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Electric Railway Journal

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Instructions for Use of Index

This index is essentially a subject index, not an index of titles, and articles treating a number of different subjects are indexed under each of them. In addition, a geographical reference is published wherever the article relates to any particular railway company, or to the State matters of any particular State. The geographical method of grouping serves to locate in the index any article descriptive of practices, conditions, events, etc., when the searcher knows the electric railway, city or State to which the article applies. Groupings are made under the name of the city in which the main office of the company is located, but an exception is made in the case of electrified sections of steam railroads, such entries being made direct under the name of the railroad. City or State affairs appear direct under the names of the city or State involved.

In the subject index, the alphabetical method is followed, and if there is a choice of two or three keywords the one most generally used has been selected, cross references being supplied. Below will be found a list of the common keywords used in the index to this volume. This list has been subdivided for convenience into sixteen general subjects, but the general subject headings, shown in capital letters, do not appear in the body of the index. As an example, if a reader wished to locate an article on power-driven tower wagons he would obviously look in the list under the general subject "vehicles," and of the two keywords that appear under this caption, only "Service and tower wagons" could apply to the article in question. The reader would therefore refer to this keyword under "S" in the body of the index.

In addition to the groups of articles covered by these headings the papers and reports from railway associations are grouped under the names of the various organizations. Proceedings of other societies are indexed only in accordance with the subject discussed. Short descriptions of machine tools appear only under the heading "Repair Shop Equipment" and are not indexed alphabetically, because of the wide choice in most cases of the proper keyword.

CLASSIFIED LIST OF KEYWORDS

ACCIDENTS AND LEGAL

Accidents (including wrecks)
Accident claim department
Legal
Public service and regulative commissions
Safety-first movement

CARS

Car construction
Car design
Cars (descriptive)
Lubrication
Heating of cars
Lighting of cars
Motor cars, gasoline
One-man cars
Work and wrecking cars

CAR EQUIPMENT

Axles
Bearings
Brakes
Controllers
Couplers
Gears and pinions
Motors
Seats
Trucks
Wheels

EMPLOYEES

Employees
Labor
Life insurance
Strikes and arbitrations
Wages
Women conductors
Women employees

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Fares
Fare increases
Freight rates
Transfers
Zone fare system

FINANCIAL AND STATISTICS

Accounting
Appraisal of railway property
Depreciation
Financial
Franchises
Operating records and costs
Statistics
Traffic investigations

HEAVY ELECTRIC TRACTION

Heavy electric traction (general)
High-voltage d.c. railways
Locomotives

MAINTENANCE OF EQUIPMENT

Maintenance records and costs
Paints and painting
Repair shop equipment
Repair shop practice
Repair shops
Tests of equipment
Welding, special methods

TRANSPORTATION

Energy checking devices
Operating records and costs
Passenger handling records
Signals
Stopping of cars
Train operating practice

POWER

Boiler room practice
Coal
Energy consumption
Feeders
Overhead contact system
Poles
Power distribution
Power stations and equipment
Substations and equipment
Substations, automatic
Third-rail contact system
Transmission lines
Turbo-generators and equipment

RECORDS

Maintenance records and costs
Operating records and costs

STRUCTURES

Bridges
Carhouses and storage yards
Power stations and equipment
Repair shops

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Rail joints and bonds
Rails
Special work
Ties
Track construction
Track maintenance

TRAFFIC

Advertising
Freight and express
Publicity
Traffic investigations
Traffic stimulation

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• Portrait.

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Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, July 6, 1918 *Number* 1

Release Needless Platform Man Power

JUST before America's entry into the war the manager of a Southern railway wished to change to one-man operation, for which his town is ideal. The news got to the men in such distorted fashion that they thought one-half would lose their jobs at once. There followed the threat of a strike, the manager's toes chilled at once, and no more was done in the matter. In the meantime a great shipyard was begun near by and the men who had been so worried about their jobs on the cars began to leave in droves. Of course, there was also the effect of the draft to make matters worse. For all that, the property is still run with two men on cars that need little more than air equipment to serve as one-man cars.

This is not an isolated case. There are scores and scores of cities equally adapted to change to one-man operation. Instead of timorously hoping that the next one or two drafts will leave them unscathed, these companies should get busy now to reconstruct their cars at least as fast as their men leave or are taken from them. Any attempt of medium-sized roads to compete with war wages is out of the question, except by reducing the number of men required to run an equal or even a greater number of cars.

Engineering and Transportation Are of Primary War Importance

THE operations of an army in the field depend now so much upon engineering that this war has well been termed largely a war of engineers. That the members of the engineering profession in the United States have responded to the call made upon them is shown by the fact, brought out at the A. I. E. E. meeting last week by General Black, that our four principal engineering societies have more than 10 per cent of their members in the service, this percentage rising, in the case of the A. S. C. E., to 14½ per cent. According to the same speaker, also, there are in the Engineer Corps of the regular army some 8000 commissioned officers and 200,000 enlisted men with engineering experience, and probably an equal number of men with engineering experience in other branches of our military forces. To these must be added, of course, to get the total engaged in war work, the very large number of engineers engaged in the construction at home of war equipment and its transportation, as well as in other allied war activities.

General Black used the figure of 25 lb. as the amount of supplies required by an army at the front per man per day, and to deliver this finished product at the front means, of course, not only its transportation to an American port and then across the sea, but the transportation at home of many times that weight of raw material to the factory as well as of the workers themselves to and from their work. All this means that engineers and transportation men have an especial responsibility in this war to put forth their best efforts to defeat the enemy. Those not able to engage directly in foreign military service should do everything they can at home to maintain their efficiency and output to the uttermost.

McAdoo's 1-Cent Rate for Soldiers Should Not Injure the Interurbans

HOW will interurban electric lines be affected by Director-General McAdoo's order that soldiers and sailors under certain conditions shall be entitled to a rate of transportation of 1 cent per mile on steam railroads? A few seem to expect serious results and state that as the electric lines have in many cases gone to considerable expense to handle this class of traffic, the government should recompense them for the revenues lost. Even if this low rate should become chargeable on interurban lines, however, there is no reason for fear.

Secretary McAdoo's steam-railway order reads: "All fares now constructed at a lower basis than 3 cents per mile shall be advanced to the basis of 3 cents per mile—subject to the following exceptions: (E) Officers, enlisted men and nurses of the United States Army, Navy and Marine Corps, when traveling in uniform at own expense, shall be granted the privilege of purchasing passage tickets at one-third regular one-way fare when on furloughs or official leave of absence. except that this reduced fare shall not be granted on short-term passes from camp or on liberty from ships or stations to near-by cities." Probably only 10 per cent of the service riders on the interurban lines are on furloughs or official leave of absence.

Thus the service revenues on interurban lines would be only slightly reduced by an application of the 1-cent rate to such carriers, and the loss would be negligible in view of the generally improving rate situation. The institution of the 3-cent steam railroad rate has given the interurbans an unparalleled opportunity to secure the rate structure which they need for their own and the nation's welfare. As the electric carriers find themselves enabled by increased rates to perform in full their essential functions, they will be doubly glad to give any aid desired for the boys of Uncle Sam.

First Aid to Electric Railways Is Needed at Once

THE one outstanding defect in the present system of utility regulation is *delay*. Electric railways are in straits, some are in the last throes. But they cannot, as a rule, get speedy relief.

A year ago the New York Public Service Commission, Second District, received petitions for relief from more than thirty companies. It was months before the first case was decided. Then the highest court in the State decided that the commission had not power to act, and an appeal had to be made to the separate municipalities. As a consequence, many of the companies have not yet had relief.

Nearly every application for increased rates results in long drawn out and expensive proceedings varied by all the political or legal moves for delay that ingenious politicians or lawyers can devise.

In Massachusetts the increased fare movement became marked as early as 1914. The utilities in that State have been under public control more than thirty years, so that all capital issues have had the approval of the authorities, and no question of "watered stock" can be raised. Yet the average time for disposal of the fifteen cases for higher fares instituted from Jan. 1, 1914, to May 24, 1917, was 144 days, varying from 36 to 379 days each.

The appeals made early in the present year by the Comptroller of the Currency, John Skelton Williams, and Secretary McAdoo, backed up by a letter from President Wilson himself, for *speedy assistance* to utilities and especially electric railways in the hour of need, as necessary to the war work of the government, may have had some effect somewhere, but they have not changed the record materially. The long battle in New Jersey over the emergency rate case of the Public Service Corporation still goes on, although this company's service in the war program is most marked.

A notable exception is the quick decision made by the Maine commission in the case of the Lewiston, Augusta & Waterville Street Railway, which applied for a 7-cent basic fare. This case was disposed of and the fares began to come in within thirty days.

Is it possible that the lesson of the experience of the steam railroads has not been learned? Years ago these carriers proved that not only did they need greater revenue but they needed it at once. Otherwise, new extensions, new terminals, new locomotives and cars could not be provided as they were needed for growing service.

When, last winter, we paid $10 a ton or so for coal—double the rates prevailing when the railroads just asked for relief—we were paying only part of the enormous bill which that delay in granting higher rates brought about. The savings on freight and passenger rates were trifling compared to the extra cost of coal and countless other things which the lack of transportation facilities increased.

And now we must pay the increased rates anyway, for Mr. McAdoo has put them up probably to much higher figures than would have answered had the railroads been allowed to make the increase themselves. The politicians may have won a victory, but it is costing the public dearly.

The Bay State Street Railway in Massachusetts with nearly 1000 miles of track, by reason of insufficient income, was allowed to go into the hands of a receiver. Now not only are the fares higher, but more important, the receiver got permission of the courts to discontinue about 140 miles of track.

When the drowning man is hauled out on the bank, it is no time to wait for physicians' conventions. He needs first aid immediately. Questions of investment, fair return, valuation and the like, pertinent and proper as they may be when there is ample time in the regular procedure, should not be raised to delay action upon the present emergency applications of electric railways for immediate relief.

When higher wages must be paid—and that they should be paid admits generally of no argument—and the company's revenues will not meet the bill, the public must meet it at once or delay the war program at the cost of lives abroad. It is the same with advancing bills for coal and other materials, higher taxes and the like.

The questions of adequacy or excess payment of dividends and the like can be taken up at leisure. But now is no time, when these questions stand exactly as they have stood for years in most cases, to begin the long-detailed and time-killing study that such questions necessarily involve.

The government's War Labor Board has taken this ground. If local authorities and commissions cling to the policy of obstruction, the government by one means or another will have to clear the track, through exercise of its war powers. That its program will hardly result in so much hesitation over a 1-cent increase in the fare—or even more—is shown by the course taken with the steam railroads.

Applying the Lessons of the June Conventions in October

IN REGARD to its 1918 annual convention the American Electric Railway Association is fortunate in having the opportunity to study in advance a number of other war-time conventions. June is an important convention month for associations closely bordering on the electric railway field. The National Electric Light Association, the American Institute of Electrical Engineers, and the American Society for Testing Materials have held their usual conventions, and the Master Car Builders' Association and the American Railway Master Mechanics' Association held a short joint meeting of representative members to attend to necessary business.

In all of the June conventions the entertainment features were very properly subordinated to the idea of contributing to the winning of the war. This thought of the winning of the war was probably stressed more forcibly at the N. E. L. A. meeting than at the others, but it was evident in all of the programs of the associations mentioned. Every one of these represents an industry or a line of engineering activity which is vital to the success of our greatest of all national tasks. Power supply, transportation and first-class materials for all construction are certainly three of the most essential elements in putting up a winning fight. The test of the success of these meetings is the spirit in which those who attended, as well as those affected by the reflected influence, go about their tasks after the conventions. If each is imbued with the conviction that all considerations must bend to the country's needs, then the expenditure in time and money of those who attended the conventions will have been justified, and only then.

In surveying as a whole the conventions held in June, these aspects stand out prominently. First it is not necessary or desirable to hold large conventions, as the needs of the hour can be met by a small, representative and earnest group qualified to lead the thinking of the industry which it represents. Second, in planning the program provision should be made for postponing, until after the war, all discussion which does not relate essentially to the means for winning. Third, the addresses and discussion should be unusually definite and concrete in their suggestions, leaving for peace times, if ever, those more diffuse and ephemeral dissertations which sound well but contain little of definite applicability.

As we said editorially some weeks ago, the spirit of these war-time conventions should be cumulative. We shall be greatly disappointed if our own convention in October does not show the result of careful study of the weak as well as the strong points in the meetings of our sister societies.

Justice Will Have Its Due in the Long Run

THAT the decision of the New York Court of Appeals in the Rochester fare case need not be discouraging to utilities seeking rate increases in other states is the cheerful conclusion which develops as one regulating body after another gives its views on jurisdiction over cases of this kind. Within the past few weeks we have had encouraging news from both Missouri and Pennsylvania on the fundamental point involved in the New York decision—the power of the State to alter franchise rates imposed under a constitutional requirement for municipal consent to electric railway construction and operation. It will be recalled that, owing to the defective state of the regulatory law in New York, the court there did not rule directly upon this constitutional question, although it uttered a dictum which has led many to fear that the State will not be able to change franchise rates without a constitutional amendment.

In the St. Louis fare case the Missouri commission decided that it has power to change franchise rates, and that whatever authority the city may have had to enact the ordinance in question it was necessarily adopted subject to the provisions of the Constitution that the charter and ordinances of the city conform always to the laws of the State. The commission held that the only harmonious interpretation of the constitutional consent clause in connection with other constitutional provisions relating to the police power and legislative control over rates gives the State the right to alter franchise rates when it so elects. Indeed, the commission stated in plain words that it does not agree with the dictum of the New York Court of Appeals.

The Pennsylvania commission in the recent Petroleum Telephone Company case expressed the sound principle that adequate service cannot be rendered by a utility company unless it shall be permitted to charge such reasonable rates as will enable it to meet operating, maintenance and fair return obligations. The opinion said:

"While rates carried in municipal ordinances may be enforced so long as they remain reasonable and do not offend against other rate provisions of the public service law, whenever under changed conditions they become unreasonable, inadequate or unduly discriminatory, they place a burden upon the public from which the public has a right to be relieved, and the machinery for proper adjustment having been created, whereby the exercise of the police power may be put in motion, all ordinances carrying unjust or inadequate rate provisions must give way. We are of the opinion that such exercise of the police power of the State does not invade the authority of municipalities or violate the sanctity of ordinance contracts."

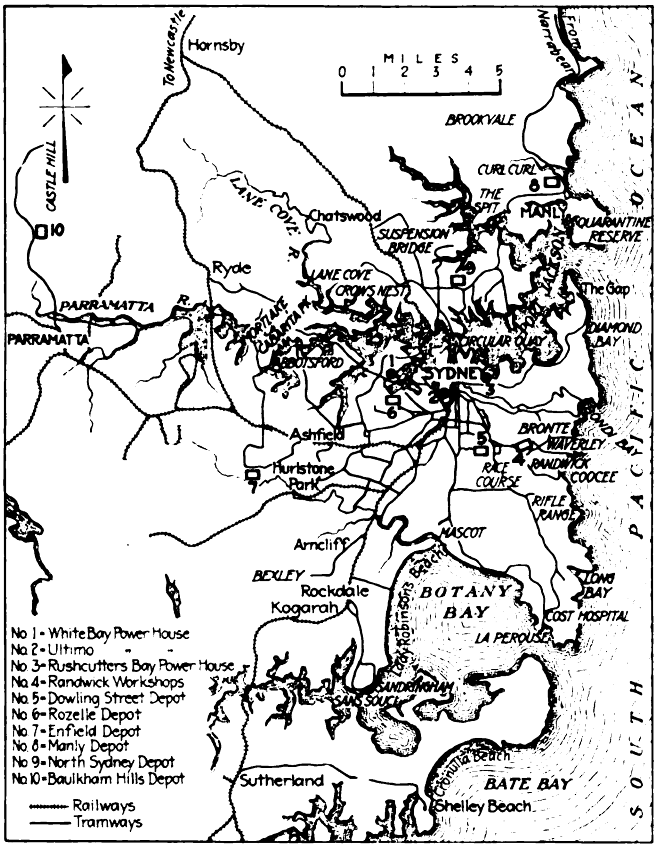
This decision, dealing as it did with telephone law, concerned primarily the supremacy of the State rate-making power over municipal consents required by statutory enactment and did not address itself directly to the question of control over rates fixed under a constitutional consent clause. In this connection, however, it may be pointed out that the Attorney General of Pennsylvania has now advised the commission of full power on its part to fix reasonable electric railway rates, notwithstanding the fact that such rates were specified by local authorities as a condition upon which they gave constitutional consent for the construction of the lines. This is a non-legalistic broad-minded interpretation of the law—such an opinion as the New York Court of Appeals should hand down when it comes to rule unmistakably on the constitutional point involved.

Another interesting recent decision in regard to State rate-making is that of the New Jersey Court of Errors and Appeals quoted in the June 22 issue of the ELECTRIC RAILWAY JOURNAL. It held in brief that the State sovereignty is still unimpaired, and that municipalities cannot exceed the authority intrusted to them and must not consider their powers extended even by implication. The question of a constitutional barrier did not arise, however, for the New Jersey constitution does not confer upon cities the right to grant street franchises, and the requirement for municipal consent was imposed by legislative acts. We mention the case here only because it is an excellent late example of what the New York Court of Appeals recognized when it said: "The paramount power of the Legislature over the subject of fares has been upheld in the absence of a constitutional limitation." And now, in view of the other opinions mentioned, is it too much to hope that the supremacy of the State power will eventually be recognized by all the courts without even such a qualification?

Utility companies must not despair because a court or commission here and there holds that it is without power to give relief in cases of this kind. Justice will have its due in the long run, and the real or imaginary barriers which stand in the way of adequate rates must give way eventually, even though laws have to be changed or constitutions amended. The fight for a square deal must go on.

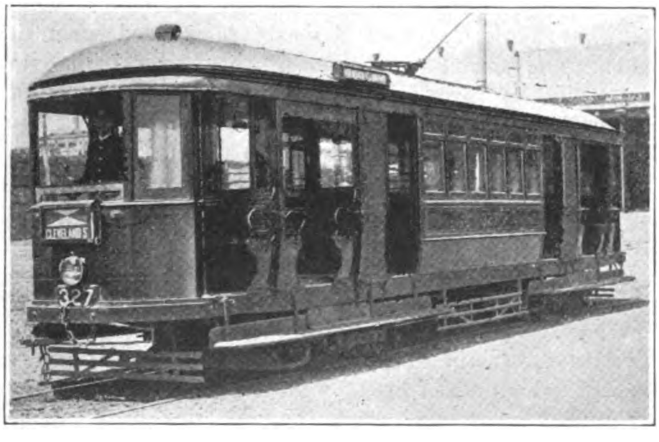
The New South Wales Government Tramways

Australia's Greatest Electric Railway System Serves a Large Area and Provides Both City and Suburban Service—A Unique System of Route Signs, Easily Distinguishable from a Distance, Aids Particularly to Accelerate Traffic at Switch Points

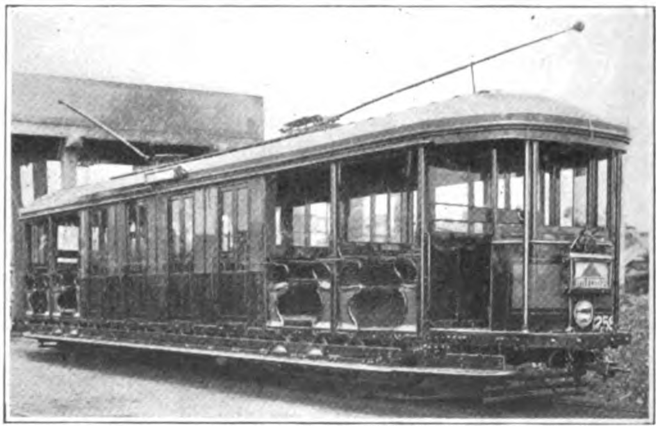

To Newcastle
Hornsby
MILES
0 1 2 3 4 5
BROOKVALE
CASTLE HILL
10
CURL CURL
8
THE SPIT
MANLY
QUARANTINE RESERVE
LANE COVE R.
Chatswood
SUSPENSION BRIDGE
Ryde
LANE COVE
CROWS NEST
9
The Gap
PARRAMATTA R.
PARRAMATTA
CIRCULAR QUAY
DIAMOND BAY
ABBOTSFORD
1
SYDNEY
3
2
6
Ashfield
BRONTE
WAVERLEY
5
4
RANDWICK
COOGEE
Hurlstone Park
7
RACE COURSE
RIFLE RANGE
MASCOT
Arncliff
BEXLEY
Rockdale
Kogarah
Lady Robinson's Beach
BOTANY BAY
LONG BAY
COST HOSPITAL
LA PEROUSE
SANDRINGHAM
SANS SOUCI
Cronulla Beach
Sutherland
BATE BAY
Shelley Beach
SOUTH PACIFIC OCEAN
No 1 - White Bay Power House
No 2 - Ultimo " "
No 3 - Rushcutters Bay Power House
No 4 - Randwick Workshops
No 5 - Dowling Street Depot
No 6 - Rozelle Depot
No 7 - Enfield Depot
No 8 - Manly Depot
No 9 - North Sydney Depot
No 10 - Baulkham Hills Depot
Railways
Tramways

MAP SHOWING TRAMWAYS AND RAILWAYS OF SYDNEY AND ENVIRONS

SYDNEY, the metropolis of Australia, is justly proud of its electric railway system. The New South Wales Government Tramways, as this system is called, as the name implies is owned by the state and controlled directly by the Chief Commissioner for Railways and Tramways, James Fraser. A general idea of the extent of the system and the location of the various places served can be obtained from the accompanying map. Transportation is provided to the many beaches, race tracks, pleasure grounds, etc., as well as to all the suburbs to the south and east of the city. There is very little railway competition at these points. There are many different routes, thirty of which converge to Circular Quay, the port of Sydney. An idea of the heavy nature of the traffic may be gained from the fact that between 4000 and 5000 cars pass Railway Square, one of the busiest centers of the city, between 6 a.m. and midnight each day. The system comprises 350 miles of standard-gage (4 ft. 8½ in.) track in the city and suburbs and includes one or two isolated sections. The rolling stock equipment is composed of 1387 motor cars, eleven trailers and 105 service cars. These were all built locally except a few of the earlier ones built by the American Car Company. All are thoroughly serviceable and are provided with the most modern devices to give the passengers comfort, safety and a rapid means of transportation. As shown in the accompanying illustrations, the cars are of single deck construction and have the end section open while the center section is closed. In the latest type car used, side doors are provided for the closed section. In other types, entrance and exits are provided on each end of the closed section. Running boards are arranged along the sides for boarding and alighting. The latest type of car used is known as the "O" class. Cars of this type are 44 ft. 5 in. long over all and 9 ft. wide over footboards. A seating capacity for eighty passengers is provided. The control equipment is Sprague-General Electric, type M, arranged for multiple-unit operation so the cars can be connected up in trains when desired. Other types of



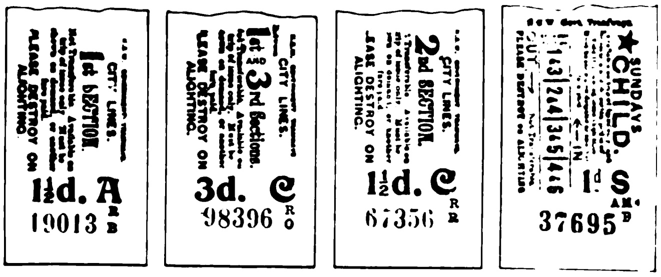
CLASS "O" CAR HAVING ACCOMMODATION FOR EIGHTY PASSENGERS



CLASS "L" CAR WITH ACCOMMODATION FOR FIFTY-SIX PASSENGERS cars have K controllers and the remainder of the electrical equipment is General Electric. All cars are equipped with air brakes.

Destination signs are located just above the headlights at both the front and rear of all cars. In addition, side signs are provided at the edge of the roof. The end destination sign boxes, in addition to having the names of the various places served by the system, are provided with variously colored routing signs. These signs have geometrical figures of different colors which are visible from a considerable distance both day and night and enable the signal men properly to set the switches to give the car its proper route.

The following is a list of some of the forms in which these signs are arranged, and an idea as to their appearance can be obtained from the accompanying illustrations: White ground with one green circle; white ground with two red circles; white ground with two green circles; white ground with two green crosses; white ground with diagonal red cross; white ground with three green diamonds; white ground with green and red triangle; green ground with white diamond; green and white triangles; red and white diagonal bars.

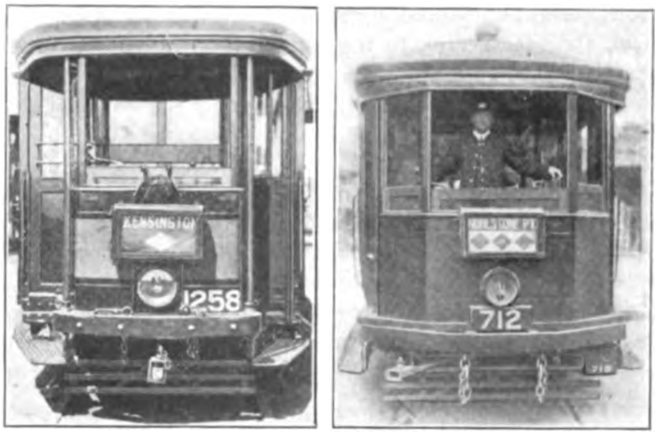

CITY LINES.
1st SECTION
1½d. A
19013
CITY LINES.
1st & 3rd Sections.
3d. C
98396
CITY LINES.
2nd SECTION.
1½d. C
67356
SUNDAYS
★CHILD.
1d S
37695

TICKETS USED BY THE NEW SOUTH WALES GOVERNMENT TRAMWAYS

Signal towers are provided adjacent to crossings and junctions. A Park Street signal box is shown in an accompanying illustration. The design is arranged to harmonize with the surroundings and presents an attractive appearance. The monogram of the railway system appears on each panel. The signaling and switching system is interlocking. An additional illustration shows the form of signal used. These consist of two separate disks with a red stripe on a white background. When the stripe is in a vertical position as shown in the signal numbered 6 in the illustration, the indication is clear, and when in a horizontal position, as in 7, it indicates stop.

The railway tracks, in general, are located on public thoroughfares, but there are some locations where the physical condition of the country makes it undesirable for the car lines to follow the public highways. This is especially necessary on the Spit-Manly section where the cars have to ascend and descend hundreds of feet from the sea level and "negotiate" the steep cliffs rising from the shores of the harbor. There is a section on the Balmain line where the track is so steep that it is necessary to use a dummy truck to pilot the cars up and down the steep inclines.

Power for operating the cars is supplied from a direct-current overhead trolley system with rail return at 600 volts potential. The system has three generating stations located at White Bay, Ultimo and Rushcutters Bay. There are also several substations situated at suitable points throughout the system. The location of these is indicated on the accompanying map.

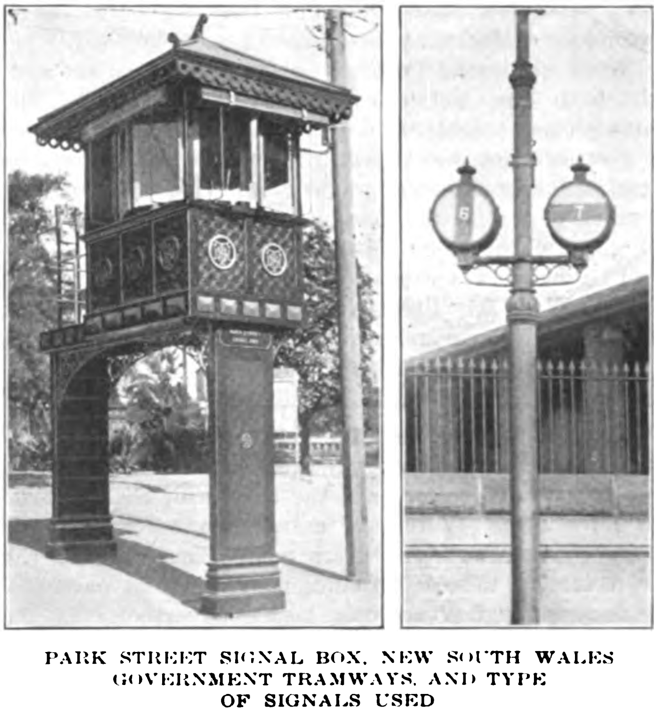


END VIEWS OF DIFFERENT CARS SHOWING LOCATIONS OF DESTINATION SIGNS

In order properly to house and maintain the rolling stock, twelve carhouses are provided. The largest of these is located at the Dowling Street Depot, at which 700 men are employed. In addition an extensive construction and maintenance shop for the building and repair of rolling stock is located at Randwick.

The system of fare collection is based on the section or zone principle. The fares are moderate considering the service given. A section is from 1 to 2 miles long and the fare charge is 3 cents for a single section or at a rate of 2 cents per section where two or more sections are traveled. Each conductor is supplied with a ticket case to hold tickets of ten different denominations, as each section or combination of sections has its distinct colored ticket. Transfers are not used.

Several of the tickets are shown in an accompanying illustration. Some of the colors used are: for first section tickets, cerise; second, white; third, gray, etc. For tickets applying to more than one section, that for the first and second sections is green; first to third, sal-



PARK STREET SIGNAL BOX, NEW SOUTH WALES GOVERNMENT TRAMWAYS, AND TYPE OF SIGNALS USED mon; second and third, light green; first to sixth section, blue, etc. Referring to the illustration, it will be noted that the fare is printed on each ticket and is indicated in pence as 2d, 3d, etc. The large letter immediately following the fare denotes the day of issue. *A* is used for Mondays and Thursdays, *B* for Tuesdays and Fridays, *C* for Wednesdays and Saturdays and *S* for Sundays and special fares. Underneath is the serial number of the ticket and immediately following are two letters. The topmost letter indicates the depot of origin—*R* for Rozelle, *N* for Newtown, *AM* for Enfield, etc. The lower letter denotes the series. Special rates of fare are provided for school pupils, teachers, members of the military and naval cadet forces, blind persons and apprentices. Special rates of fare are also provided for through transportation to the parks and race courses.

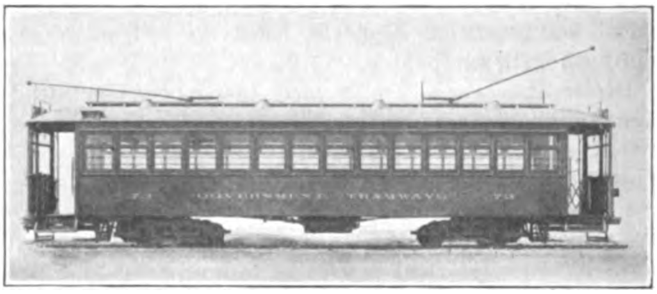
Some of the statistics regarding the operation of this railway system for the year ending June 30, 1917, are as follows: Passengers carried, 295,303,714; car mileage, 25,361,992; earnings, $10,043,700 approximately; units of power generated, 94,326,199 kw.-hr.; men employed, 10,000. There are at present about 1000 men of the Tramway Traffic Branch in active service with the Australian Imperial Forces. At the Rozelle Depot a fine monument has been erected to the memory of fallen comrades and a similar memorial is in the course of erection at Dowling Street Depot. The cost of these monuments has been defrayed by the voluntary contributions of the staff.

Standing to the Colors at Jacksonville

A PATRIOTIC custom which appears to be original with Jacksonville, although it has since spread to other Florida towns, is standing to the colors for one minute at 6 p.m. every day. At that instant the flags throughout the city are lowered, and conductors in the standing cars announce: "Six o'clock—please bare your head and stand to the colors." This act is carried out by the passengers and by men on the shipyard ferries and elsewhere. The custom, which was first purely voluntary, has now been embodied in an ordinance of Jacksonville.

The Jacksonville Traction Company was glad to comply with this patriotic practice, but it found the power-house machinery less amenable. The first time the experiment was tried, the engines in the power station nearly ran away to their ruin. It was therefore decided to modify the plan by stopping different groups of cars within four minutes, as follows: Riverside and Highway cars stop at 5.58 p.m.; Phœnix Park, Main Street, West Bay Street cars at 6 p.m., and Fairfield, Lavilla and Newman cars at 6.02 p.m. This plan has worked out satisfactorily.

The shortage of men for electric railway work has been felt in Louisville. At one carhouse of the Louisville Railway where it has been the custom of the company to have about twenty-six extra men on hand there were recently only two extra men. The company has used various means to induce men to accept positions The company has recently begun advertising in the newspapers of the county seat of every county in the State, seeking men between the ages of twenty-one and forty who are not in class 1 of the army draft.

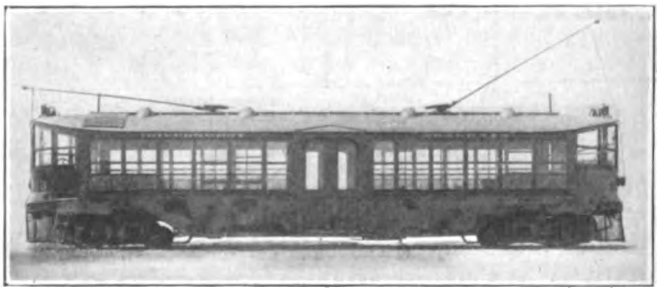


AUSTRALIAN BUILT CAR AT PERTH

New Cars for Perth

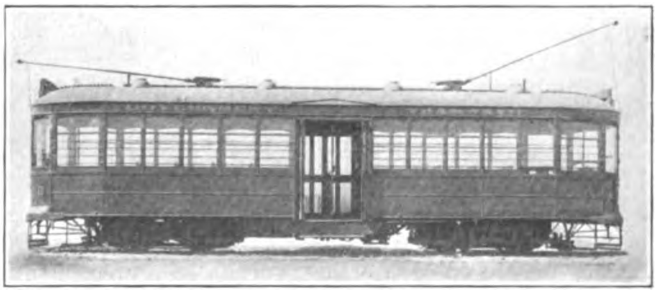
THE Perth Government Tramways have recently put in service ten maximum traction double-ended cars of the type shown in the first engraving. They were built in the company's shop and are mounted on Brill-62-E trucks and equipped with GE-218-C motors. General Electric air brakes and Ohio Brass sanding valves are used.

As an experiment the company has also added two center-entrance cars, one of the Washington type, the other of the New York type. The Washington type car has four GE-58-A motors with K-36-J controllers without contactors. The doors are hand operated. The New York type car is mounted on Brill-62-E trucks and equipped with GE-218-C motors with K-36-M controllers. The capacity is fifty passengers seated and twenty-two standing, and the car has carried ninety passengers. Both cars are fitted with Westinghouse air brakes. As prepayment operation is not used, the fare box apparatus has been removed. Both cars were built by the J. G. Brill Company.



NEW YORK TYPE OF CAR AT PERTH

The Perth Government Tramways system comprises about 36½ miles, measured in single track, and has been a government property since July, 1913. A new power station of 12,000-kw. capacity has recently been put in operation. Distribution in the city is at 6000 volts and to the outlying districts at 20,000 volts.



WASHINGTON TYPE OF CAR AT PERTH

Power Supply for Electric Railways

At Its Atlantic City Convention Last Week, the A.I.E.E. Discussed a Number of Topics Directly Applicable to Electric Railway Power Supply—Membership Is Now 9370

THE thirty-fourth annual convention of the American Institute of Electrical Engineers was held at Atlantic City last week with an attendance of about 200 members and guests. Abstracts of several of the papers were given in the June 29 issue of this paper, page 1229, and a number of others are abstracted this week. The convention was of the simplest possible nature, with few papers which could be considered without the sectional arrangement of the program sometimes found necessary and desirable by the Institute.

Retiring President E. W. Rice, Jr., in his presidential address, reviewed the progress recently made in the design of generating apparatus, after complimenting the Institute on the addition of 1235 members during the year, bringing the total to 9370. He said that the efficiency of electric generators is about 90 per cent and transformers 98 per cent, with no material change in three years. Water turbines have been improved, having a maximum efficiency now of 90 per cent. At the same time steam turbines have reached 75 to 80 per cent of Rankine efficiency, that is the percentage of the heat available within the working range of pressure and temperature. Thermal efficiencies have gone from 10 per cent to 21.6 per cent in fifteen years. Mr. Rice also referred to the progress that had been made in increasing "system" efficiency, *i. e.*, the energy efficiency of a system, and to the effects of operating substations automatically and of tying power plants together electrically.

In addition to the technical papers General William M. Black, Chief of Engineers, U.S.A., addressed the Institute on "Engineers and the War." Charles E. Stuart of the Fuel Administration also spoke, stating the attitude of the administration toward the utilities. This is that no drastic measures will be adopted in curtailing power generation until absolutely necessary, and every effort will be made to induce economy in the use of power. There is an acute shortage due to increased demand and decreased production.

A Bird's-eye View of Electric Transportation

The Coming of the Light-Weight Motor, the Electrification Situation and Other Matters Were Considered in the Traction and Transportation Committee's Report

THE annual report of the traction and transportation committee, signed by N. W. Storer, chairman, was chiefly concerned with heavy traction and light-weight motors. It called attention to the unprecedented operating difficulties of the past year. With labor conditions at their worst, the maximum tonnage ever offered, rolling stock and motive power sadly deteriorated due to a long period of lean income—all added to a winter of unprecedented severity, it is little wonder that the trunk lines practically collapsed under the strain. The collapse of the steam railways, however, did not extend to electrified lines, especially to the electrified steam railways. These roads operated successfully through the hardest weather. The committee urged as a war measure the most careful consideration of the possibilities of electrification, both by the government and the railways, stating that electrification will eventually be adopted because the character of service will be so much better that the railways cannot afford to do otherwise. During the war, however, the amount of electrification work done will probably be limited to places where it is absolutely essential, or especially advantageous, in order to facilitate handling of traffic necessary for the proper prosecution of the war.

LIGHT-WEIGHT MOTOR HAS COME TO STAY

In electric railway circles, the past year has been one of great hardships. The long continued cold weather, combined with the heavy falls of snow, resulted in a very unusual number of break-downs with little opportunity for recuperation. First, the general labor and material situation made it difficult to secure good maintenance. In addition, the street railways have been working for several years under increasingly heavy financial difficulties, so that in many cases the equipments were in no condition to stand the extra strain.

A feature which contributed to this result was the light-weight campaign. Ten years ago there was great need for this campaign. The idea became prevalent that it costs a railway 5 cents per pound per annum to haul its equipment around, so that it has been the end and aim of practically every man having anything to do with the design of cars and equipment to cut the weight. This has been done in a more or less scientific manner, but like all campaigns of this kind, the pendulum has swung past the limit in some respects, probably due to the fact that it is impossible to recognize the limit until it has been passed and trouble encountered. Fortunately, such trouble has not been sufficiently widespread to do more than point to the limit.

Possibilities for trouble with light-weight motors are mainly as follows: (1) open ventilation, leading to the introduction of snow into the working parts of the motor, with resulting danger to insulation; (2) higher armature speeds, leading to more rapid deterioration of armatures and wear of bearings; (3) reduction of area of parts thus increasing unit stresses; (4) danger from overloading due to lack of sufficient thermal capacity to withstand abnormal loads.

The ventilated motor has come to stay. Its advantages are too many to give up because of the slight damage resulting from snow. The logical thing to do when there is danger from this is to put tight covers over the motor openings in the winter time. The additional margin due to the lower ambient temperature in the winter will, in practically all cases, be sufficient to keep the motor temperature within safe limits.

High armature speeds should be approached with conservatism, care being taken that the armature is sufficiently substantial to withstand the additional strains, and that bearings are of liberal dimensions, with adequate lubrication.

The use of high-grade steel is recommended, but is preferred as an additional factor of safety, rather than to get minimum weight. It must be remembered that it is not always possible to secure special grades of material for making repairs.

Trouble from overloading with the light-weight motors has come as a very disagreeable surprise to operators. It is subject to careful analysis and the reasons are easily understood. The chief reason is that the limitations of the ventilated motor are not generally understood.

The trade has been educated to believe that the continuous rating of the railway motor is the one that determines its service capacity; and that if its continuous rating is equal to the integrated loads in service, it will be ample to perform the work. This method of selecting motors was quite satisfactory with the old nonventilated type of motors, where the motor had sufficient thermal capacity to absorb the losses generated in the short applications of heavy loads, without reaching abnormal temperatures. The modern highly ventilated motor, however, has relatively a very high continuous rating, as compared with the one-hour rating. The latter, as is well known, is really the gage of the thermal capacity of the motor and of its capacity for handling heavy intermittent loads.

When the motor that is selected for its continuous rating is required to develop four times this load for a few minutes under some abnormal condition, a nonventilated motor would be loaded to only about 60 per cent above its one-hour rating, while the highly ventilated motor would be loaded to two and one-half or three times its one-hour rating, resulting in a much greater rise in temperature. Where this abnormal load is applied at low speed, as is apt to be the case, the trouble is further accentuated, due to the decreased ventilation secured with fan-cooled motors.

The logic of this situation is simply that motors of the ventilated type for a given service will require a higher continuous rating than one of the non-ventilated type. Due regard must be paid to the capacity for short-time overloads in order to avoid reaching a dangerous temperature under abnormal conditions.

There seems to be a distinct tendency towards more conservative selection of equipments for street car service, since it has been definitely established that the cost of maintenance of motors which are worked beyond their capacity, added to the cost of unreliable service, is so high as to offset any possible saving resulting from the lighter weight. This is also leading to a return to four-motor equipments, simply because of their greater reliability under abnormal conditions. It is hoped, however, that any return along these lines will be taken with the greatest care and with the maximum utilization of the experience that has been secured up to date. Having been at both extremes, it should now be possible to adopt a mean position which will give the very best results.

Great savings in energy can be effected without cutting the weight of the equipment, by attention to improved methods of operation and, especially, by the further use of field control. It is hoped also that eventually it will be possible to make use of regenerative control for elevated and subway equipment, at least. This has worked out so satisfactorily on mountain grades that its extension to car equipment seems very desirable.

Experience with an Automatic Hydroelectric Power Plant

Seven Months' Operation of Cedar Rapids, Ia., Automatic Plant Has Demonstrated that Scheme Used Is Practical for Existing Local Conditions

SINCE October, 1917, there has been in operation at Cedar Rapids, Ia., the automatic hydroelectric plant of the Iowa Railway & Light Company. This plant is a further development of the automatic substation idea. Its construction and operation were covered in a paper at the Atlantic City meeting by J. M. Drabelle and L. B. Bonnett, the former of the Iowa Railway & Light Company and the latter of the General Electric Company. This plant was fully described in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 1, 1917, page 980, and its salient features were emphasized in an editorial on page 978 of the same issue. Supplementing the earlier article the following notes are based on the paper by Messrs. Drabelle and Bonnett, to indicate the results of the last winter's experience with the plant.

When the paper was written the station had been in operation about seven months, and during this time the total flow of the river had been used at all times. The plant had fed into the transmission system a total of about 3,000,000 kw.-hr. There were a few failures to start, as no automatic apparatus can be absolutely infallible, but the source of the failures has been found and removed.

The equipment is designed to shut down in case of abnormal conditions, so that all the machines will be protected against injury. It operated so successfully that, in spite of the shortage of help and pressure of other work on the part of those in charge, the plant ran continuously for ten weeks with no attention of any kind to the automatic equipment. There have been several cases of exciter trouble at the main steam station, resulting in a complete shutdown of the automatic plant. As soon as the bus voltage was restored the automatic equipment put the hydroelectric plant back onto the line without attention of any kind and with no damage to any machines.

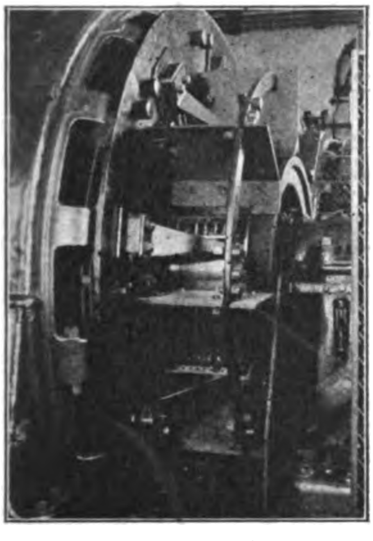
Since the plant was put into operation the changes that have been made consist essentially of substituting heavier and more reliable relays at one or two points in the control system. The plant has successfully withstood short-circuits, exciter failures in the steam plant, low and high water, and all of the test conditions which those in charge of the work desired to place upon it, without damage. Incorrect operations have been brought about artificially, further to test the plant, and it has been operated by the regular operating force of the steam plant. There has been no occasion to keep men in the hydroelectric plant to watch its operation.

In concluding their article the authors point out that if the automatic development means anything at all it will now be possible to develop a large number of small, low-head plants and to tie them in on a high-tension system, leaving their operation entirely to the float switch and voltage relays. If there is voltage on all three phases of the high-tension line, and water for the turbines, they will start up and go onto the line without wrecking themselves or disturbing the operation of the remainder of the system. In these days of scarcity of coal and of labor, together with high prices for these, the utilization of our water power is of national importance. With the elimination of the excessive cost of labor for small plant operation, many water-power sites can be made paying investments.

Keeping Direct-Current Apparatus from Flashing

High Speed Circuit Breakers and Arc Barriers Have Been Proved Effective in Limiting the Effects of Short-Circuits

THE latest practice in protecting d.c. equipment from flashing was described in a paper by J. J. Linebaugh and J. L. Burnham, both of the General Electric Company, Schenectady, N. Y. The subject is of particular importance at this time on account of the flashing problems incident to the automatic substation and to high-voltage heavy traction. As the authors point out, the problem of protection from flashing has for many years confronted engineers who build and operate d.c. machines. Some form of barrier has been the most common protection suggested, but most attempts to apply this plan have been unsuccessful. It was realized, also, that the means for preventing flashing at the commutator and brushes of d.c. machines must operate to remove the cause very quickly. In this paper a special form of barrier which gives the required protection, and two forms of high-speed circuit breakers were described.



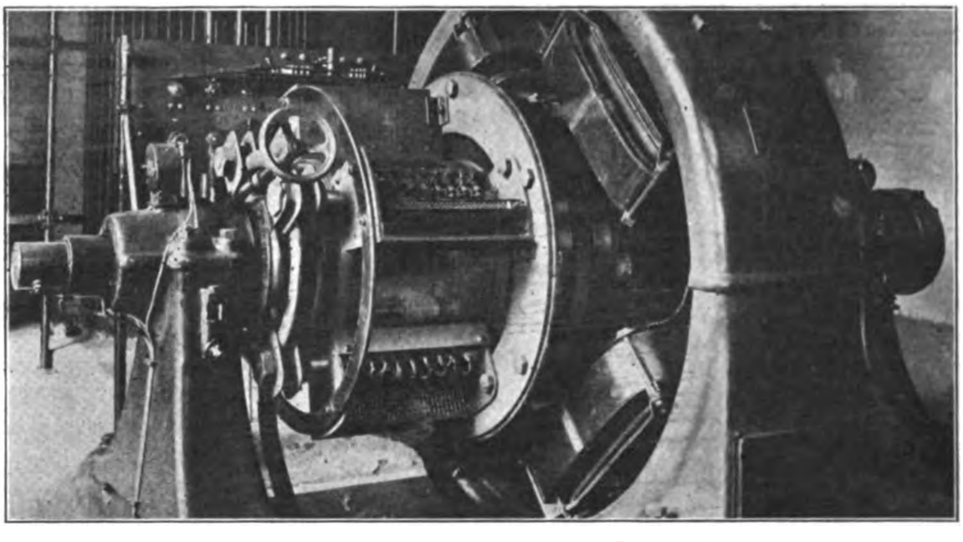


FIG. 1—FLASH BARRIER INSTALLED ON 2000-KW., 3000-VOLT, SYNCHRONOUS MOTOR-GENERATOR SET USED IN CONNECTION WITH HIGH-SPEED CIRCUIT BREAKERS. FIG. 2—500-KW., 25-CYCLE, 600-VOLT SYNCHRONOUS CONVERTER EQUIPPED WITH COMMERCIAL FORM OF FLASH BARRIER INSTALLED IN AUTOMATIC SUBSTATION

A flash at the commutator starts from excessive sparking, produced by the breaking of current in the coils short-circuited by the brush as each segment of the commutator passes from under the brush. The spark or arc tends to hold, due to the inductive character of the coil, and if the arc is of sufficient volume the vapor produced thereby forms a low-resistance path between segments and from brush to brush or to frame. The value of load that causes flashing when applied suddenly, *i. e.*, short-circuit, is a function of the time required to throw it off. The quicker the circuit is opened the higher the value of current that will not cause arcing.

With the ordinary circuit breaker which begins to open at about one-quarter of a second there is a certain maximum load which cannot be exceeded for each commutating machine without causing flashing. If feeders have a sufficient resistance to limit the short-circuit current to this critical value, flashing will occur only on the rare occasion of a short-circuit in a feeder itself. It has been the standard practice of nearly all manufacturers to recommend the tapping of feeders, especially railway feeders, at a sufficient distance from the substation to insure enough resistance in the circuit to limit current in case of short-circuit near the station.

With special high-speed circuit-opening devices, operating at about 0.005 second, the more sensitive machines, such as 60-cycle synchronous converters for railway voltages, may be short-circuited without flashing over even though the maximum current is of higher value than would cause flashing with suddenly applied load in ordinary circuit-breaker operation.

After considerable experimentation the engineers of the General Electric Company decided to concentrate their energies on the design of a circuit breaker using the principle of a latch, a heavy spring and a series tripping coil. The problem was to obtain very quick tripping, rapid acceleration of contact and a sufficient number of ampere-turns in the magnetic blow-out to insure rapid breaking of the arc. A very special latch with a light tripping movement was designed somewhat similar to the hair trigger on a rifle, so that about 0.001 in. movement of the plunger would trip the breaker.

A breaker of this type was tested exhaustively in connection with a 2000-kw., 3000-volt d.c. sychronous motor-generator set built for the Chicago, Milwaukee & St. Paul electrification, and some have been in service in the substations of this railroad since early in 1917.

Later another type of high-speed breaker has been developed and forms part of the more recent equipment being furnished to the St. Paul. This consists essentially of a contactor having a laminated structure with electric holding coil and series bucking coil so that it opens when the load current reaches a value sufficient to offset the ampere-turns of the holding coil.

ARC BARRIERS ARE NECESSARY ALSO

In connection with the tests described it was found that even with the very high speed obtained it was not possible completely to protect the machines from flashing on the most severe short-circuits, and barriers were designed and installed to supplement the circuit breakers. Barriers of the type shown in Fig. 1 were installed to delay the time of flashover so that the breaker could give complete protection.

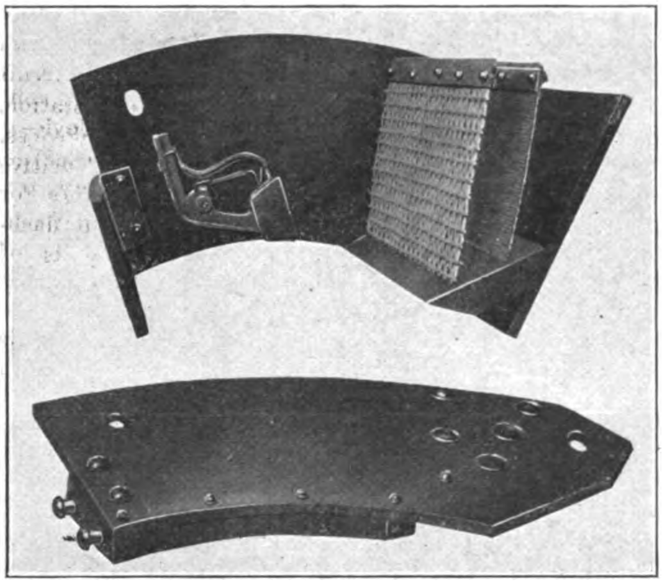


FIG. 3—FLASH BARRIER WITH FRONT REMOVED TO SHOW LOCATION AND CONSTRUCTION OF ARC SCOOP AND WIRE MESH ARC COOLERS

Further experimenting resulted in the general arrangement of a successful barrier as shown in Fig. 2. Here a close-fitting box of fireproof insulating material surrounds each set of brushes and is located so as to give a small clearance between the box and the commutator. On the side of the box toward which the commutator rotates after leaving the brush is fastened a V-shaped "scoop" (see Fig. 3) of fireproof insulating material, preferably having good heat conductivity. This points toward the brush and has a small running clearance from the commutator. Radially above the scoop about 1 in. apart are two metal screens, one coarse and one fine mesh, through which the arc is successively forced and cooled.

The scoop runs very close to the commutator with narrow edge and small clearance and picks up the arc from the commutator and deflects it into the arc coolers which, from their construction, allow free passage of all gases generated by the arc. The cooling and condensing of the arc reduces the gas pressure so that shields at the end of the commutator, installed to prevent the arc from being thrown from the end of the commutator and communicated to the pillar block and frame, are permissible.

Direct-current machines for use in automatic substations are being equipped with these barriers and short concerted tests at the substations have been taken, indicating that they will take care of any short-circuit experienced in actual service. These barriers are in operation and short-circuit tests were taken on a 500-kw., 600-volt, 25-cycle synchronous converter of the Des Moines Electric Railway; a 500-kw., 600-volt, 60-cycle synchronous converter of the Columbus Electric Railway & Light Company, Columbus, Ohio, and a 500-kw., 30-cycle, 1200-volt synchronous converter at Montieth Junction, Mich., and other installations are now in service.

The investigations and tests indicate that if any commutating machine is equipped with barriers and the last high-speed circuit breaker described, complete protection will be given against external short-circuits of all kinds so that interruptions to service will not be of any greater duration than necessary for closing the circuit breaker as in ordinary overload operation.

DISCUSSION ON ANTI-FLASHING APPARATUS

The paper of Messrs. Linebaugh and Burnham brought out some interesting discussion. One speaker referred to methods developed by the Interborough Rapid Transit Company to prevent flashover. In one case a condenser was connected in series with the trip magnet so that the latter would be actuated when there was an instantaneous drop in voltage. He emphasized the disadvantages of a high-speed breaker stating that it is easier to use a choke coil with the trip coil shunted across it. With this arrangement the switch will open when there is an impulse voltage impressed.

Another speaker commended the method described by the authors as logical in supplementing existing apparatus. He mentioned another method of attacking the problem, consisting of the short-circuiting of the windings of the machine through collector rings to reduce the voltage below the flashover point and at the same time to reduce the field flux. (See ELECTRIC RAILWAY JOURNAL, May 4, 1918, page 858.) Attention was also directed to the disadvantages of barriers in that the commutator and brushes are rendered inaccessible thereby.

Large Diameter Trolley Wheels Give Good Results

The Oakland, Antioch & Eastern Railway is reported to be enjoying continued success with various makes of 10-in. trolley wheels originated by this company and described in an article by F. A. Miller in the ELECTRIC RAILWAY JOURNAL of Aug. 14, 1916, page 278. With a 6-in. wheel previously used, the limit of life was frequently as low as 90 miles with a trolley pole tension of 35 to 40 lb. With the 10-in. wheels it was found that the tension could be reduced to from 25 to 30 lb. and the life of these wheels with this reduced tension was increased to 6000 miles and more. Wheel dewirements and pole troubles were also greatly decreased.

Employees Demand Wage of 60 Cents an Hour

In Leading Cases Before War Labor Board Union Representatives Give Their Idea of a Reasonable Wage—Want Platform Time of Nine to Ten Hours Performed in Eleven to Thirteen Hours, With Time and a Half for Overtime—Cleveland Railway Says Demands Are Excessive

THAT 60 cents an hour is a reasonable wage for electric railway trainmen is the contention advanced by union representatives in leading cases now pending before the War Labor Board. Data to this effect were introduced by brief and by witnesses before the board at the hearings which began on Monday, June 24, in Washington, D. C.

It will be recalled that upon the opening of the hearings the joint chairmen, William H. Taft and Frank P. Walsh, stated that the board wished to hear arguments upon two points: (1) What recognition should the board, in making wage awards, give to the financial status of the companies? (2) What is a living wage? As described in detail in the ELECTRIC RAILWAY JOURNAL of June 29, the arguments on the first point during the week seemed to impress the chairmen with the fact that although it is the duty of the board to fix reasonable wages, despite the poor financial condition of utilities, any awards made should be accompanied by a recommendation for fare increases by federal action in order to prevent the awards from being nullified and maximum production from being injured.

When this point became established, and as the railway men and union representatives were drawing up a mutually satisfactory brief holding that both Congress and the President have power to increase electric railway fares without assuming further control of the properties, the attention of the board was turned to the second question—that of a living wage. Some evidence and briefs were then presented, from which one can secure a good idea of the general propositions being advanced before the board.

The board announced that in order to expedite proceedings and not cumber up the records, it would consider as evidence in any of the twenty-four cases before it the relevant and material evidence in any of the other cases. The companies to make arguments after the general railway case was completed were asked, therefore, to confine their attention to local conditions. Inasmuch as most of the railway men had come prepared to discuss the point of wages only in connection with their individual cases, not much general evidence was introduced by the carriers. The Detroit and Cleveland companies, however, presented arguments on their cases, and the Chicago Surface Lines, the Chicago Elevated Railways and the Public Service Corporation of New Jersey were given a short extension of time to prepare evidence in detail.

ISSUES RAISED IN CLEVELAND AND DETROIT

According to the union brief, the principal points in controversy in Cleveland and Detroit include schedules, wages and overtime. In the men's opinion, schedules and overtime are so interwoven with wages that unless both are satisfactorily fixed an award of a substantial increase in wages could be made ineffective by operation within excessive outside time and with improper pay for overtime.

At present the wages in Detroit are 30 cents an hour for the first three months of service, 35 cents an hour for the next nine months and 40 cents an hour thereafter. In Cleveland the present wages are 32 cents an hour for the first year and 35 cents an hour thereafter. The request of both the Detroit and Cleveland organizations is for a wage rate of 60 cents an hour. It has been agreed that the Cleveland award by the War Labor Board shall be effective as of May 1, 1918, and that for Detroit as of June 1, 1918.

LIMIT DESIRED FOR OUTSIDE TIME

The employees in Cleveland and Detroit, it is said, are not seeking a shorter work day, although various public bodies are decreeing a basic eight-hour day. The men are willing to work for a longer period "as that is the only way they see of obtaining an adequate weekly wage." In their opinion, however, the runs should be so arranged that the platform time would be from nine to ten hours performed as follows: 40 per cent of the runs within eleven hours; 40 per cent within eleven to twelve hours, and 20 per cent within twelve to thirteen hours—with, of course, the understanding that each 40 per cent would be considered a minimum and the 20 per cent a maximum.

To show the board that this proposition is practical, the men quoted from agreements between these Massachusetts companies and their employees as follows:

Boston Elevated Railway:

At least 70 per cent of all schedule runs are to be within eleven hours, and in no case is a schedule run to have outside time in excess of fourteen hours.

Bay State Street Railway:

In the arrangement of schedules as many runs as possible shall be made nine hours to be completed within eleven consecutive hours, consistent with the remainder being arranged to the best advantage in runs of not less than eight or more than nine and one-half hours, to be completed within twelve consecutive hours, except that not more than 20 per cent of the total runs may exceed twelve but not fourteen consecutive hours.

Springfield Street Railway:
Worcester Consolidated Street Railway:

Not less than 60 per cent of the schedule runs shall be not more than nine hours work, and shall be so arranged that not less than one-third thereof shall be completed within eleven consecutive hours, and not more than one-third thereof shall be completed within twelve consecutive hours and that the remainder thereof shall be completed within eleven and one-half consecutive hours. Not more than 40 per cent of the schedule runs may be, but shall not exceed, nine and one-half hours' work, and shall be so arranged that not less than one-half thereof shall be completed within eleven consecutive hours, and not more than one-half thereof shall be completed within twelve consecutive hours.

James H. Vahey, counsel Amalgamated Association of Street & Electric Railway Employees, stated that when a man started to work at 5 a.m. he ought to finish work at least in the middle of the afternoon. The men must submit to hardships necessary to the business, but the outside hours should be as short as possible in order that the men may be enabled to get rest and recreation.

The union leaders also called attention to the decision of Justice Higgins of the Australian Commonwealth Arbitration Court (6 Com. Arb. 168). Justice Higgins fixed eight platform hours a day to be performed within nine consecutive hours. He went further and fixed a week of only six working days, with provision that "the overtime for any excess of forty-eight hours shall be calculated at time and a quarter for the first two hours, and at time and a half afterward." This overtime rate of time and a half applied to all time on Sundays and holidays.

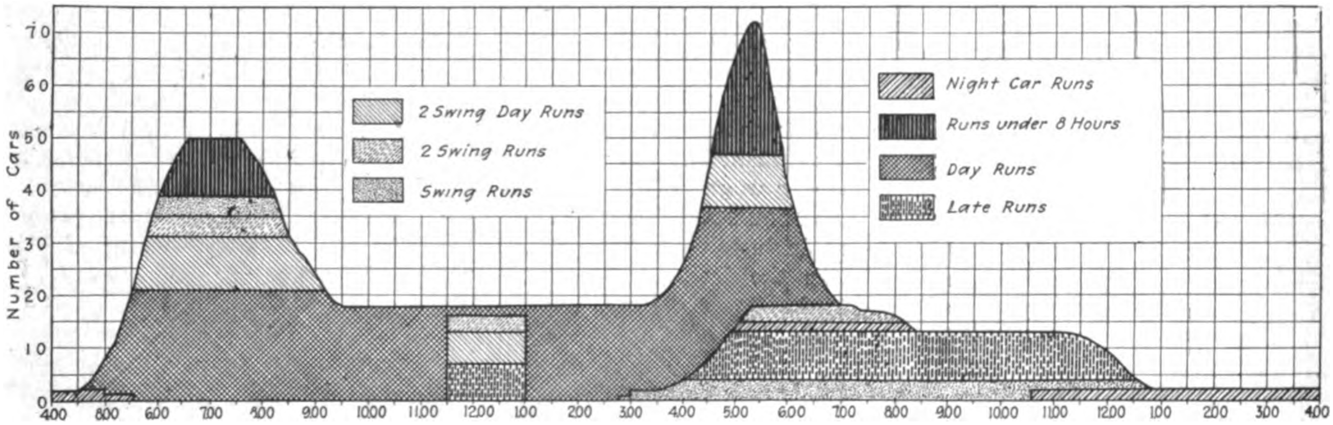


DIAGRAM NO. 2—CLASSIFICATION OF RUNS ON TYPICAL CLEVELAND LINE UNDER PROPOSED WORKING CONDITIONS

CLEVELAND PROVISION OF TIME AND A HALF FOR OVERTIME IS DEMANDED

The employees in Detroit are asking the War Labor Board to make the same overtime provision as already exists in Cleveland, namely:

> All motormen or conductors who are called upon to work extra trips or do other extra work in addition to the runs to which they are respectively assigned, shall be paid time and a half for all such time, and time and a half from the completion of their run to the starting time of the extra trip or extra work. Where a run has a swing of one hour or less, the motorman and conductor working such run shall be paid for such swings. (This does not apply to relief for dinner on two-swing runs.)

In general, the employees allege, the trades such as machinist, carpenter, painter and the like have a basic day which is usually only eight hours long, and then receive double time for all overtime. Electric railway employees are asking only time and a half after a day's work of from nine to ten hours. Extra pay for overtime, it is said, is the logical way to force the standard day of reasonable hours with no work thereafter.

As for Sunday and holiday work, the Detroit and Cleveland men ask that it be established on a basis of not to exceed eight hours straight time in one day. Owl-car runs should be straight with no more than eight hours' time to pay the full ten hours' time allowed to other employees.

COST OF LIVING UP 42 PER CENT

In taking up the wage question itself, the Detroit and Cleveland brief presented as a basis the following summary of the rise in the cost of living for the last two years:

	Per Cent Increase	Weight	Product
Food	52	43.47	2,260
Rent	20	15.25	305
Clothing	53	13.02	690
Fuel and light	31	5.69	176
Sundries	35	22.57	790
Total weighted increase, 42.21 per cent.		100.00	4,221

In commenting upon this table the brief states that the Railroad Wage Commission decided to adopt a figure of from 37 per cent to 38 per cent as representing the rise in the cost of living for the United States as a whole for the two-year period from January, 1916, to January, 1918. It would, however, be natural now to expect a higher increase for the following reasons:

1. The period used in the table is from May to May. In this period a greater increase took place in all the items (particularly clothing) with the exception of food.

2. The figure for rent increase was taken by the Railroad Wage Commission at 10 per cent, which was the average they found for the country as a whole. They found the increase in what they called the "Eastern Territory," however, to be 15 per cent.

3. What figures could be obtained on rentals in Detroit and Cleveland show that the figure for rent increase for those two cities is too low.

4. In the words of the Railroad Wage Commission, the figure for the increase in clothing is low.

With regard to a minimum wage expressed in dollars, the employees cited the finding of Dr. Chapin, professor of economics Beloit College, to the effect that an income of $900 or more properly permits "the maintenance of a normal standard at least as far as the physical man is concerned." Since his investigation in 1907, however, the cost of living has advanced about 75 per cent, which would give a living minimum wage of $1,575 upon the same standard of living.

The desired hourly rate of 60 cents would give the following yearly incomes:

Eight hours per day;	300 days per year;	income of	$1,440
Eight hours per day;	325 days per year;	income of	1,560
Nine hours per day;	300 days per year;	income of	1,620
Nine hours per day;	325 days per year;	income of	1,765
Ten hours per day;	300 days per year;	income of	1,800
Ten hours per day;	325 days per year;	income of	1,950

Thus, the employees state, at a rate of 60 cents an hour a man would have to work at least nine hours a day for 300 days a year in order to earn a wage of $1,620 and save $45 above the $1,575 cost of living. If he wished to save more, as he should do, he would have to work either more days a year, or else more hours a day.

Applying the increase in the cost of living during the last two years to the wage rates received by the men in 1916 gives the following results (only the maximum rates being considered):

	Wages in 1916	Increase	Result
Cleveland	34 cents	42%	48¼ cents
Detroit	35 cents	42%	49¾ cents

If 5 cents is added for compensation for past hardships and another 5 cents for the increase expected during the coming year, the wage rate of 60 cents an hour, in the men's opinion, then shows itself to be fair and reasonable. Moreover, this rate is asserted to be below the going rate for skilled labor, in which class the employees place themselves because of their exercise of skill and assumption of responsibility.

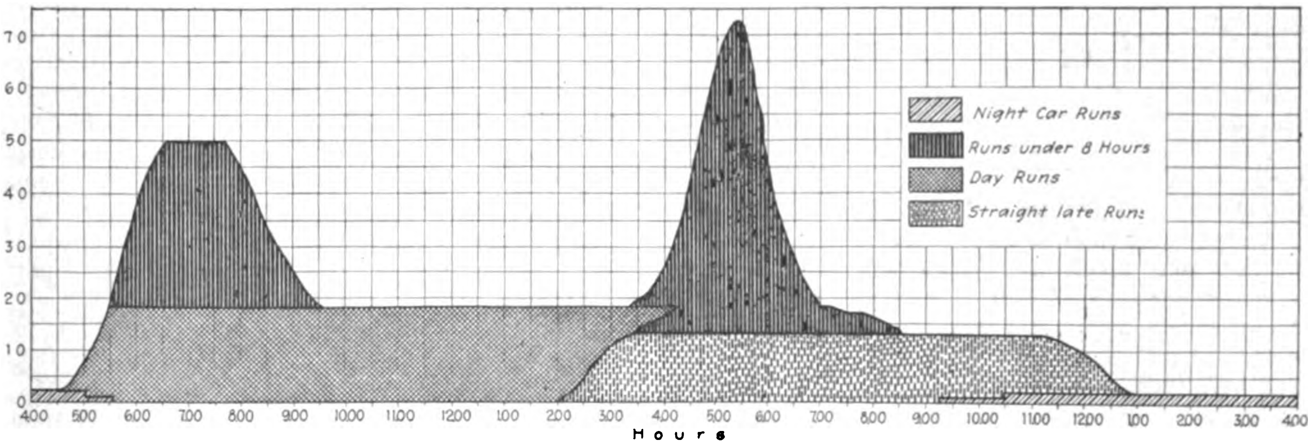


DIAGRAM NO. 2—CLASSIFICATION OF RUNS ON TYPICAL CLEVELAND LINE UNDER PROPOSED WORKING CONDITIONS

SPECIAL DATA ABOUT CHICAGO

From the brief filed by the union men in the cases of the Chicago Surface Lines and the Chicago Elevated Railways it appears that the surface trainmen are receiving from 30 cents an hour for the first three months up to 39 cents an hour for the fifth year and thereafter; the elevated motormen, 41 cents an hour; the elevated conductors 34 cents an hour and the guards 31 cents an hour.

On the basis of tables prepared by the Bankers Trust Company, New York, to show the proper percentage of the salary of employees to be paid as a bonus to offset the increased cost of living, it is said that the surface and elevated employees who are receiving from $900 to $1,199 are entitled to an increase of from 50.2 per cent to 50.9 per cent, while those receiving less than $900 are entitled to a raise of more than 48.4 per cent. This, it is stated, does not take into consideration the increase in the cost of living since December, 1917.

Upon the basis of the increased cost of specified items of expenditure in 1911, 1914 and 1917, as compared with the cost as ascertained for 1900 by the Bureau of Labor Statistics, the records for families with incomes of $1,000 and under $1,100 would be:

	1900	1911	1914	1917
	(340 Families—Nine Months)			
Food	$349	$457	$509	$764
Clothing	136	151	152	264
Rent	158	211	209	251
Fuel and lighting	44	44	50	90
Sundries	213	243	239	315
Total	$900	$1,106	$1,159	$1,684

Increase in 1917 over 1911, 52 per cent.; over 1914, 45 per cent.

The average wage of the men involved in Chicago, it is said, is about $90 per month or $1,080 per year, and the comparison shows that it will take $1,684 a year to cover the present living cost on the basis of the 1900 standard. This result is close to the figure of the Bankers Trust Company arising from a 50.9 per cent increase. Moreover, it is added, the April *Monthly Review* of the Bureau of Labor Statistics reports the average family budget for twenty-four principal cities in this country to be $1,650.

In the course of the hearings John Fitzpatrick, of the Chicago Federation of Labor, stated that the general rate of wages specified for 1917 in the building trades of Chicago was 70 cents an hour; for 1918 the rate has been increased to 80 cents with one or two exceptions. In his opinion, this gives the closest basis for considering the rate of wages which should apply to electric railway operation in Chicago. Mr. Fitzpatrick said that the pauper budget established by the United Charities of Chicago was $1,000 for a family of five. Provision for insurance and other necessary items not included would increase this amount by $108. Even the pauper budget itself, however, would require a wage rate of 46 cents an hour.

CLEVELAND RAILWAY PROTESTS AGAINST EXCESSIVE INCREASE

The Cleveland Railway, as noted in last week's issue, concedes that its employees are entitled to an increase in wages because of the sudden and unexpected rise in the cost of living, but it can find no excuse for the men demanding a raise to 60 cents an hour, or 71 per cent, at this time. Motormen and conductors are not skilled employees, in the sense in which the term "skillful" is commonly used, for only a few days' training is needed to enable one to perform the duties. The work is not difficult—it is, in fact, much easier than almost any other unskilled employment. On the other hand, the work is attractive and continuous, not being affected by weather conditions as are the building and many other trades.

At the suggestion of the War Labor Board the Cleveland Railway collected the data shown in the accompanying table bearing upon the wages paid and increases made in other lines of employment. This table shows that the railway, between March 1, 1910, when it resumed the operation of its railroad after the receivership, and May 1, 1917, when its last wage agreement with its motormen and conductors was made, advanced wages 41 per cent, while the average increase in the other occupations, including the advances of June 1, 1918, has been 60 per cent. An advance of 60 per cent to trainmen over the average wage of 24 cents an hour that they were receiving in 1910 before the company resumed possession of its property would bring the average wage now to 38.4 cents. The same advance over the average wage paid June 1, 1910 (25 cents an hour), would give them now 40 cents.

COMPARATIVE WAGES AND INCREASES IN CLEVELAND

Employment	Cents per Hour 1910	Cents per Hour 1918	Per Cent Increase
Electric railway men	24	35	41.0
Bricklayers	60	90	50.0
Iron-workers	60	90	50.0
Lathers	56¼	85	51.1
Plumbers	56½	81¼	43.8
Steamfitters	56¼	81¼	44.4
Carpenters	45	80	77.8
Hoisting engineers	45	85–90	88.9-100
Building laborers	25–35	55	57.1-120
Pipefitters	45	70	55.5
Painters	42½	67½	58.8
Stonecutters	56¼	77½	37.8
Average	48.29	77.50	60.49

If the same increase in wages were granted to the employees of the Cleveland Railway, as was recently allowed to the steam railroad men, conductors and motormen who on Dec. 31, 1915, received 29 cents an hour would be raised to 41 cents an hour, and those who then received 32 cents an hour, the maximum then paid, would be advanced to 45¼ cents an hour. The company believes, however, that a smaller advance should be made to its trainmen than to steam railroad men.

Bradstreet's "Weekly Food Index" for each week of this year and each corresponding week of 1917, indicates an average advance in the prices of thirty-one foods of less than 20 per cent over last year. It indicates also a gradual decrease in rise in prices since the beginning of 1918. The percentage increase of 35.34 for the first week in January, 1918, as compared to the same week in 1917, has gradually dropped to 8.61 for the last week reported in June.

In the matter of changes in working conditions, the Cleveland Railway objects that several hundred more men would be required to follow out the men's demands. It is even now difficult to find enough men to operate the railway properly.

Diagram No. 1 shows the number of cars necessary to give the service required by the city on a typical line and the present arrangement of runs to operate these cars. Diagram No. 2 shows the same line, with the runs rearranged as proposed by the union. Comparison of the two shows the enormous increase in the number of short runs and in men required.

The total number of men now working eight hours is 1951. Under the proposed scale the number of men working eight hours would be 1385; that is, 566 men who are now working eight hours would have to be satisfied, under the proposed arrangement, with something less than eight hours. The total number of men now working less than eight hours is 423, which number, under the proposed schedule, would be increased to 1844. That is to say, 1421 additional men would be required to work less than eight hours.

The number of men now operating three typical lines is 350. The proposed arrangement would require 476 men to do the same amount of work. For the entire system 2374 men are required to operate the present schedule. Under the new arrangement 855 additional men would be required—an increase of 36 per cent—to operate the same number of car-miles.

Under the present arrangement, the company has now a five-hour minimum; that is, a man is paid for at least five hours if he works at all. At present the company is required to pay each year for 179,819 hours for which it has received no service. The proposed arrangement of runs would increase this "dead" time to 462,134 hours a year, for which the company would be required to pay the full wage without receiving any service. At the present wages this would require an expenditure of $161,746. If the maximum demand as to wages were granted, it would cost the company $277,280 a year for "dead" time alone.

During the hearings F. H. McCulloch, Evanston, Ill., testified that the 10-mile Evanston Railway is paying 38 cents an hour, or about $120 a month. The policemen, firemen, drivers of coal trucks, drivers of milk wagons and all men performing service similar to that of electric railway men are receiving at least 20 per cent less. The company has more applicants than it can take into service. Small lines of this sort should not be overlooked in the general wage discussion.

CURRENT OPINION IN WASHINGTON

Newspaper reports that the War Labor Board will hand down its wage decisions in the near future are not subject to confirmation in Washington. It is stated to the Washington correspondent of the ELECTRIC RAILWAY JOURNAL at the office of the board that there are so many reports and briefs still to be considered that some time may elapse before decisions are reached. Mr. Taft has taken much of the material to his summer cottage at Murray Bay, Canada, where he purposes to work further before decisions are announced.

In official as well as electric railway circles in Washington it is believed that President Wilson will soon appoint an electric railway administrator because of the necessity of giving assistance under a strong guiding hand to the electric railway industry as a war measure. The appointment may be made at any moment. On the other hand, there may be a delay because of the continued absence of the Director General of Railroads from the city. There is a disposition in official circles to doubt recent newspaper reports that Peter Witt, Cleveland, will be the appointee.

Five Cent-Seven Cent Fares for Pittsburgh

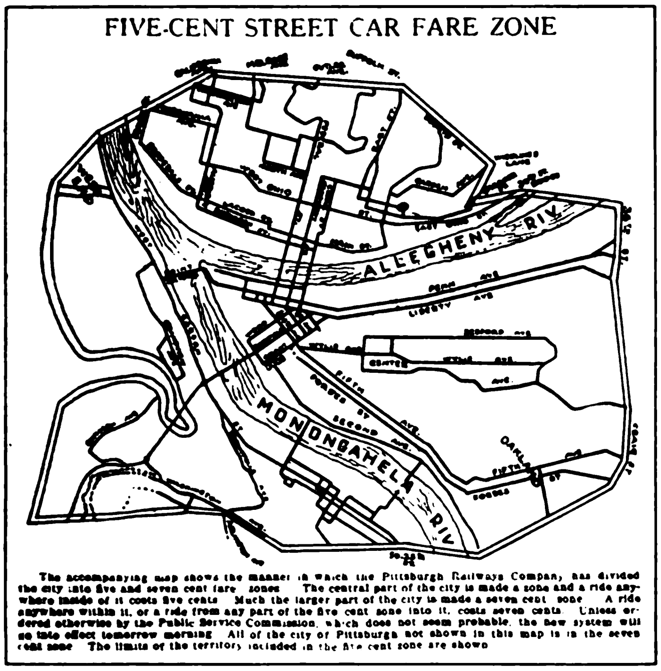
An Analysis of Conditions Shows This to Be the Most Equitable Arrangement — Outbound Passengers Pay as They Leave, While Inbound Passengers Pay as They Enter

ON JUNE 20 the Pittsburgh Railways superseded the former 5½-cent fare which has been in effect since Jan. 22 last by inaugurating a 5 cent-7 cent fare. This is a combination of a flat rate and a zone system and is believed to combine the good points of each class of rates.

The 5½-cent fare placed in effect last January included the use of tickets sold either two for 11 cents, or ten for 55 cents. If a cash fare was paid the amount was 6 cents, and if a dime was given and pennies were not available for change, a 4-cent rebate coupon was given. This system was explained in the ELECTRIC RAILWAY JOURNAL of Feb. 9, page 278.

During the past months the majority of the car riders have availed themselves of the 5½-cent fare by purchasing tickets, but the greater number bought the two-for-11-cents tickets instead of the longer strips, in spite of the fact that they used the cars every day. The sale of tickets in such small quantities was found to cause great inconvenience to the conductors.

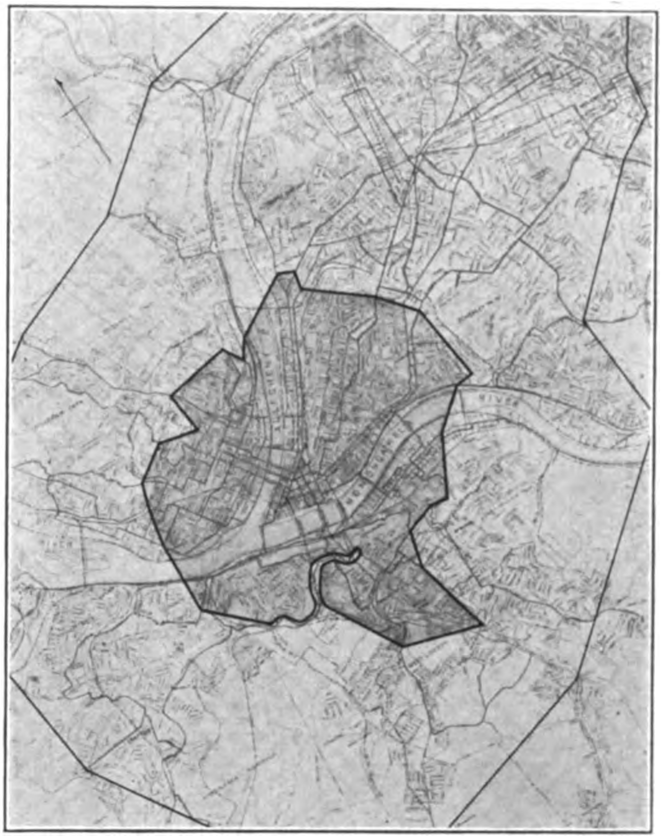
The number of persons traveling on the cars has decreased about 8 per cent during the past four months as compared to the same period last year. The company attributes this decrease in part to the large number of young men who have gone into military service and who were formerly in the habit of using the cars, especially in the evening; in part to the natural instinct of persons to economize during this time of necessary sacrifice, and, in part, but of less importance than the other factors, to the ½-cent increase in fare. In consequence of this decrease in travel, the increase in revenue resulting from the 5½-cent fare has been little more than 2 per cent. It therefore became necessary to obtain a further increase in fares, and various methods were proposed and analyzed. It was determined that it would take at least 7 cents, if a uniform fare was charged, to insure proper street car service.



FIVE-CENT STREET CAR FARE ZONE

The accompanying map shows the manner in which the Pittsburgh Railways Company has divided the city into five and seven cent fare zones. The central part of the city is made a zone and a ride anywhere inside of it costs five cents. Much the larger part of the city is made a seven cent zone. A ride anywhere within it, or a ride from any part of the five cent zone into it, costs seven cents. Unless ordered otherwise by the Public Service Commission, which does not seem probable, the new system will go into effect tomorrow morning. All of the city of Pittsburgh not shown in this map is in the seven cent zone. The limits of the territory included in the five cent zone are shown.

REPRODUCTION OF NOTICE WHICH APPEARED IN PITTSBURGH NEWSPAPERS

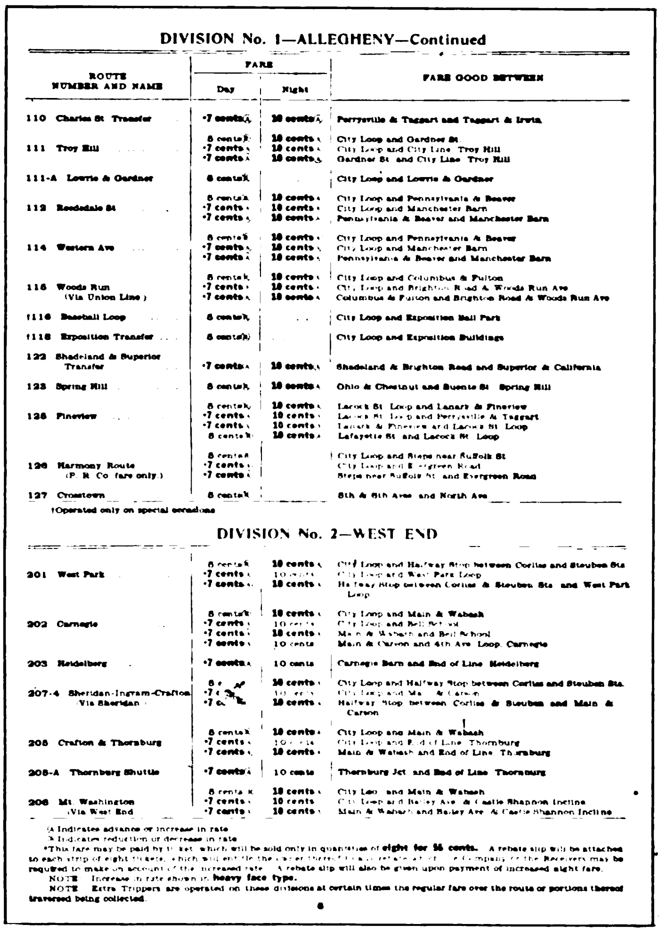


CENTRAL AREA REPRESENTS PITTSBURGH'S 5-CENT ZONE. TO RIDE IN OUTSIDE AREA FARE IS 7 CENTS AND BEYOND SECOND LINE ANOTHER 7 CENTS

The inequalities of a flat fare have been appreciated by the railway industry from time immemorial. The Pittsburgh Railways analyzed one of its typical lines to determine the extent of this discrimination. It was found that based on the car-miles and passenger-miles per day in each 1-mile zone between Pittsburgh and Wilkinsburg the amount of fare that would be paid at the average rate of fare then in effect, if each passenger paid according to the distance he rode and according to the number of passengers on the car in each mile zone, would be as follows:

First mile	1.49 cents
Second mile	1.50 cents
Third mile	1.60 cents
Fourth mile	1.63 cents
Fifth mile	1.75 cents
Sixth mile	2.15 cents
Seventh mile	3.99 cents
Last ¾ mile	6.60 cents

In place of this, however, the man riding 1 mile and supposedly entitled to a rate of 1.49 cents was paying for the passenger who rode the longer distance. On the other hand, a true zone system was considered impracticable for a city the size of Pittsburgh.



DIVISION No. 1—ALLEGHENY—Continued

ROUTE NUMBER AND NAME	FARE Day	FARE Night	FARE GOOD BETWEEN
110 Charles St. Transfer	*7 cents (A)	10 cents (A)	Perrysville & Taggart and Taggart & Irwin
111 Troy Hill	5 cents (R)	10 cents (A)	City Loop and Gardner St.
	*7 cents (A)	10 cents (A)	City Loop and City Line, Troy Hill
	*7 cents (A)	10 cents (A)	Gardner St. and City Line, Troy Hill
111-A Lowrie & Gardner	5 cents (R)		City Loop and Lowrie & Gardner
112 Rosedale St.	5 cents (R)	10 cents (A)	City Loop and Pennsylvania & Beaver
	*7 cents (A)	10 cents (A)	City Loop and Manchester Barn
	*7 cents (A)	10 cents (A)	Pennsylvania & Beaver and Manchester Barn
114 Western Ave.	5 cents (R)	10 cents (A)	City Loop and Pennsylvania & Beaver
	*7 cents (A)	10 cents (A)	City Loop and Manchester Barn
	*7 cents (A)	10 cents (A)	Pennsylvania & Beaver and Manchester Barn
115 Woods Run (Via Union Line.)	5 cents (R)	10 cents (A)	City Loop and Columbus & Fulton
	*7 cents (A)	10 cents (A)	City Loop and Brighton Road & Woods Run Ave.
	*7 cents (A)	10 cents (A)	Columbus & Fulton and Brighton Road & Woods Run Ave.
†116 Baseball Loop	5 cents (R)	. . .	City Loop and Exposition Ball Park
†118 Exposition Transfer	5 cents (R)		City Loop and Exposition Buildings
122 Shadeland & Superior Transfer	*7 cents (A)	10 cents (A)	Shadeland & Brighton Road and Superior & California
123 Spring Hill	5 cents (R)	10 cents (A)	Ohio & Chestnut and Buente St., Spring Hill
125 Pineview	5 cents (R)	10 cents (A)	Lacock St. Loop and Lanark & Pineview
	*7 cents (A)	10 cents (A)	Lacock St. Loop and Perrysville & Taggart
	*7 cents (A)	10 cents (A)	Lanark & Pineview and Lacock St. Loop
	5 cents (R)	10 cents (A)	Lafayette St. and Lacock St. Loop
126 Harmony Route (P. R. Co. fare only.)	5 cents (R)		City Loop and Steps near Suffolk St.
	*7 cents (A)		City Loop and Evergreen Road
	*7 cents (A)		Steps near Suffolk St. and Evergreen Road
127 Crosstown	5 cents (R)		5th & 6th Aves. and North Ave.

†Operated only on special occasions

DIVISION No. 2—WEST END

ROUTE NUMBER AND NAME	FARE Day	FARE Night	FARE GOOD BETWEEN
201 West Park	5 cents (R)	10 cents (A)	City Loop and Halfway Stop between Corliss and Steuben Sts.
	*7 cents (A)	10 cents	City Loop and West Park Loop
	*7 cents (A)	10 cents (A)	Halfway Stop between Corliss & Steuben Sts. and West Park Loop
202 Carnegie	5 cents (R)	10 cents (A)	City Loop and Main & Wabash
	*7 cents (A)	10 cents	City Loop and Bell School
	*7 cents (A)	10 cents (A)	Main & Wabash and Bell School
	*7 cents (A)	10 cents	Main & Carson and 4th Ave. Loop, Carnegie
203 Heidelberg	*7 cents (A)	10 cents	Carnegie Barn and End of Line, Heidelberg
207-A Sheridan-Ingram-Crafton (Via Sheridan)	5 [illegible]	10 cents (A)	City Loop and Halfway Stop between Corliss and Steuben Sts.
	*7 [illegible]	10 cents	City Loop and Main & Carson
	*7 [illegible]	10 cents (A)	Halfway Stop between Corliss & Steuben and Main & Carson
208 Crafton & Thornburg	5 cents (R)	10 cents (A)	City Loop and Main & Wabash
	*7 cents (A)	10 cents	City Loop and End of Line, Thornburg
	*7 cents (A)	10 cents (A)	Main & Wabash and End of Line, Thornburg
208-A Thornburg Shuttle	*7 cents (A)	10 cents	Thornburg Jct. and End of Line, Thornburg
206 Mt. Washington (Via West End)	5 cents (R)	10 cents (A)	City Loop and Main & Wabash
	*7 cents (A)	10 cents	City Loop and Bailey Ave. & Castle Shannon Incline
	*7 cents (A)	10 cents (A)	Main & Wabash and Bailey Ave. & Castle Shannon Incline

(A) Indicates advance or increase in rate

(R) Indicates reduction or decrease in rate

*This fare may be paid by ticket which will be sold only in quantities of **eight for 55 cents.** A rebate slip will be attached to each strip of eight tickets, which will entitle the owner thereof to a rebate which the Company or the Receivers may be required to make on account of the increased rate. A rebate slip will also be given upon payment of increased night fare.

NOTE: Increase in rate shown in **heavy face type.**

NOTE: Extra Trippers are operated on these divisions at certain times the regular fare over the route or portions thereof traversed being collected.

PAGE OF TARIFF SCHEDULE. (NOTE: NIGHT FARES HAVE NOT BEEN PLACED IN EFFECT)

To obtain a more equitable assessment upon the car rider than the flat-rate system provides, and at the same time to eliminate the inconsistencies of a true zone system of collection, Pittsburgh has been divided as shown on the map on page 15. All persons who ride within the limits of this central 5-cent area pay a 5-cent fare—a reduction of ½ cent over that paid since last January. All persons who pass from the 5-cent to the 7-cent area, or vice versa, pay a fare of 7 cents. Also, all persons who ride entirely within the 7-cent area pay a 7-cent fare. The 5-cent area varies in radius from 2.2 miles to 3 miles and depends upon natural boundaries and local conditions for the dividing line.

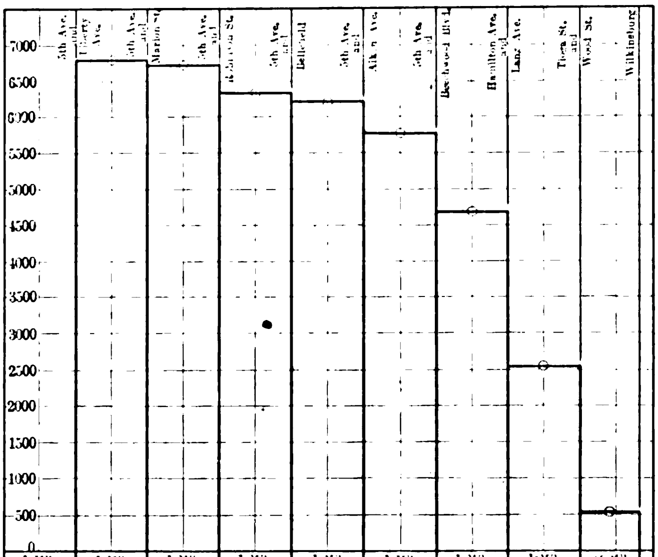
The 5 cent-7 cent system of collection is very simple. All passengers boarding the cars in the downtown district pay as they leave the cars. This permits loading through all doors and greatly facilitates the maintaining of faster schedules during the rush hours. If a passenger leaves the car within the 5-cent area, he pays a nickel; if he leaves after passing the boundary of this area, he pays 7 cents. If a passenger transfers inside the 5-cent area to a car which will carry him into the 7-cent area his transfer bears such a mark of identification that the second conducter collects 2 cents upon presentation of the transfer. All passengers boarding inbound cars pay as they enter—if in the 7-cent area 7 cents, regardless of how far they ride; if in the 5-cent area, 5 cents.

Two registers are used on the cars for recording the two rates of fare. Only one of these can be operated at a time, and when the car is passing from one fare area to the other the conducter has to go forward in the car and change certain mechanisms, an operation which would be noticeable to the passengers if performed other than at the proper time. Thus both error and dishonesty are eliminated.

On May 18 the company issued a schedule of rates and fares for Pittsburgh and surrounding territory in the form of a twelve-page pamphlet giving detailed information concerning fares, tickets, rates for special cars, etc. A page from this tariff is reproduced herewith, but it should be noted that the night rate of 10 cents has not been put into effect.

The new system of fares upon inauguration worked without friction. Passengers understood and paid the correct fare without question. Tickets are being sold eight for 55 cents, and it is expected that the majority of patrons living within the 7-cent area will avail themselves of these, both for convenience and economy. The only complaint which has been received concerns the passenger who rides a short distance entirely within the 7-cent area. It it understood by all railway men that it is the outlying end of a line that produces a deficit in receipts, and it is only fair that a passenger should pay for the service he receives. As both the value and the cost of the service in this section are greater than in the business district, the price should be correspondingly greater. Aside from this, the answer to this criticism is that it was a choice between a 5 cent-7 cent fare or a universal 7-cent fare, so the suburban patron would pay 7 cents in either case.

It is estimated by the Pittsburgh Railways that the 5 cent-7 cent fare will increase the revenue of the company to $16,300,000. Figures substantiating or refuting this estimate will be available at a later date.



	1-Mile 1st Mile	1-Mile 2nd Mile	1-Mile 3rd Mile	1-Mile 4th Mile	1-Mile 5th Mile	1-Mile 6th Mile	1-Mile 7th Mile	¾-Mile
Car Miles for each Mile Zone	255	255	255	255	255	255	255	86
Revenue for each each Mile Zone *	$100.92	$100.92	$100.92	$100.92	$100.92	$100.92	$100.92	$33.93
Number of Passengers Riding a Mile in each Mile Zone	6738	6729	6319	6200	5774	4692	2526	514
Fare for each Passenger per Full Mile Zone	$0.0149	$0.0150	$0.0160	$0.0163	$0.0175	$0.0215	$0.0399	$0.0660
Fare from City to and through each Mile Zone	$0.0149	$0.0299	$0.0459	$0.0622	$0.0797	$0.1012	$0.1411	$0.2071

* Based on Average Receipts per Car Mile, for whole System for Last Three Months

CHART SHOWING NUMBER OF PASSENGERS AND FARES PER FULL MILE ON EXACT ZONE SYSTEM FOR TYPICAL LINE

Skip Stop Will Save One Million Tons of Coal

Wastefulness of Every-Corner Stops Shown by Simple Comparisons—Fuel Administration Greatly Interested in Reform

BY CLARENCE RENSHAW
Conservation Division, United States Fuel Administration

IN THE TRAIN of troubles which the scarcity of fuel and other war conditions have brought to the electric railways, there is one bright spot. This is the growing recognition of the inconsistency of requiring the cars to stop at every street corner, regardless of whether these corners are located 100 or 1000 ft. apart.

On the electric railways of most cities there have heretofore been from twelve to fifteen stopping places per mile, averaging, in general, probably 400 ft. or less apart. The cars used on these lines are, in most cases, at least 40 ft. long, so that there is usually a stopping place about every ten car lengths. Where trailers or multiple-unit cars are used so as to give two-car trains, there is then a stopping place about every five lengths.

WHAT THE SKIP STOP MEANS

This is startling in a way, but the real situation can be better understood by a simple comparison. The average person has a length on the ground of about 12 in. or 1 ft. In walking he ordinarily covers about 2½ ft. at each step. If in walking to reach a certain destination he were obliged to come to a standstill every four steps and then start again, he would be operating on a basis comparable with the usual city street car. If he were obliged to stop every two steps, the conditions would then compare with those for a two-car train.

If a railway manager will try stopping in this manner every four steps on his way to catch a train some morning, he will then have an interesting experience to discuss with the next electric railway official that he meets.

There is another simple experiment he should try before he undertakes to discuss this question, however, or he will not have the full story. He should go at a quiet hour when no one is looking, to the nearest building that is equipped with a revolving door and he should step in and out of this door, say, ten times. In doing this, he should not follow his ordinary habit of leaving the door

UNITED STATES FUEL ADMINISTRATION
WASHINGTON, D. C.

Bulletin No. 1985

SUGGESTIONS TO BE CONSIDERED IN ADOPTING THE "SKIP-STOP" SYSTEM IN ORDER THAT MAXIMUM FUEL SAVING AND REASONABLE IMPROVEMENT IN SERVICE MAY BE OBTAINED

In adopting the skip-stop system as a fuel-saving measure during the war, there are three fundamental principles which must be observed in order that the proper results may be assured. These are as follows:

A. The system must be applied to the entire city, including the business district as well as the residence district, and not merely to the latter.

B. The stopping points must be located so as to serve the people to the best advantage rather than to secure uniform spacing or to follow any arbitrary rule. This may bring some of the stopping points on the near side of the street, some on the far side, and some in the middle of a block. It is better, however, to have such a diversity, with the points properly located, than to have uniformity if convenience of location is sacrificed to secure this result.

C. The number of stopping points must not be too great. There should be not more than eight per mile (averaging 660 ft. apart) in business districts, six per mile (averaging 880 ft. apart) in residence districts and four per mile (averaging 1320 ft. apart) in the open country.

The remarkable improvement in the service which has been affected in Washington by the skip-stop system has been largely due to the proper observance of these principles.

In addition to the above, which may be regarded as fundamental, there are a number of other items which should be carefully considered in each case, but which, on account of local conditions, may or may not apply. These are:

1. If the system is inaugurated gradually instead of all at once, it is preferable to put it into effect first in the congested downtown districts where a number of lines converge and to make it apply to all of the lines in that district. This will effect an immediate improvement in service on all of the lines and will prepare the way for a greater improvement when the system is extended.

2. The stopping points should be plainly marked, preferably by signs bearing the words "Car Stop" or some similar designation which will be clear to anyone, rather than merely by a colored stripe on the pole or other designation which is not self-explanatory.

3. There should be a sign in each car giving a list of the points at which stops are made, where this is practicable, or where this is not practicable, calling attention to the fact that the car stops only at certain streets and suggesting that passengers find from the conductor the nearest stop to their destination.

4. Where lines diverge, the stopping points should be located so that the stopping of cars of one line will not hold back cars of the other line. A typical instance is where one line continues on a given street while a second line follows the same route for a portion of the distance and then turns into a side street. In such a case if the cars of the first line stop in both directions beyond the point where the second line turns off and if the cars of the second line stop in both directions on the street which they alone use, the above object will be attained.

5. In many cases a staggered arrangement of stopping points, so that if the cars bound in one direction stop at First Street, Third Street, etc., those bound in the other direction will stop at Second Street, Fourth Street, etc., will distribute the advantages of the system in a more equitable manner among all of the patrons than an arrangement by which the cars stop at a given point in both directions and skip the next former stopping point entirely. There are other cases, however, where this arrangement is not practicable.

6. In connection with the introduction of the skip-stop system the matter of safety stops should be carefully reviewed. There are many points at which cars are now required to come to a standstill where equally safe operation can be obtained merely by having them slow down to a speed of 5 or 6 m. p. h.

7. Where interurban cars enter cities, it is desirable that they should not be required to stop at every city car-stopping point (since such cars require much more power for starting than the city cars) but they should stop not oftener than every quarter mile. This can readily be arranged for by the use of special signs at the interurban car-stopping points.

8. By observing the above policies it is ordinarily possible, when introducing the skip-stop system, to reduce the number of stopping points on city lines by from 30 to 40 per cent. This usually reduces the number of stops actually made by about 25 per cent. Under these circumstances the schedule speed of the cars can, as a rule, be increased by from 10 to 12 per cent. (without any increase in the maximum speed) while at the same time the power required (and hence the fuel) is reduced by a corresponding amount.

9. It has been more or less common, in introducing the skip-stop system, to begin with one or two lines and to reduce the stopping points only in the outlying sections, making all stops as usual in the business district. Such an arrangement does not give satisfactory results from the standpoint of either fuel economy or improvement in service. It is in the effort to avoid the introduction of the system on such a basis in any future cases that we are calling especial attention to the above principles which it is necessary to follow in order to secure the desired results.

BULLETIN OF FUEL ADMINISTRATION URGING ADOPTION OF SKIP STOP spinning carelessly behind him as he goes in or out, but he should carefully stop it each time he passes and should start it again on his return trip. He should then go in and out another ten times, but during this period he should start the door once for all. He will find that a very light touch each time he passes will keep the door turning rapidly and he will be surprised at the difference in effort necessary to complete the series of enterings and leavings.

He is now ready to be of service to his railway friends if the local fuel administrator has not reached them first. In discussing the matter, he will not need to talk "speed-time curves, "acceleration," "kilowatt-hours," or any similar technical terms to prove his point. If one of his friends should happen to be of the "old school," now rapidly disappearing, (*i.e.*, all right from the shoulders down, but dead above them) and if the friend should pooh-pooh at his enthusiasm, he should not lose his temper but should remember how *he* felt last week. He should then, without unnecessary words, make his friend perform the above experiments for himself.

WHAT THE FUEL ADMINISTRATION IS TRYING TO DO

The United States Fuel Administration is confronted with the staggering task of reducing the coal consumption of the country by 60,000,000 tons per year. It must do this in ways which will not impose undue hardship on domestic consumers nor interfere with the production and transportation of material necessary for the war. It is the aim of the administration to save one of these sixty million tons by getting the electric railways throughout the country to introduce the skip-stop system on their lines. This idea was suggested to the Fuel Administration last winter by the American Electric Railway Association War Board which, as a means of illustrating the possibilities, had a study made in Washington which showed that the skip-stop system there should save approximately 10,000 tons of coal per year.

The results which may be looked for in general from this system are that, if properly applied, it should make it possible to increase the schedule speed of the cars by approximately one-eighth without any increase in the maximum speed, while at the same time reducing the power and hence the fuel consumption by a similar proportion. As an example of what has actually been accomplished the railway companies in Columbus, Toledo, Cincinnati and Detroit have reported savings in coal by the skip-stop system at the rate of 3600, 7300, 10,000 and 21,000 tons per year respectively.

HOW THE SKIP STOP SHOULD BE INTRODUCED

To obtain these results as to saving in fuel and at the same time to improve the service, it is essential that in adopting the skip-stop system it should be put into effect in the business district of a city, as well as in the residential districts. It is also important that the stops which are retained should be located sufficiently far apart to make the change worth while. The Fuel Administration has asked that the stops be located so that the distances between them will average not less than ⅛ mile in business districts, ⅙ mile in residential districts and ¼ mile in the open country.

Finally, the administration has suggested that the stopping places retained should be located according to the needs of the traffic, rather than by any arbitrary rule, even though this should bring some of them on the near side of the street, some on the far side and some in the middle of short blocks. The administration has embodied these and other detailed suggestions in its Publication No. 1985, reproduced with this article.

In many cities, the stopping places of electric cars are regulated by municipal authorities or state public utility commissions. In such cases, the necessary authority must first be obtained from these bodies before the system can be put into effect. The United States Fuel Administration has been taking up the matter with these bodies where necessary through the various state and county administrators, and when the matter has been properly explained these bodies have all been glad to co-operate. The general public also has cheerfully accepted the skip-stop system, at first as a war measure necessary to save fuel, but afterwards on account of the improvement in service.

My own experience in Washington illustrates the improvement effected. Before the adoption of the system I could take a car at the corner of the cross street on which I lived and I then had a ride of about twenty minutes. After the skip-stop system was put into effect, I had to walk one and a quarter minutes away from the city to the nearest stopping point, but after boarding the car here I had a ride of only twelve or fourteen minutes. The conditions in Washington are peculiar, however, and there are few other places where so great a percentage increase in speed can be expected. In every instance, however, there should be a material improvement from the adoption of the skip stop.

ONE MILLION TONS SAVING POSSIBLE

In endeavoring to secure the adoption of the skip-stop system throughout the country as a conservation measure the Fuel Administration assumed from the start that it would have the hearty co-operation of all of the railway companies so that it need devote its efforts only to the public bodies. This, in general, has been the case. There are a number of companies in various parts of the country, however, whom the news of the movement has not yet reached, as well as a few which have not appreciated the importance of carrying out the details of the measure to the full extent asked by the administration.

Inasmuch as the skip-stop system will effect the desired saving in coal, not only without handicapping the service but with the actual improvement, and thus with benefit both to the public and the railway companies, it is an extremely unusual and desirable type of conservation measure. While the administration is endeavoring to secure the adoption of the system on a national basis as quickly is possible, it will appreciate anything which railway men themselves can do to assist it in spreading the news of the movement or in securing the prompt adoption of the system.

The measure is in effect or is about to be put into effect on a state-wide basis (that is, in all cities of the state of sufficient size to warrant it) in Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Pennsylvania, Maryland, Indiana and the District of Columbia. In addition to this, it has been adopted in twenty-two large cities in other states. It is estimated that the above cities cover about one-third of those necessary to secure the desired saving of 1,000,000 tons per year and that the remainder will fall into line in the near future.

Power Limiting Circuit Reduces Load a Maximum of 30 per Cent

THE contract under which power is supplied for the operation of the electrified divisions of the Chicago, Milwaukee & St. Paul Railway involves a minimum payment per month of 60 per cent of the kilowatts for which the railway company has exercised an option, the power company standing ready to serve at any instant the number of kilowatts so optioned for. It thus becomes highly desirable for the railway to be in a position to hold its maximum demand down to a minimum—in other words, to run at as high a load factor as possible. The power indicating and limiting system for securing this result consists of a 1200-volt circuit running from the first to the last substation, and fed from a very small motor-generator in the load dispatcher's office. In each substation where there is a power company feed tap, there is installed a contact-making wattmeter, which introduces into the power indicating and limiting circuit an additional ohmic resistance whose amount varies with the load supplied at such feed tap.

There is also in each substation automatic apparatus which, when the total kilowatts used in the system reaches the amount optioned for and consequently when the current in the power indicating and limiting circuit has a certain value, causes resistance to be inserted in the fields of the substation generators of the motor-generator sets. This reduces the voltage on the trolley system, causing the speed of all trains to be decreased.

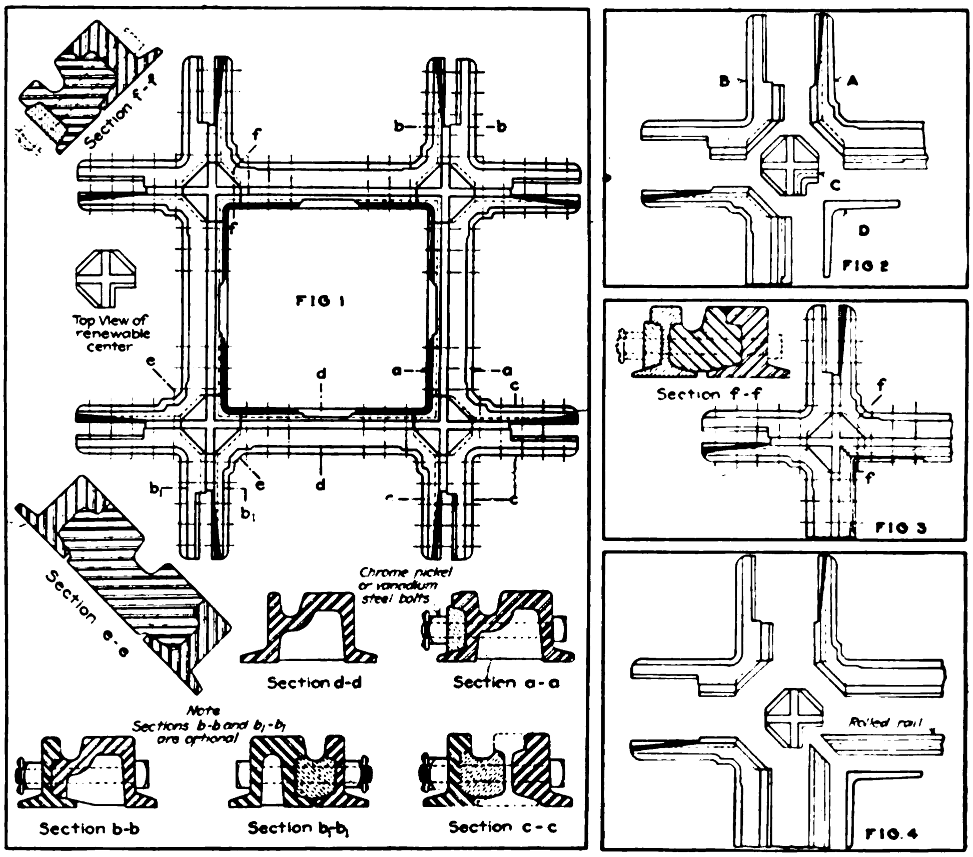
The maximum reduction in load thus obtainable is about 30 per cent of that which would be used in case the power indicating and limiting system were not provided. The apparatus is so arranged as to reduce the voltage of the most heavily loaded substations first, and also to reduce the voltage of any individual substation so as to throw this load on the other substations when the load on such substation reaches the certain amount for which the apparatus may have been adjusted. In the dispatcher's office there is a switchboard on which is mounted apparatus for controlling the small motor-generator set supplying the system, and also indicating and curve drawing wattmeters which show for any instant the total kilowatts supplied by the power company.

This work, like other electrical features of the St. Paul electrification, is in immediate charge of R. Beeuwkes, electrical engineer.

Articulated Cast Manganese Crossing with Renewable Centers

SINCE the description of the plain articulated cast manganese crossing, in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 26 was published, the inventor, Stephen Balkwill, president The Balkwill Manganese Crossing Company, Cleveland, Ohio, has secured patents on a renewable center crossing. The general principle used in this crossing is the same as that underlying the earlier one, but the new crossing has renewable centers, flexibly supported, around which the other parts of the articulated crossing are assembled. The details of construction are shown herewith by a number of line drawings.

Fig. 1 is a general assembly plan of a right-angle crossing of the new type, while Fig. 2 shows the separate pieces ready to put together. A complete crossing consists of four U-shaped pieces, like *A*, four corner pieces like *B*, four centers like *C* and four angle bars on kneebraces like *D*, together with chrome nickel or vanadium heat-treated steel bolts for fastening all together.



AN ARTICULATED TRACK CROSSING WITH RENEWABLE CENTERS
Fig. 1—Plan of right-angle cast manganese crossing
Fig. 2—Separate parts of crossing represented in Fig. 1
Fig. 3—Plan of right-angle crossing with rolled rail guards
Fig. 4—Parts of crossing represented in Fig. 3

In the drawings a number of cross-sections have been reproduced in order more clearly to show the construction. It will be noted that cross-sections *b* and *b*1 are stated to be optional. The only difference between the construction as indicated in the two sections is that in *b* the two pieces forming the section at this point are directly connected together. In the alternative construction shown in section *b*1 a filler block or separator is used between the two main pieces, which are recessed to receive it. The former construction is slightly more substantial but the latter construction can be used, if desired, in order to simplify the grinding operation in fitting the parts together.

The feature of particular interest in this crossing, aside from the renewable character of the centers, is the arrangement of projections and recesses by means of which the several parts of the crossing are keyed or interlocked intimately and yet a certain amount of flexibility is provided. Projections, or tongues, are provided on the corner pieces which fit into recesses or grooves in the limbs or guard arms of the U-members. Both U-members and angle members are recessed to receive projections or tongues on the sides of the centers. All joints are a ground fit, manganese to manganese, no spelter being used. This plan is particularly applicable for combination steam and electric railway crossings, when one flangeway is deeper than the other. The same crossing body is used for all depths of flangeway and the renewable insert is made with any combinations or depths of flangeways as desired. All of this is clearly brought out in the cross-sections.

In some cases it is found desirable to use rolled rail guards, which can be done as shown in Figs. 3 and 4. This makes one extra set of four pieces, but somewhat simplifies the U-shaped castings. Exactly the same principle applies here as in the construction already described.

More than twenty railroads are using the plain articulated crossings of which many score have been installed during the past year. It is the expectation of the company that the new type will prove popular with electric railways in replacing the older types of crossings having renewable centers held in place with spelter.

Factors Affecting Arc Welding

THE arc welding process of repairing broken parts and fabricating new construction has been well known to railway repair shop men for a number of years. All the problems incident to the process, however, have not been solved. They still offer fruitful fields of endeavor for both the chemist and metallurgist. A recent investigation of the welding of mild steel by O. H. Eschholz, of the research engineering department, Westinghouse Electric & Manufacturing Company, has thrown some new light on these problems.

Of the various arc welding processes the one in which a metal rod acts both as electrode and weld filler has the widest use. With this process the filler rod automatically attains the melting temperature and is deposited in a molten state on the hottest section of the weld.

When, in the course of making a weld the metal electrodes are separated, an arc is formed having a highly luminous central core of iron vapor surrounded by a flame of oxides. In order to prevent excessive burning of the iron, the arc must be screened from local air currents as much as possible. This makes it necessary that the welder manipulate the electrode in such a manner that maximum protection by envelopment of the arc is secured. The best way of doing this is by the use of a short arc and the proper inclination of electrodes to compensate for air currents. The use of a short arc also promotes the fusion, concentration and economy of electrode deposit as well as gives it freedom from porosity and reduction in the area affected by heat treatment due to the arc. With long arcs the arc flame cannot be controlled so that it becomes impossible adequately to protect the deposited metal from oxidation. The excessive porosity often found in welds, in the process of making which the arc was broken, is largely due to this cause. In general the action of the atmospheric gases is to refine the vaporized metal. As the field of application of the welding process widens, a method of securing better control of the weld ingredients appears more and more desirable. The use of a refractory tube or asbestos coating has been suggested. However, the difficulty of electrode manipulation is increased thereby to a prohibitive degree and excessive quantities of slag are formed and unavoidably imbedded in the weld. Better possibilities appear to lie in the development of an electrode which generates during operation an atmosphere of permanent gases enveloping the arc.

The fusion obtained at the weld surface and in the body of the filler is determined by the scarf angle, arc current and electrode diameter as well as by arc length. When the abutting sections of the material to be welded are inclined at too sharp an angle, the bottom of the weld is inaccessible and good arc contact is prevented.

The best results are secured when arc currents ranging from 20 amperes for a $\frac{3}{32}$-in. electrode to 200 amperes for a $\frac{3}{16}$-in. electrode are used. Porosity and incomplete fusion often result from welding with too low an arc current. The amount of slag formed and retained by the weld is dependent upon the cleanliness of the electrode and the manipulation of the arc flames to minimize oxidation,

Surface inspection of completed welds is an unsatisfactory check on the weld's characteristics. Observations, or preferably an automatic record of the arc voltage and current and electrode manipulation during welding, permit the formation of a better estimate of the finished product.

Pitting Overcome by Insulating Bearings from Their Shells

GROUNDS and weak insulation are given as the cause of bearings becoming pitted by T. A. Borden of the engineering department of the Hydro-Electric Power Commission of Ontario, and another engineer claims that eddy currents are set up in the iron of the armature structure by short-circuited laminations. Both of these engineers agree that the best way to remove the trouble is to insert thin sheets of insulating material between the bearing shells and their housing in order that the stray current-circuit may be broken.

Referring to a previous experience, Mr. Borden states that in one case a brush was placed at one end of the shaft of a motor-generator set to reduce the sparking, on the journals and oil rings. This did away with the sparking at that end, but greatly increased the sparking on the other journal. With a brush placed at each end, the current was so great that the brushes were heated to an excessive temperature. Further experiments showed that this current had a value of several hundred amperes when measured either with a shunted d'Arsonval type meter or with an induction-type instrument through a series transformer.

LETTER TO THE EDITORS

Proper Designation for Pipe

NATIONAL TUBE COMPANY
PITTSBURGH, PA., July 1, 1918.

To the Editors:

We have noticed of late a number of references to pipe in editorial columns of the business papers, somewhat as follows: "Wrought-iron pipe was used in the steam lines." "This device was made from ordinary wrought-iron pipe, etc."

We should like to point out that there are three proper designations for pipe, as below:

Wrought Pipe. This is the generic term for steel or iron pipe. The average dealer in pipe refers to himself as a "dealer in wrought pipe." This means that he sells both steel and iron pipe

Wrought-Iron Pipe. This means just what it says, namely wrought-iron pipe, the product of a puddling furnace. This product comprises about 10 per cent of the wrought pipe made in this country.

Steel Pipe. This also means exactly what it says. Steel pipe comprises about 90 per cent of the present output of wrought pipe in this country.

Because wrought-iron pipe was the original pipe many people still refer to ordinary pipe as "wrought iron," whereas "wrought pipe" is the proper term. In the ordinary article referring to this product the chances are ten to one that the product is steel pipe, but in the absence of definite information the proper term is "wrought pipe." The term "wrought-iron" pipe is distinctly erroneous.

W. L. SCHAEFFER, Advertising Department.

Individual Contracts Forbidden

THE National War Labor Board has just handed down a decision which should be of interest to many electric railways. It is to the effect that the General Electric Company shall eliminate individual employment contracts at its plant at Pittsfield, Mass. At the same time the board turned the entire controversy at Pittsfield over to William H. Taft and Frank P. Walsh, the joint chairmen, as a section of the board with instructions to establish a just system of collective bargaining between the company and the men.

The decision is the first of its kind made by the War Labor Board. Individual contracts, submitted to men upon taking up employment at the plant, are characterized by the board as a source of irritation. One of the principal demands of the men was that the contracts be abolished and that a system be established by which the workers could deal collectively with the company. The order of the board is that such of the contracts as are now in existence be eliminated and that the company be directed to make none in the future.

The staff of the War Labor Board will devise a system of elections by which workers may choose committees to represent them in dealing with the employing firm. Up to this time the company has not recognized either committees or individuals representing groups of the workers. At Schenectady, however, where there is a high percentage of organization, committee representation has for some time been recognized and accepted.

AMERICAN ASSOCIATION NEWS

Bulletin No. 23 Sent Out

THE American Electric Railway War Board has just issued bulletin No. 23 accompanying a copy of the brief submitted by the board to the National War Labor Board in the matter of the power of the President to fix rates of fare on electric railways. The War Board explains that it expects also to mail to member companies copies of the statements by Mr. McCarter and Mr. Gadsden to the War Labor Board, as soon as they can be printed.

May Outing for Rhode Island Company Section

THE May meeting of the Rhode Island company section was held at Peace Dale, near Narragansett Pier. The members went from Providence in special cars. The festivities included a trip to the pier, a sumptuous dinner and a varied program of short talks.

Program Largely Musical at Section No. 6 June Meeting

THE Chicago Elevated Railroads Company Section met on June 18 and was entertained with music, and amusing stories and reminiscences. Henry Cordell read a paper relating to his work on the Chicago, North Shore & Milwaukee Railroad. About 75 members and guests were in attendance.

Tribute to the Memory of Capt. H. A. Bullock

BY LETTER BALLOT the executive committee of the American Association has passed resolutions of appreciation of the work of Capt. H. A. Bullock, who was killed in action in France on May 31. Captain Bullock has been an active association worker and, so far as known, was the first member of the association to give his life for the cause.

Experimental Lecture at Toledo

DR. E. E. F. CREIGHTON, of the research department of the General Electric Company, gave an experimental lecture on lightning protection before an audience of nearly 500 at a recent meeting of the Toledo section. He traced some of the early history of the lightning arrester, paying especial tribute to the aluminum cell. He showed by means of experiments the effect of surges on transmission lines and illustrated the manner in which a good lightning arrester relieves the line from these surges.

Recent Happenings in Great Britain

Power Supply a Difficult Problem—District Board Proposed—The Shrinking Penny Fare—Economy Essential Everywhere

(From Our Regular Correspondent)

The committee appointed by the Board of Trade to consider the question of electric power supply has issued its report in a white paper. The chief recommendations include one that a new body called the Electricity Commissioners should be appointed and that it should assume the powers of the Board of Trade, the local government board, the local government board for Ireland, and the Scottish office, relating to the supply of electricity. It is suggested that it receive large additional powers for regulating and encouraging the generation and distribution of electricity. The other recommendations are that subject to an appeal to Parliament in certain cases these commissioners should have general control over the generation and distribution of electricity in the United Kingdom; that the existing system under which electricity is separately generated for small areas should be abolished; that the commissioners should, after local inquiries, divide the United Kingdom into districts where a district electricity board should be set up to purchase all generating stations of authorized distributers, and be responsible for the future generation of electricity in their district; that existing electrical undertakers should, if they so desire, retain their power to distribute electricity within their local areas, but should purchase electricity in bulk from the boards or their lessees, due provisions being made for controlling the profits of distributers so as to insure a cheap supply; that district electricity boards should make no divisible profits, and should be financed by funds raised with government assistance, except where it is shown to be desirable and practicable to finance them locally.

PENNY NO LONGER POTENT COIN

The nimble penny as the tramway fare unit has done wonderful things. It has built up a great service of public utility which, after providing cheap transit on a commercial basis, has been able from time to time out of surplus funds to hand over large sums in relief of rates. But the penny is not the potent coin that it was. The leaps by which wages and prices of material have advanced during the war have radically altered its value. Stages could be shortened, but that would involve considerable disturbance of present organization. It is certain, however, that tramway undertakings will have to find some means of covering the greatly increased costs they now have to shoulder.

A proposal to reduce the number of "request stops" on the Manchester tramway routes will probably be put into force very soon. The saving of coal is not the only consideration, although a very important one. There is the wear and tear of rails and rolling stock, which is considerably increased by the frequent stopping of the cars. J. M. McElroy, the general manager of the Manchester Tramways, has stated that the number of "request stops" has had a tendency to grow in every town, because pressure has been brought to bear by the public. The Board of Trade tramways committee, of which Mr. McElroy is a member, is giving special attention to this question. The number of passengers on the Manchester tramways has increased since the beginning of the war although the number of car-miles has been reduced. For the year ended March 31, 1914, 205,000,000 passengers were carried, and the car mileage was 19,463,000. For the year ended March 31, 1918, the number of passengers was 240,000,000, and the cars ran only 18,540,000 miles. In other words, the number of passengers increased by 35,000,000 and the car-miles decreased by 1,000,000. The City Council of Manchester has passed a resolution authorizing an arrangement with Mr. McElroy under which he will remain in the service of the corporation as general manager of the tramways department for five years, at a salary of £1,500 a year.

LONDON DIVIDED INTO FARE ZONES

Revised fares on the London County Council tramway routes south of the Thames have come into force. The new system of fares has been arranged on the plan of dividing the routes into stages, of which three can be covered for a 1d., six for 2d., nine for 3d. and anything above nine to the end of the route for 4d. Similarly, increased fares on the routes north of the Thames will come into operation as soon as the County Council has completed arrangements with other authorities in conjunction with whom it works some of these lines. The Council, in common with all other tramway authorities, has been notified that coal consumption in connection with the tramways must at once be reduced by at least 15 per cent. Suggestions made are the reduction of service not required in the national interest, the withdrawal of service for the whole or part of Sundays, the stopping of cars at an earlier hour in the evening, the partial substitution of coke locally produced for coal, and the grant of a bonus to motormen for economy in power consumption.

A new defence of the realm regulation provides that the Board of Trade may authorize the local authority to charge the local rates or funds with any deficiency that may result where a tramway undertaking is carried on efficiently under statutory powers by a local authority but cannot be run without charging fares in excess of those authorized or without applying local rates in aid of a deficiency in the revenue. The Board of Trade is also authorized to modify any provision in any local act regulating the undertaking, or to relieve the local authority from the obligation of making allowances for the items of renewals or depreciation.

Christopher John Spencer, general manager of the Bradford Corporation Tramways, recently testified before the select committee of the House of Commons on municipal tramways (statutory requirements). He said that since the outbreak of war the cost of production had increased enormously. In consequence almost all tramway undertakings had to consider their financial position. The general manager of the Leeds Corporation Tramways estimated that unless the fares at Leeds were increased there would be a deficit of £45,000 for the current year. The main cause for the increased expenditure on tramways had been the increased cost of labor. The wage bill of tramway undertakings had increased approximately 70 per cent, and in some cases even 100 per cent. The application now under consideration for a 12½ per cent bonus on present rates would, if granted, mean another considerable increase in cost. In munition centers there had been a considerable increase in the number of passengers with a consequent increase of receipts, but expenditures were now increasing more rapidly than revenue.

There was also another disquieting feature in the situation. The Board of Trade had already intimated to tramway authorities that in consequence of war-time circumstances it would be necessary to curtail car mileage. While this would reduce certain expenditure it did not affect standing charges. The present scale of tolls and charges for the carriage of parcels and goods was so obviously out of date that it was impossible to extend the conveyance of parcels and goods without considerable loss to the undertakings. It was suggested by Mr. Spencer that the Board of Trade be authorized to set aside the statutory limitations of tolls and charges in respect to passengers' parcels and goods for the period of the war in cases where it was satisfied that sufficient reason existed.

WOMEN DRIVERS FOR LONDON

Women tramcar drivers will probably soon be seen in London for the first time. They have been driving in Glasgow and other cities for the past two years, but until recently the Commissioner of Police for London has refused to license them. The manager of the Walthamstow Tramways recently stated that five women had passed through the three weeks' course of training, and were ready to take out the cars as soon as their licenses were received. They had all been conductresses on the tramway for some time. They will take the place of Grade I and II men, and will be paid the same rate of wage as the men, 31s., rising to 37s. 6d., with a war bonus of £1 a week.

A. C. S.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Service-at-Cost Suggestion

Director of Street Railroads of Cincinnati Sees This as Best Way Out for City and Company

W. C. Culkins, Director of Street Railroads of Cincinnati, Ohio, has outlined a service-at-cost plan for the Cincinnati Traction Company in connection with the revision of the ordinance now under way. While the company has made no formal request for an increase in its rate of fare, this is in contemplation. Mr. Culkins has taken it into consideration.

SERVICE-AT-COST BEST

He says it would be unfair to fasten upon the people of Cincinnati until 1931 a franchise drawn to fit the war conditions of to-day. On the other hand, if the proposed franchise is based upon conditions existing before the war the company would refuse to accept it. He says the service-at-cost plan would give the city the kind of service the people were willing to pay for. After all, service was paramount. Should the rate of fare be established to meet present conditions, the new plan would make a reduction possible as soon as a drop in the cost of operation and the price of materials warranted it. In case the company asked for an increase in the rate, the burden of proof would be upon it.

Mr. Culkins also advised elasticity in the contract so far as it relates to the use of the company's tracks by interurban cars. Due consideration should also be given to the possible development of a freight service.

MR. DRAPER PRESENTS COMPANY'S SIDE

When he appeared before the street railway committee of the City Council on June 25 to discuss the proposed revision of the street railway ordinance, Walter A. Draper, vice-president of the Cincinnati Traction Company, presented an array of figures that are calculated to make the members consider well before they decide upon a rate of fare under present conditions.

The company's estimate for 1918, without providing for increase on account of improvements, taxes, higher wages and contingent expenditures will necessitate an income of $5,906,897. Revenue from other sources and estimated savings will reduce this to $5,536,897. On the other hand, additional amounts necessary to cover the items excepted would aggregate approximately $500,000 annually, making a total of $6,036,897 to be secured from fares.

Mr. Draper said that an increase in the rate of fare would result in a decrease in the number of fares collected. In 1917 the number of riders was 110,000,000. It is estimated that this number would be reduced to 100,000,000 under an increased fare. These riders would have to yield the amount mentioned above, namely $6,036,897. To do this the fare would have to be a little over 6 cents a ride. If the city would relieve the company of the tax of 6 per cent on its gross earnings, the amount to be raised from car patrons would be about $5,700,000 or a little over 5.75 cents a ride.

The net income in 1917 showed an increase of $200,000 over 1916, but Mr. Draper estimated that the net income for 1918 will show a decrease of $585,000 from that of 1917, or an actual deficit of $437,000, without providing for dividends on the preferred stock, funds for improvements or an increase in the wages of the men. He said that this was due to the absence of 18,000 men from the city in the service and the greatly increased cost of materials.

The largest item of expenditure in 1917 was for wages. The amount was $1,924,000, of which $1,500,000 went to the conductors and motormen. Despite the fact that the company has a contract with the men running to July 1, 1919, Mr. Draper declared that it would be necessary to increase wages just as soon as additional revenue could be secured. He enumerated other items and showed where increases would be necessary, if the road was to be kept in condition to give proper service.

Wheeling Arbitrators Report Findings

As a result of the agreement between the arbitrators comprising representatives of the West Virginia Traction & Electric Company and the Wheeling Traction Company, Pan Handle and the City Railway lines, Wheeling, W. Va., and the members of Local Union No. 103 of railway employees and a representative of the federal government, the trainmen and others will receive substantial increases for the ensuing year. It is reported that the men will receive from 38 cents to 45 cents an hour, on a sliding scale, this representing an increase of approximately 10 cents an hour. Following the war the men will work only eight hours a day and six days a week.

The arbitration board concluded its report with a recommendation to the Public Service Commission for relief for the various companies affected by the agreement entered into between the employees and the companies, stating that in its opinion there was a pressing need for an examination of the situation by the commission with a view to increasing rates.

New Transit Lines Opened

Several Important Additions Opened to New York's $350,000,000 New Rapid Transit System

Operation of the new Seventh Avenue subway, which was placed in service in June, 1917, from Times Square to the Pennsylvania Railroad Station at Thirty-third Street, was extended South to the Battery on the main line and to the Wall Street station on the Park Place and William Street branch on July 2.

16.7 MILES OF NEW LINE ADDED

With the portion already in operation, the opening of the Seventh Avenue subway will add approximately 16.7 track-miles to the dual system lines now in use. The Seventh Avenue lines extend south from Times Square as a four-tracked structure to the vicinity of Chambers Street and West Broadway, whence two tracks continue to a loop at the Battery, while the two remaining tracks branch through Park Place, Beekman and William Streets to Wall Street, the terminus of temporary operation.

Eventually the so-called Wall Street branch line will be extended to Brooklyn by way of the Old Slip—Clark Street tunnel line, which will connect with the existing Interborough lines in Brooklyn near Borough Hall. Through service on the Seventh Avenue subway in connection with the old subway north of Forty-second Street will be begun a few weeks hence, when the Lexington Avenue line is completed and can be placed in operation in connection with the old subway in Fourth Avenue below Forty-second Street near the Grand Central Terminal.

Another dual system line placed in operation on July 2 was the portion of the 162nd Street connection, east of Sedgwick Avenue to Jerome Avenue. This connection unites the west side elevated lines in Manhattan with the Jerome Avenue branch of the Lexington Avenue subway in the Bronx. The connection was previously in operation as far as Sedgwick Avenue.

JAMAICA ELEVATED EXTENSION OPENED

On July 3 the New York Consolidated Railroad, a subsidiary of the Brooklyn Rapid Transit Company, placed in service by direction of the Public Service Commission for the First District the unopened portion of the Jamaica Avenue elevated line from Greenwood Avenue, Richmond Hill, to Cliffside Avenue at Jamaica, the terminus of the line. The road was placed in service as far as Greenwood Avenue last year. It will add materially to the transit facilities in Queens.

Government to Control Unskilled Labor

On Aug. 1 Federal Employment Service Will Supplant Private Agencies—Survey of Material Started

After Aug. 1 the United States Employment Service will undertake to be the medium through which employers in the whole country will secure unskilled labor. The country is divided into thirteen districts with four hundred branch offices.

The centralization of recruitment of unskilled labor will affect establishments employing a hundred or more workers. Establishments employing a smaller force will be free, if they choose, to proceed in their usual manner. The concerns which come within the plan, too, will be permitted to hire in the ordinary way such workers as present themselves without inducements from the employer. In other words, employers will be free to engage men who offer themselves without having been solicited, directly or indirectly.

The plan is a military necessity, intended to put an end to the waste and disorganization which arise from "stealing labor." As far as the plan operates to withdraw unskilled labor from industries not directly connected with the war, the withdrawals will be distributed as equitably as possible, under the control of the War Labor Policies Board. Priorities for labor will be established only where there is an actual shortage.

The coming monopoly of the government in distributing unskilled labor will not extend to skilled labor, and for the present such labor may be recruited by all employers as heretofore. At the same time, the offices of the United States Employment Service will in no way decrease their work of providing skilled workers.

LABOR SURVEY ALREADY BEGUN

The United States Employment Service has already begun an approximation of the common labor requirements of war industries for the next three months and of the common labor reserves in each state which may be utilized for war production. With these two national estimates as a basis, the employment service will allot the quotas of unskilled workers which each State will be called upon to furnish.

The war industries will report their needs by means of a special form issued to each industry through the particular government department or board with which its contract is placed. The form asks the immediate common labor requirements, an estimate of the weekly requirements from July 15 through August, and a lump estimate of its needs from Sept. 1 to Oct. 1. The questionnaire also asks, in substance, what percentage of the total of common laborers in each state in 1914 is now engaged in agriculture, transportation, mining or other war work. It then asks the estimated number of common laborers now in each state who are not engaged in war work.

Immediate and full return of the requirement blanks is urged upon every war industry receiving them. Any concern engaged in war work which does not receive its forms should apply at once to the state director of the employment service for the state in which it is operating.

Short Strike in Columbus

Officers of the Columbus Railway, Power & Light Company, Columbus, Ohio, and representatives of the Amalgamated Association reached an agreement on July 1 to submit their differences to the National War Labor Board for settlement. This action was taken in response to a telegram from the board urging that this be done at once in order to prevent loss and inconvenience. The questions to be submitted are hours of labor, working conditions, wages and the reinstatement of seven men who had been discharged. The company recognized the union only tentatively, in order to submit the matter to the board.

Operation was resumed late on the evening of July 1, after the road had been idle almost forty-eight hours.

Bellaire Tries to Shackle Railway

The twenty-five-year franchise under which the Wheeling Traction Company has been operating its lines within the town of Bellaire, Ohio, expired about two months ago. In an effort to secure renewal of its right to operate over these lines, the company presented to the Town Council for its consideration a proposed form of agreement which was practically indentical with the old franchise.

The railway proposal was rejected by the city officials, who in turn presented a proposed franchise of their own. This contained many restrictions, as illustrative of which may be mentioned excessive requirements in the way of street paving, lighting of all street intersections along the car lines, and the maintenance of flagmen at all railroad crossings. Altogether the conditions were so burdensome that the traction company could not accept the franchise in its proposed form. It attempted to effect a compromise but was unable to do so.

In the meantime the Council, as a coercive measure, passed a resolution requiring the railway to pay the city $25 a day rental for the time during which the lines were operated without a franchise. The company has refused to pay the rental, and as a retaliatory measure the Council has just passed another resolution instructing the town solicitor to sue for an injunction prohibiting the company from operating within the Bellaire corporation limits. As the railway is at present the only means of transportation available to a large number if mine and steel mill workers who are engaged either directly or indirectly on government work, complications will likely arise if the injunction is granted.

Operating Agreement on Pacific Coast

City of San Francisco Buys Operating Rights on Private System for Municipal Line

A plan to provide local car service for the residence district west of Twin Peaks Tunnel in San Francisco, Cal., has been presented to the Board of Supervisors by M. M. O'Shaughnessy, city engineer. Officials of both the Municipal Railway and the United Railroads systems have tentatively agreed that the city shall use the tracks of the United Railroads, the rental for which shall apply as part payment on the properties, in the event that the city purchases the private system before the franchise expires. Features of the arrangement are as follows:

The city is to pay to the United Railroads $100,000 for the right of operation over the Ocean Avenue tracks from Sloat Boulevard to Harold Avenue, this sum to apply as part payment on the United Railroads' lines if purchased by the city before the expiration of the franchise. The United Railroads is to maintain the tracks and trolley and furnish the power for the city cars at the rate of 7¼ cents per car-mile operated, which is said to be the average actual cost of the United Railroads. The city is to construct the necessary connection between its tunnel tracks and the United Railroads tracks. This can be done, it is believed, in about forty-five days.

In Parkside, the track farther to the north, the plan tentatively agreed to by both parties is that the city shall have unlimited use of the United Railroads tracks on Taraval Street, in consideration for which the city is to lower the tracks to grade and pave the street. After this the maintenance will be divided by the city and the private company in proportion to the car mileage operated. In this section power for the city cars will be furnished by the United Railroads at the rate of 1¼ cents per kilowatt-hour. The plan is approved by Mayor Rolph, provided no legal entanglements will result. The whole matter has been referred to the city attorney.

Power Plant Saving Campaign

The United States Fuel Administration has announced the appointment of administrative engineers as follows:

Thomas R. Brown, Pittsburgh; for the western half of the Pennsylvania. He was formerly special engineer with the Westinghouse Air Brake Company.

George R. Henderson, Philadelphia; for the eastern half of Pennsylvania. He was formerly consulting engineer with the Baldwin Locomotive Works.

Edward N. Trump, New York; for the State of New York. He has been the vice-president of the Solvay Process Company.

W. R. C. Corson, Hartford; for New England. He has formerly been a consulting engineer.

The administrative engineers will work under the general supervision of state fuel administrators. The campaign includes: (1) Personal inspection of every power plant in the country; (2) classification and rating of every power plant, based upon the thoroughness of which the owner of the plant conforms to recommendations; (3) responsibility of rating to be based upon reports of inspectors, who will not express opinions, but will collect all the definite information that is available.

State fuel administrations, in their judgment, may entirely or partially shut off the consumption of coal by any needlessly wasteful plant in their territories.

Chicago Ordinance Goes to Main Committee

The sub-committee of the Chicago City Council on June 28 having learned from the traction companies that the proposed ordinance was acceptable recommended it to the main committee. At this meeting a complete draft of the franchise was presented, and attention was called to several features which had not previously been determined.

One of these sections refers to labor. It provides that hours and working conditions shall conform to just and reasonable standards of safety, health, comfort and efficiency, and that all wage earners employed by the company shall receive "wages which shall be just and reasonable and not less than shall be customarily paid for services of like character under substantially similar conditions." The local commission is to have power to settle disputes under this section, if it is finally approved.

Another section paves the way for carrying express matter and package freight on the combined system of surface and elevated lines, at such times as will not interfere with passenger service, subject to regulation by the local commission.

One element of opposition has been overcome by changing the plans for one of the downtown elevated lines which was to have been a double-deck structure. It is expected that sufficient time still remains to discuss the ordinance and get action in the main committee and the City Council before adjournment.

At a recent meeting of the sub-committee Walter L. Fisher placed at the disposal of the members his resignation as special traction counsel. He referred to differences of opinion which had arisen on questions of policy and said he would like to be free to express his objections of the ordinance if it goes to a referendum vote. When this matter was taken up by the main committee it was decided to retain Mr. Fisher as advisor on legal questions.

The full committee began its sessions on July 1 and made several slight changes in the draft of the ordinance as submitted to it.

Dorchester Extension Opened

The Broadway-Andrew Square section of the Dorchester tunnel was opened for traffic by the Boston (Mass.) Elevated Railway on June 29. The new line is a double-track subway with 8845 ft. of single track installed, and is equipped for train operation along the same general lines as the previously operated route east of Harvard Square, Cambridge to Boston. Congestion at the recently opened Broadway station of this tunnel in South Boston, will be relieved by the new line as will also congestion at Dudley Street, Roxbury. There will be a saving of five minutes on each trip from the Dorchester district into and out of the business center of Boston. One of the most valuable features of the new service is the reduction in running time between residential areas in Boston and the Victory plant at Squantum, where destroyers for the United States Navy are being built on a large scale. At Andrew Square there is a transfer station with two surface car loops and two train platforms on a lower level.

News Notes

Fire in St. Louis Destroys Equipment.—A fire on June 14 destroyed a section 400 ft. long by 75 ft. wide of the De Baliviere car sheds of the United Railways, St. Louis, Mo., at Delmar Boulevard and De Baliviere Avenue. The flames consumed nine Olive line motor cars, four trains consisting of motor car and trailer, eight or nine roofless "moonlight" cars, and six storage cars and a snowsweeper.

Bus Men to Be Pensioned.—The Fifth Avenue Coach Company, New York, N. Y., has adopted a system for pensioning its employees who have reached the age of seventy years, or who have been in the company's employ twenty-five years. Any employee who has been in the service twenty-five years and has been disabled will be pensioned under the plan. The pension system will not debar any employee from engaging in any other business.

St. Louis Settlement Vote in November.—The United Railway settlement ordinance will not be voted on in St. Louis until the regular election in November. The final count of the valid signatures on the referendum petitions filed by the Citizen's Referendum League failed to total a sufficient number for a special election within ninety days, as expected. The provisions of the settlement ordinance were commented upon editorially in the ELECTRIC RAILWAY JOURNAL of May 4, page 840.

People's Champion After Profits.—At the recent hearing in Flushing, Long Island, on the appeal of the New York & North Shore Traction Company for a 7-cent fare Mayor Hylan of New York is said to have stated the municipal ownership policy of his administration as follows: "I am in favor of municipal ownership, but I feel that if the city is going to take over a public utility, it ought to take over one that is paying so it will lessen the burden on the taxpayers. Our theory is to take over a public utility that is paying big profits at first and then the next best one and so on so as to help the taxpayers. We prefer that to taking over a losing proposition such as this one."

Wage and Fare Appeals Coupled.—The union of employees of the Memphis (Tenn.) Street Railway has appealed to the Mayor and the City Commissioners to proceed with the investigation requested by the company in connection with its request for 6-cent fares. The employees say they are interested in the 6-cent fare only in so far as it bears on their securing a decent living wage, and that they want the investigation only in order that they may be able to proceed intelligently with their negotiations for a new wage agreement. The men say that "as living costs have advanced 100 per cent in most instances, we feel justified in asking our company for an increase in wages of approximately 85 per cent."

More Buffalo Crooks Sentenced.—Three more conductors employed by the International Railway, Buffalo, N. Y., have been convicted of stealing fares. One was fined $25; another was fined $5 and one was sent to the penitentiary for nine months. These convictions bring the total during the last month up to eleven. The men were charged with larceny, and it is alleged they withheld fares from the fareboxes and also manipulated the fareboxes in such a manner that coins would not register on the dial of the machines. One of the men convicted is charged with making devices which he sold to conductors for $10. These devices could be placed in a farebox in such a manner that the fares would not register on the dial.

How Yonkers Regards Mr. Sutherland.—The Yonkers *Daily News*, in commenting editorially on the career of Leslie Sutherland, recently elected second vice-president of the Third Avenue Railway, New York, N. Y., said in part: "Yonkers is proud of Leslie Sutherland—proud with the pride of a mother who has watched the growth of her child, has seen him reach maturity, has learned to lean not a little upon his strong right arm, and who, with mingled feelings of sorrow and joy, sees him answer the call of responsibilities that will take him away from the home circle. Yonkers had learned to respect his strength, to place faith in his judgment, to call upon him for advice. In a very true sense he became a favorite son. And now, as larger duties call him, she bids him good-by, with pride in her heart, but not without sorrow. Wherever the paths of success may lead him Yonkers cherishes the hope that he will not forget the old home and the mother who loves him well."

Financial and Corporate

I. R. T. Would Issue Notes

Wants to Put Out $37,700,000 of Three-Year 7 per Cent Securities At About 96½

The Interborough Rapid Transit Company, New York, N. Y., on June 29, filed with the Public Service Commission for the First District, an application for approval of a proposed collateral trust agreement securing $37,700,000 in three-year 7 per cent notes and for authority to issue and dispose immediately of $33,000,000 thereunder. Several days ago the company filed an application for permission to issue about $58,906,000 of bonds to be used as collateral for the contemplated note issue.

The commission set July 10 at 10.30 a. m. as the date for the hearing on the bond issues, and at the same time will consider the merits of the note issue proposal, as the two are linked.

W. F. C. WILL PROBABLY HELP

Eugene Meyer, Jr., a member of the War Finance Corporation, said on June 29, that he felt sure that corporation would take about 30 per cent of the proposed note issue. He said that he personally felt 87½ was a fair price for the bonds, and 7 per cent interest rate reasonable. It is asserted that the conditions will require the sale of the notes at not less than 96½ per cent of par.

Of the proceeds derived from the sale of the $33,000,000 immediately put on the market, $31,845,000 are to be devoted to the following purposes:

For equipment under subway contract No. 3	$18,827,000
For Manhattan Railway third tracking	10,897,000
For Manhattan Railway power plant improvement	2,121,000
Total	$31,845,000

Last year the commission authorized the Interborough Rapid Transit Company to issue about $39,000,000 in bonds to meet obligations incurred in the work of constructing and equipping the new subway and elevated lines. These bonds were to be disposed of at 93½ or more. Owing to inability to dispose of the bonds at that price, the company has now requested the commission to permit a large issue of short-term notes to be secured by the bonds as collateral.

Pending the July 10 hearing, city officials will confer in reference to questions involved, particularly whether the city's interest in the dual subway lines will in any way be affected.

Northern Electric Railroad Successor

Articles of incorporation were filed on June 20 for the Sacramento Northern Railroad, which is to take over the Northern Electric Railroad and its subsidiary lines, the plans for the reorganization of which were reviewed in the ELECTRIC RAILWAY JOURNAL for June 15, page 1161. The articles state that, in addition to operating the road, the new company will build 5 miles of standard gage track from the M Street bridge over the Sacramento River to a point 5 miles distant in Yolo County.

The fifteen directors represent the reorganization committee and the various creditors of the Northern Electric Railway. They are: E. D. Sullivan, F. M. McAuliffe, Delger Trowbridge, William S. McKnight, William H. Gorrill, Walter Slack, Charles C. Sullivan, A. E. Roth, A. D. Plaw, F. M. Hultman, A. E. Wellington, E. K. Pedler, W. G. Gardiner, Jerome B. White and G. S. Sahlender.

The roads taken over by the new corporation are the Northern Electric, the Sacramento-Woodland Railroad, the Marysville-Colusa branch of the Northern Electric and the Vallejo & Northern.

The reorganization committee purchased the Northern Electric Company at the foreclosure sale on May 28.

Responsible for Underlying Bonds

Pittsburgh Subsidiary Wants Controlling Companies Held Liable—Court Refuses Interest Payment Now

George Wharton Pepper, Philadelphia, representing the bondholders of the United Traction Company, appeared before Judge Charles P. Orr in the United States District Court in Pittsburgh on July 1 and filed a petition asking that the Philadelphia Company and the Pittsburgh Railways be jointly held responsible for the indebtedness of several million dollars to the bondholders of the United Traction Company. It is asserted that the property of the underlying companies has not been conserved properly.

The Philadelphia Company, through stock ownership, controls the Pittsburgh Railways, and the latter company in turn owns a large majority of the stock of the United Traction Company. The pending suit in equity was brought by the bondholders of the United Traction Company and was filed several months before the receivers for the railway were appointed.

Almost coincident with the foregoing plea Judge Orr handed down a decision refusing the assent of the court to the payment, at this time, by the receivers of the Pittsburgh Railways, of nearly $500,000 as interest to underlying companies. Judge Orr says that the prospect of the company performing its full duty to the public and of meeting the just demands of its creditors is at present so dim that the court hesitates to make an order for the payment of fixed charges.

The Pittsburgh Railways was placed in the hands of James D. Callery, H. S. A. Stuart and Charles A. Fagan as receivers on April 23 by judges of the United States District Court.

T. H., I. & E. Returns for 1917

Gross Earnings Gain $186,000 or 5.83 per Cent, but Operating Expenses Rise $223,000 or 12 per Cent

The income statement of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., for the year ended Dec. 31, 1917, follows:

Gross earnings from operation		$3,386,364
Operating expenses		2,087,472
Net earnings		$1,298,891
Taxes		179,362
Operating income		$1,119,528
Other income		200,343
Gross income		$1,319,872
Deductions from income:		
Bond interest	$760,410	
Dividends	234,291	
Interest on notes	36,776	
Maintenance of organization leased lines	3,000	1,034,479
Surplus		$285,393
Sinking fund		207,742
Balance		$77,650

While the gross earnings for 1917, as compared with 1916, showed an increase of $186,840 or 5.83 per cent, the operating expenses increased $223,794 or 12 per cent, making a decrease in net earnings from operation of $36,953. This falling off was principally due to advances in the cost of material and increased wages. Taxes were increased $17,911 above 1916.

The total expenditure for 1917 for maintenance of ways and structures was $288,054 and for maintenance of equipment $192,600. Improvements on account of owned lines included the erection of a freight building 401 ft. x 30 ft. on the new freight terminal property on Kentucky Avenue, with the construction of seven tracks on this property.

The total amount expended for added property during the year was $305,766. The total investment in addition to plant, property and equipment to Dec. 31, 1917, for which no bonds or securities have been issued, and including payments to sinking funds and investments in securities of affiliated companies amounted to $2,285,467, an increase of $316,923 over the year 1916.

Miscellaneous traffic and operating statistics for the year 1917 follow:

Passengers carried—interurban lines	9,257,115
Passengers carried—city lines	13,370,894
Total passengers carried	22,628,009
Freight handled (tons)	99,447
Express handled (exclusive of Wells-Fargo), tons	15,362
Car-miles operated—interurban lines	5,697,875
Car-miles operated—city lines	2,338,007
Coal consumed at power station (tons)	243,522
Power generated, main power station (kilowatt-hours)	97,181,993

The company refers to the purchase during the year of a coal mine in Sullivan County under an agreement made with three other electric railways in Indiana, one of them the local Indianapolis company. This agreement was previously reviewed in this paper.

Finance Corporation Grants $1,000,000

New Orleans Company Is Promised Direct Loan If Holders of $4,000,000 Debentures Accept One-Year Notes—Other Financing Happenings

In pursuance of its apparent policy of helping those utilities which can help themselves, the War Finance Corporation on July 2 announced that it had agreed to advance to the New Orleans Railway & Light Company $1,000,000 to reimburse it for necessary expenditures, the corporation in return taking the company's note for the amount. The loan is based upon the condition that the holders of $4,000,000 of two-year 6 per cent debentures, which matured on June 1, exchange them for new one-year 7 per cent notes.

The issue of debentures went unpaid at maturity because of the refusal of the War Finance Corporation to advance the money on the ground that it had no authority to make direct advances to corporations except in exceptional cases. At the time President Curran sent out a circular to the noteholders, explaining the circumstances and asking them not to press for payment until an opportunity had been afforded to work out an extension plan.

This plan, later submitted, called for the refunding of the matured notes, par for par, into the new notes, callable at 100 and interest on thirty days' notice. Mr. Curran now asks the holders to deposit their debentures in acceptance of the refunding plan, as not until its success is assured will the War Finance Corporation advance the $1,000,000 it has promised. More than 50 per cent of the holders have already deposited their securities.

B.R.T. REFUNDING IS PROGRESSING

Holders of the $57,735,000 of Brooklyn Rapid Transit Company 5 per cent notes will have until July 10 instead of July 1 to deposit their holdings, under the proposed refunding plan, with the Central Union Trust Company, in order to have them taken up, 30 per cent through cash furnished by the War Finance Corporation and 70 per cent through the new issue of 7 per cent three-year notes.

Up to the close of business on July 2, it was said, approximately $25,000,000 of the old notes had already been deposited. They were coming in at a rate that indicated the acceptance of the refunding plan by virtually all the holders.

A committee of Philadelphia bankers has been appointed to consider the public utility problem. The members are: J. R. McAllister, John H. Mason, Effingham B. Morris, Arthur E. Newbold, Levi L. Rue, Joseph Wayne, Jr., and William P. Gest, chairman. It is probable that a sub-committee will be appointed to confer with bankers in other cities. Similar committees have been appointed for New York, Boston and Chicago.

The Capital Issues Committee on June 29 announced the appointment of Dudley Cates, San Francisco, as secretary and chief examiner, and the creation under him of a new bureau of examiners to digest applications for approval of proposed securities issues. This bureau will assist in gathering information on these issues from local capital issues committees in each Federal Reserve District, and from the Fuel, Food, and Railroad Administrations, War Industries Board, and other government departments which can throw light on the war necessity of the project covered by proposed securities issues.

Frederic A. Delano, who has resigned as member of the Federal Reserve Board to enter the army, also has given up his membership on the Capital Issues Committee. A successor will be appointed by President Wilson.

Passes Preferred Dividend

New York State Railways Puts Action Over Pending Result of Its Fare Appeal

The executive committee of the New York State Railways, Rochester, N. Y., on June 14 decided not to declare at this time the regular quarterly dividend of 1¼ per cent, due on July 1, on the $3,862,500 of cumulative preferred stock. Horace E. Andrews, president of the company, in a circular dated at New York, June 18, says in substance:

"The executive committee was obliged to pass the preferred dividend because of insufficient earnings. The preferred dividends, however, are cumulative and must be paid before any dividends are declared on the common stock. The gross revenues have decreased and the operating expenses have greatly increased and the situation has reached a point where an increase in the rate of fare has become an absolute and immediate necessity. Our position is similar to that of other electric railways and also like that of the steam railroads until the government assumed control and established an average increase of approximately 25 per cent in freight and passenger rates.

"A year ago we applied to the Public Service Commission for permission to increase the fare from 5 cents to 6 cents in the cities in which we operate. Before the case could be heard an injunction was obtained restraining the commission on the ground that it had no power to increase the rate beyond that fixed by franchise or agreement, which contention the Court of Appeals later upheld. Your company has, therefore, made application to the City Councils of Rochester, Syracuse and Utica for authority to increase its rate of fare.

"Due to the increased cost of living, the operating employees last month demanded an increase in their rate of wages, resulting in a cessation for two days of the operation of the company's cars. An adjustment finally resulted in an increase in the rate of wages upon an understanding with the cities that relief would be granted the company if an examination of its books developed the need of it. An examination by certified public accountants has been under way for about three weeks, and it is hoped the examination will be completed shortly after this month."

Financial News Notes

Sale Under Foreclosure Postponed.—The sale of the properties of the Kansas City, Outer Belt & Electric Railway, Kansas City, Mo., scheduled to take place at Kansas City on June 18, was postponed by Judge John C. Pollock of the United States District Court.

Would Issue $100,000 of Bonds.—The Hagerstown & Frederick Railway, Hagerstown, Md., has applied to the Maryland Public Service Commission for authority to issue $100,000 of bonds, of which amount $35,000 will be used for refunding, and the balance to guarantee a loan of that amount.

$7,750,000 Kansas City Railways Notes.—The Kansas City (Mo.) Railways has sold $7,750,000 of three-year 7 per cent collateral notes, Series A, to a syndicate of New York and Chicago bankers. The notes are secured by the deposit with trustees of $10,134,000 first mortgage 6 per cent bonds, due in 1944.

Interstate Again Passes Preferred Dividend.—The directors of the Interstate Railways, Camden, N. J., have again passed the 3 per cent semi-annual preferred dividend. As was the case six months ago, when the preferred dividend was omitted, several of the leased companies have failed to pay their rental.

Puts Dividend Action Over.—The directors of the Youngstown & Ohio River Railroad, Leetonia, Ohio, on June 25 deferred action on the dividend of both the $1,000,000 of outstanding common stock, and on the $1,000,000 of outstanding 5 per cent cumulative preferred stock, usually due at this time. The preferred disbursement, usually payable in April, last, was postponed this year till May 15. The road is classed as a short-line railroad. It is under federal control.

Bondholders Buy Cincinnati Surburban Road.—On June 26 Common Pleas Judge Wade Cushing approved the sale of the property of the Cincinnati, Milford & Loveland Traction Company to the bondholders' committee for $136,000. Before its future can be determined the Public Utilities Commission will have to act upon its application to abandon its line. L. M. Goldman & Company, junk dealers of Danville, Ill., offered to make a higher bid on the property, but the conditions were such that the court could not consider them.

Delving Into the Past.—The officers of the North Kankakee Electric Light & Railway Company, Kankakee, Ill., have received notice to appear before the Illinois Public Utilities Commission and explain why a stock dividend was paid without securing permission of the commission. The stock dividend was voted about three years ago. The officers of the company say they took all necessary steps suggested by their attorneys. They did not understand that the permission of the commission was necessary. The company was capitalized for $100,000. The paid-in capital was $33,000 and an equal amount of bonds had been sold. After the bonds were paid off the stockholders voted to issue stock to the full amount of the capital authorized. Each stockholder received three shares of new stock for each share that he held previously.

Connecting Railways Passes Preferred Dividend.—The committee of trustees of the Chicago City & Connecting Railways, Chicago, Ill., has passed the dividend on the preferred shares. Members of the collateral trust committee said that there was no probability of the dividend question being considered again until December, when a vote on the January payment is due. The dividend on the preferred stock is cumulative to the extent of $4.50 a year. This is the first time a dividend was ever entirely passed. Including the July payment of this year there is an accumulation of $8.50 of dividends due. In January, 1918, $1.50 was paid. Three per cent was paid in 1917, 3½ per cent in 1916, and $2.50 in 1915. The last year in which the full $4.50 dividend was paid was 1913, and the last full semi-annual dividend was July, 1914. Nothing has been paid on the common stock since July, 1912.

Scranton & Binghamton Bondholders Organize.—At the instance of bondholders of the Scranton & Binghamton Railroad, Scranton, Pa., G. Tracy Rogers, Binghamton, N. Y., formerly president of the Binghamton Railway, has consented to organize a bondholders' protective committee to conserve the interests of the bondholders on account of the fact that the company defaulted in the payment of interest due on June 1. The committee is made up of G. Tracy Rogers; H. G. Dunham, president of the People's Savings Dime Bank, Scranton; F. W. Wollerton, president of the Union National Bank, Scranton; William L. Foster, president of the Miners Bank, Pittston, Pa.; W. L. Connell, president of the Connell Coal Company, Scranton; F. L. Fuller, president of the Remington Railway Company; G. R. Bedford, Wilkes-Barre, attorney for the committee. Ford, Bacon & Davis, New York, will make a survey of the property.

Empire United Reorganization Echo.—The Rochester & Syracuse Railroad, Syracuse, N. Y., on June 27 filed with the Public Service Commission for the Second District, a petition asking for the vacating of an order granted by the commission on Oct. 28, 1915, merging the Empire United Railways, Inc., with the Monroe County Electric Belt Line Company. The petition recites that the Empire United Railways, Inc., was authorized to purchase the outstanding capital stock of the Monroe County Electric Belt Line and effect a merger. After the proceedings were commenced to merge the two companies, the Columbia Trust Company, New York, as trustee for mortgage bondholders, commenced an action to foreclose a mortgage given to it by the Rochester, Syracuse & Eastern Railroad to secure the issue of its first mortgage bonds for $7,500,000 and it was stated in the complaint that the property claimed to be owned by the Monroe County Electric Belt Line Company was actually owned by the Rochester, Syracuse & Eastern Railroad and subject to the lien of the mortgage. Judgment was entered declaring title to be in the Rochester, Syracuse & Eastern Railroad, and the property of the Rochester, Syracuse & Eastern Railroad, together with the Monroe County Electric Belt Line, was sold under a judgment subject to the lien of the Columbia Trust Company's mortgage.

Would Divide Released Depreciation Fund.—Holders of income 5 per cent bonds of the New York (N. Y.) Railways have organized under the lead of John Candler Cobb, Boston, Mass., for the purpose of bringing action to require the company to distribute to holders of income 5s the reserve fund which was recently released by decision of the Court of Appeals in favor of the company against the Public Service Commission of the First District. As of June 30, 1917, the depreciation or accrued amortization of capital amounted to $3,127,258, equivalent to 10.20 per cent on the outstanding adjustment income bonds. The New York Railways is the successor to the reorganized Metropolitan Street Railway. The new company was required, before paying any interest on its income bonds or dividends on its stock, to set aside each month 20 per cent of its gross operating revenue for maintenance and depreciation and, if this was not expended during the month, to credit the unexpended amount to an account called "Accrued Amortization of Capital." The company objected to the order on the grounds that the commission was without power to make it; that the required reservation was not always needed in full for the purposes designated and that the directors were the proper persons to determine the depreciation rate and amount of reserve. The court proceedings which resulted finally in releasing the accumulated depreciation fund were reviewed in the ELECTRIC RAILWAY JOURNAL of June 1.

Electric Railway Monthly Earnings

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$1,925,285	*$38,361	$1,886,924	$5,898	$1,881,026
1m., May, '17	1,565,425	*28,341	1,537,084	234	1,536,850
12m., May, '18	20,487,577	*390,023	20,097,554	8,297	20,089,257
12m., May, '17	15,218,272	*287,038	14,931,234	42,624	14,888,610

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$41,373	*$28,571	$12,802	$11,570	$1,232
1m., Apr., '17	45,089	*23,870	21,219	12,515	8,704
4m., Apr., '18	159,795	*110,254	49,541	45,631	3,910
4m., Apr., '17	152,142	*91,916	60,226	46,778	13,448

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$205,083	*$136,577	$68,505	$39,728	$28,777
1m., Apr., '17	150,698	*106,371	44,327	37,295	7,032
12m., Apr., '18	2,265,272	*1,482,279	782,993	460,092	322,901
12m., Apr., '17	1,952,355	*1,259,273	693,082	440,411	252,671

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$25,900	*$16,396	$9,504	$4,010	$4,494
1m., Apr., '17	31,536	*16,091	15,445	5,125	10,320
12m., Apr., '18	340,899	*217,869	123,030	60,810	62,220
12m., Apr., '17	338,476	*196,272	142,204	62,621	79,583

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$3,524,432	*$2,002,462	$1,521,970	$1,186,854	‡§$580,523
1m., May, '17	3,511,496	*1,712,639	1,798,857	1,023,779	‡§854,317
11m., May, '18	37,208,118	*20,913,024	16,295,094	12,366,041	‡§6,794,245
11m., May, '17	36,608,909	*17,771,219	18,837,690	11,043,410	‡§8,469,450

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$903,655	*$565,868	$337,787	$206,587	$131,200
1m., Apr., '17	754,687	*460,884	293,803	191,025	102,778
12m., Apr., '18	10,172,652	*6,306,622	3,866,030	2,412,336	1,453,694
12m., Apr., '17	8,571,266	*5,244,570	3,326,696	2,241,688	1,085,008

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$92,579	*$62,704	$29,875	$24,746	$5,129
1m., Apr., '17	76,968	*51,554	25,414	23,908	1,506
12m., Apr., '18	1,035,134	*694,962	340,172	294,204	45,968
12m., Apr., '17	867,963	*574,882	293,081	285,198	7,883

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$84,863	*$48,347	$36,516	$5,085	$31,431
1m., Apr., '17	82,261	*47,183	35,078	4,372	30,706
12m., Apr., '18	997,955	*574,859	423,096	59,265	363,831
12m., Apr., '17	983,651	*537,088	446,563	52,305	394,258

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$469,142	*$338,765	$130,377	$100,034	‡$36,528
1m., May, '17	371,745	*257,291	114,454	82,638	‡37,984
12m., May, '18	5,394,109	*3,775,786	1,618,323	1,090,959	‡616,044
12m., May, '17	4,228,747	*2,623,123	1,605,624	895,941	‡738,895

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$804,783	*$536,420	$268,363	$160,777	$107,586
1m., May, '17	841,764	*531,928	309,836	149,942	159,894
5m., May, '18	4,039,141	*2,972,722	1,066,419	782,468	283,951
5m., May, '17	4,322,748	*2,865,833	1,456,915	730,414	726,501

* Includes taxes. ‡ Includes non-operating income. § Includes accruals under rapid transit contracts with city payable from future earnings.

Traffic and Transportation

Freight Rate Hearing

Indiana Electric Roads Appeal for Freight Rates Similar to Those of Steam Lines

Hearings on the petitions of Indiana interurban railways for an increase in freight rates to place their tariffs on a parity with those now in effect on the steam railroads were held before the Public Service Commission of Indiana on June 26 and 27. The following roads were represented at the hearing:

Indianapolis & Cincinnati Traction Company.
Evansville, Suburban & Newburg Railway.
Evansville Railway.
Fort Wayne & Northern Indiana Traction Company.
Chicago, South Bend & Northern Indiana Traction Company.
Winona Interurban Railway.
Terre Haute, Indianapolis & Eastern Traction Company.
Union Traction Company of Indiana.
Marion & Bluffton Traction Company.
Ohio Electric Railway.
Interstate Public Service Company.
Indianapolis & Louisville Traction Company.
Chicago, Lake Shore & South Bend Railway.
Indiana Railways & Light Company.
Fort Wayne & Northwestern Railroad.

ELECTRICS GET UNDESIRABLE BUSINESS

According to the testimony introduced, if the interurban freight rates continue to be lower than those of the steam railroads a great volume of undesirable business would be attracted to the interurbans. It was pointed out that the electric roads were not generally equipped to handle the bulky and heavy freight business, and that such business was not profitable to them. The interurban companies are doing an express business at freight rates. While the higher freight rates were needed on the interurban lines to produce additional revenue it was also necessary that the rates should be as high as those of the steam roads, so that the heavy freight matter would continue to be handled by the latter.

Chairman E. I. Lewis of the commission called the attention of the electric railway men to the likelihood of numerous motor transportation fleets if interurban rates were raised to a point where the gasoline trucks could compete vigorously on light freight. As a means of shunting off the lower classification freight, for example that in the last three classes, he inquired about the advisability of making the rates for classes 1, 2 and 3 prevail for classes 4, 5 and 6. It was agreed it would be hard to predict the results of such a change.

A rather typical case of the conditions of many of the Hoosier electric lines was displayed in that of the Evansville Railways, which handles mostly a freight business. W. A. Carson, vice-president and general manager, testified that his road had not paid dividends on either preferred or common stock since it was constructed in 1907. Each year the deficit grew larger and the road had not met interest on its bonded indebtedness for a year and a half. The net earnings decreased 59 per cent last year.

Suggestions that steam lines handle heavy freight and leave interurbans the lighter class of short-haul freight were made for consideration when conditions make such changes possible.

The hearing is more or less preliminary in character as the commission will look into the public records in this and other interurban cases before granting the increases asked. It is said that the electrics are courting federal control in that some of them have asked the Interstate Commerce Commission to take a hand in obtaining for them the higher intrastate rates desired.

Working to Better the Service

The Kansas City (Mo.) Railways has made some progress on each of the three measures which it is advocating as a solution of the problem of better service. The board of control of the company has made up a complete list of all stops to be made under the proposed skip-stop plan. According to this system the average distance between stops will be 600 ft., thus eliminating 1400 stops and providing for a 38 per cent saving. A list of the stops and an explanation of the proposed change are printed for every line in the city and copies placed in the cars for the information of the public. The schedule was published in one of the newspapers.

The continued advertisement of the "shop early" measure has resulted in considerable relief during rush hours. Women seem to realize that it is to their own advantage and comfort as well as to that of the company and business people to shop between the hours of 9 a. m. and 4 p. m. and arrange their plans accordingly.

The company has continued its study of the industrial situation with a view to getting the staggered work-hour plan adopted by industrial plants and department stores. A complete list of the firms, together with the number of employees in each establishment, has been obtained, and the company is endeavoring to prepare a work-hour schedule for all of its many lines for the purpose of lessening the rush-hour jam.

All Missouri Pleads

With P. J. Kealy as Spokesman Utilities There Place Their Case Before Missouri Commission

A plea for higher rates and for other relief from war-time burdens was made to the Public Service Commission of Missouri last month by representatives of many utility corporations in Missouri, including the heads of large utilities of St. Louis, except the United Railways. That company recently obtained an increase of from 5 to 6 cents in fares.

P. J. Kealy, president of the Kansas City Railways, the principal speaker, suggested four remedial measures, which, he said, when applied by the commission to the utilities, would give relief. A summary of them follows:

FOUR REMEDIES SUGGESTED

1. Request to municipal authorities to relieve the utility from franchise provisions requiring extensions and improvements when not necessary to maintain the present standard.
2. Relief of utilities from all taxes except the general property tax. This would include special impost, car, motor, gross income, street cleaning and sprinkling, park and paving taxes.
3. To require monthly reports of all public utilities touching their earnings and disbursements so that speedy relief may be given when the earnings fail to give a fair return.
4. Elasticity of rates to be granted through definite procedure so that they may be changed to meet the varying costs of fuel, money, labor and materials.

The resolutions adopted in May at St. Joseph by the Missouri Association of Public Utilities, asking that the utilities be granted increased rates in order to meet the increased cost of operation, were presented by a committee.

CLOSER PUBLIC RELATIONS DESIRABLE

In his address Mr. Kealy pleaded for closer co-operation between the utilities, the public and the Public Service Commission. He gave a detailed account of the conditions confronting the various utilities and declared that relief was necessary if they were to exist. Mr. Kealy said in part:

"Conditions are rapidly shifting. No one can predict to-day what six months will disclose. There must be that close co-operation between the public, the regulatory bodies and the public utilities which will admit of prompt action on the part of you gentlemen, backed by the active support of our local councils and the public.

"It is not a theory that confronts us. The utilities of Missouri are at this time facing bankruptcy. In all justice the men who have invested their money in this State should not be asked to pay for the privilege of serving the communities of Missouri with public service. Nor can they longer continue to do so."

Six-Cent Fare for Kansas City

Brief Review of Decision by Missouri Commission Allowing Flat Increase Over Fare Fixed in Model Franchise

The Public Service Commission of Missouri on June 22 granted a 6-cent fare in Kansas City, Mo., to the Kansas City Railways.

COMMISSION DIVIDED THREE TO TWO

The opinion was written by William G. Busby, chairman of the commission; and concurred in by Edward Flad, engineer, the member who had closely investigated the problems of the company, and by Noah W. Sumpson. Two members, E. J. Bean and David E. Blair, dissented. They held that the commission had no authority to handle such rate matters.

As noted briefly in the ELECTRIC RAILWAY JOURNAL of June 29, the 6-cent rate is to go into effect on July 15 for a year. At the end of the year the commission will continue the higher rate if still necessary or make other adjustment; intermediate adjustment may also be made.

CHILDREN'S TICKETS AND TRANSFERS UNDISTURBED

Under the decision, the company will continue to give universal transfers. The fare for children will continue at 2½ cents. The commission suggests that the company issue coupon books, or disks, for the convenience of the public. The company now has in circulation metal disks for half fares, and a small number of metal disks for full fare.

Pending the arrival of disks, the fare machines on the cars will be adjusted to receive pennies, though the machines will not count the pennies. The conductors will, possibly, be charged 6 cents for each nickle registered, so that they would be careful to see that the extra penny is deposited. Fares paid wholly in pennies would be registered on the overhead register.

INCREASE APPLIES ONLY IN MISSOURI

The fare increase applies only to Kansas City, Mo. The company has applied to the Kansas Utilities Commission for an increase for the business on the Kansas side. Pending action, an extra cent will be collected from 5-cent passengers boarding cars in Kansas City, Kan., for Kansas City, Mo., when the cars reach the State line. Passengers from Kansas City, Mo., will of course have paid 6 cents for their ride, whether intrastate or interstate.

Following the application before the Kansas commission, the city of Kansas City, Kan., secured from Judge E. L. Fischer in the district court of Wyandotte County a temporary injunction based on the contention that the commission had no jurisdiction. The commission's attorney is fighting the injunction. A hearing on whether the injunction will be dissolved or made permanent was set for June 29.

The company promised its employees that if the fare increase were granted, wages would be raised not less than 5 cents an hour. The matter of wage adjustment is now being worked out. The new wages probably will be established about Aug. 17, the date of last year's readjustment. The employees are asking an increase in excess of 12 cents an hour. Probably all employees receiving less than $1,800 a year will share in the advance.

CRITERION FOR OTHER CASES

The action of the Missouri commission is taken as a reflection of the present Missouri position with reference to utility properties—that the public has learned the lesson that it needs the service of utilities, and is willing to pay the reasonable cost. The definiteness of this public opinion may be credited to the efficient publicity by the utilities of the State. The Kansas City Railways and the Kansas City Light & Power Company have presented their situations openly and clearly to the public, through the newspapers of the section, and by direct advertising means. In this work *The Railwayan*, published by the Kansas City Railways for distribution among its patrons, was a potent factor.

APPLICATION PENDING SINCE FEBRUARY

The petition of the company to increase fares was filed with the commission on Feb. 14. The company said that the terms of its franchise with the city had been lived up to scrupulously for three years, but that on account of the conditions imposed by the war it would be impossible with a fare limited to 5 cents to give the city the full advantages of the franchise provisions, make additions and improvements and allow the company to earn interest upon the money invested. It said that after the return to anything like pre-war conditions it would again be possible to carry out the provisions of the franchise with the passenger revenue based upon the 5-cent fare. The relief sought was to continue only so long as the commission determined the increase to be necessary to meet the present abnormal situation. It appealed, therefore, to the commission "to make a reasonable increase in fare * * * to be applied solely to the payment of the increased expenses necessary to render first-class service."

HEARINGS BEGAN IN APRIL

The evidence was heard by the entire commission on April 29 and 30 and on May 9 and 10 at Kansas City and on May 27 at Jefferson City. The case was also briefed and argued by counsel for Kansas City and for the company.

The city contended that the Public Service Commission had no jurisdiction to regulate rates, the routing and the service of the railway and that the full power to regulate such rates, routings and service was vested in the law-making authorities of Kansas City. It also contended that any attempt upon the part of the commission to change or modify the provisions of the franchise contract would be in excess of the power of the commission and would violate the constitution of the United States and the rights of Kansas City. In other words, the city contended that the State, by constitutional, statutory and charter provisions, surrendered its power and authorized the city and company to fix irrevocably such rates by the franchise agreement so that the power of the State could not be resumed and exercised without the consent of the city during the thirty-year period of the franchise.

In its decision the commission said it held in the case of the appeal of the United Railways, St. Louis, for an increase in fare that to construe the constitution authorizing the city by its ordinance to fix irrevocably the rates for the franchise period would be to construe that section as in conflict with the other provisions of the constitution which reserve the legislative and police powers to fix rates to the State and provide that the charters of the cities shall always be in harmony with and subject to the constitution and laws of the State. In this connection it said:

"That our construction of Sec. 20, Art. XII, was correct in the St. Louis case, *supra*, and the Knight case, *infra*, not only appears from the many decisions cited in our reports therein, but has since been demonstrated by two decisions of the Supreme Court of this State. State ex rel. City of Sedalia v. Pub. Serv. Com., as yet unreported; City of Fulton v. Publ. Serv. Com., as yet unreported. While Sec. 20 of Art. XII was not directly involved in these cases, yet we think that the reasoning of the court therein shows the correctness of our decision in the St. Louis case."

FIVE-CENT FARE INADEQUATE

In conclusion the commission said:

"We therefore conclude from the evidence before us that the maximum rate of 5 cents chargeable by the company for transporting adult intrastate passengers within the limits of Kansas City, Mo., is insufficient to yield reasonable compensation for the service rendered and is unjust and unreasonable; and, having due regard, among other things, to a reasonable average return upon the value of the company's property actually used in the public service, and to the necessity of making reservation out of income for surplus and contingencies, the company will be permitted hereafter to charge for the period fixed in the order, as just and reasonable maximum rates for the service performed, a fare of 6 cents for transporting adult intrastate passengers, and the present fare of 2½ cents for children in Kansas City, Mo.

"We estimate that an increase of the Missouri intrastate adult fare to 6 cents will increase the revenue $841,190, which amount added to $680,057, shown above, will make the estimated net income $1,521,248 on the Missouri intrastate business. This amounts to a 6 per cent return on about $25,000,000 without allowance for contingencies or an increase in wages.

"The zone system of rates is considered by some to be more equitable than the flat rate, in that the fare in the former instance is approximately proportional to the distance traveled. However, taking the community as a whole, it is very doubtful if the zone system of fares would be desirable. It would entail considerable adjustment of real estate values, change in living conditions, congestion in the inner zone, and additional expense for the company.

"A charge for transfers will not raise sufficient revenue, and it is considered advisable to retain the universal free transfer privilege.

"The company will be required to issue coupon books or metal disks for the convenience of the public, without change of rate, to avoid delay and confusion arising from making change. The commission will require the company to submit monthly statements setting forth full information upon revenue and expense during the month, for the purpose of controlling the situation for the benefit of the public.

"The commission will reserve full jurisdiction of every phase of this case and will reserve the right to modify any order entered herein, including the rate of fare herein allowed, whenever changed conditions shall justify.

"An order will be entered in conformity with these views."

New Albany Fare Order Modified

The Public Service Commission of Indiana recently authorized the Louisville & Southern Indiana Traction Company, which operates the city lines in Jeffersonville and New Albany, to charge 5 cents straight for each passenger carried, instead of selling six tickets for a quarter. The commission also authorized the company to discontinue giving transfers to the city cars from the interurban cars coming into either city, although the city transfers were not discontinued, and permitted the company to charge a 10-cent single fare between New Albany and Jeffersonville, with commuters' tickets to be sold at 7 cents each, or twenty-five tickets for $1.75.

C. L. Jewett, head of the New Albany city law department, sent a telegram to the commission, asserting that the ruling was oppressive and unfair to the residents. He recently received the following reply:

"On your motion we have suspended the abolishment of the Jeffersonville transfers. We also concur in your suggestion that the purchase of twenty-five tickets at one time is excessive and are issuing an order for the selling of twelve tickets for 84 cents. You have done us a favor by bringing these matters to our attention."

Pittsburgh Railways Files Fare Brief

Methods Of Collection—Objections to City's Plan—Results to Be Obtained from Proposed Plan

On June 17 the Pittsburgh (Pa.) Railways filed a brief in answer to the fare increase proposal made by the city of Pittsburgh, as mentioned in the issue of the ELECTRIC RAILWAY JOURNAL of June 15, page 1168. The brief begins by outlining the proposed methods of collection of fares, as described elsewhere in this issue, and continued in part as follows:

Company Plan Will Secure the Following Results:

1. It will procure the revenue required to operate the cars.
2. It is simple and easily understood by the public.
3. It enables all doors to be used so that passengers may enter and leave the cars promptly.
4. It greatly simplifies the duties of the conductor.
5. It avoids delays in the congested parts of the city. Any necessary delays due to the collection of fares are transferred to the outer districts where traffic is light.
6. It makes possible the use of the fare box and registers—only one register being used at a time.
7. All doors being used, it more evenly distributes the passengers throughout the length of the car.

What the City Proposed

To collect 5 cents for a ride wholly in the 5-cent area; 5 cents for a ride wholly within the railway's 7-cent area and 7 cents for a ride across the line dividing the areas—that is, a ride which extends from one area into the other area.

The testimony indicates that the city has no definite idea how this plan is to be worked out, although Mr. Frank, on the stand, after considerable hesitation, suggested the following as a way in which he thought it might be accomplished.

Outbound Trips

On outbound trips the collection of fares in the 5-cent area would be the same as that proposed by the company, namely, collect 5-cent fare from each passenger as he left the car. In the 7-cent area each entering passenger would be handed a metal or other type of check which would permit him to leave the car and pay 5 cents instead of 7 cents.

Inbound Trips

On inbound trips in the 7-cent area, 7 cents would be collected from each passenger as he entered the car. If the passenger left the car, however, in the 7-cent area, the conductor would pay back 2 cents per passenger as he left the car. If the passenger left the car in the 5-cent area, no refund would be given the passenger. In the 5-cent area the conductor would collect 5 cents from each passenger as the passenger entered the car.

OBJECTIONS TO CITY'S PLAN

Outbound Trips

(a) Passengers in the 7-cent area could not enter by the front door, for if they did go they could not get a check from the conductor. This would render useless the front door in the 7-cent area on outbound trips and would greatly delay the traffic.

(b) The duties of the conductor would be multiplied very much since he would have to deal with the passengers in the 7-cent area when they entered the car and again when they left the car. If there were ten passengers to leave the car and as many to board the car at a stop, the conductor would be required to give checks to the ten who were taking the car and at the same time collect the fares from the ten who were leaving the car, both lines of passengers passing the conductor at the same time.

(c) The conductor could give a check permitting the passenger to leave the car for 5 cents to any party he might desire to present such check. As a matter of fact, he could also report any 7-cent fare as a 5-cent fare by simply adding one of these metal checks to the fare.

(d) It would be necessary for him to have two registers for use in the 7-cent area and he could ring up any 7-cent fare on the 5-cent register without anyone being the wiser.

Inbound Trips

(a) If the passenger got off in the 7-cent area, the conductor would have to pay the passenger 2 cents as he got off the car.

(b) A passenger in the 7-cent area would have to get off at the rear end of the car regardless of how full the car might be, resulting in delay and confusion.

(c) How would the 2 cents rebate be accounted for? Would it be rung up on a 2-cent register; that is, would we then have three registers on the car, a 2-cent register, a 5-cent register and a 7-cent register?

(d) What would prevent the conductor from selling these 2-cent rebates to himself at 2 cents cash?

(e) If an attempt were made to overcome this by requiring the passenger to drop his rebate check in the fare box as he left the car, what would prevent the conductor from dropping the rebate check in the fare box and charging up the company for 2 cents for a 7-cent passenger whose fare had gone into the box?

The testimony of the city was that there would be some decrease in revenue due to the 5 cents being collected in the 7-cent area. The testimony of Mr. Frank was that his estimate of the decrease was $175,000 a year. We believe that the decrease in revenue would be very much more than this sum, and it would be multiplied many times if the short rider were to be charged 5 cents on other parts of the system where there would be just as much right for a variation from the 7-cent fare as there would be in the 7-cent Pittsburgh area.

The objections to the various schemes outlined above are operating difficulties which have not been overcome in any city in America. In no city has any such receipt method been adopted where large cars are used and many passengers handled.

All these schemes further have the disadvantage of rendering useless the fare boxes, since at least a part of the fares would either be collected from the passengers by the conductor or some token would be collected, permitting the passenger to ride for less than 7 cents, this token, after all, being the same as money.

If a 5-cent fare is to be allowed a short rider in the 7-cent area, the following inconsistencies will develop

1. The fare from Wilkinsburg to East Liberty would be 5 cents; the fare from East Liberty to Oakland would be 7 cents, unless the 5-cent limit be moved to the city side of Oakland, when some other community then would have a discrepancy

2. Moreover, if the short rider in the 7-cent area in Pittsburgh be allowed to ride for 5 cents, then the short rider in Braddock, Homestead, etc., should also have the 5-cent fare, which would very quickly mean that we would be back to the 5-cent fare everywhere excepting for the long rider in Pittsburgh, he being the only 7-cent rider, and instead of getting $2,500,000 increase in our revenue we probably would not get more than $1,000,000 After all, an analysis of the Hamilton Avenue line chart shows that a ride from Carnegie Library to the far side of Wilkinsburg would cost approximately 16 cents, and it is surely just as unfair to the short rider to charge only 7 cents for this long, expensive ride as it is to charge the short rider 7 cents for a 5-cent ride in the 7-cent area.

Seven-Cent Fare Allowed

The Public Service Commission of Massachusetts in a twenty-six page finding, dated June 29, has sanctioned a 7-cent minimum rate for the Middlesex & Boston Street Railway, with the abolition of 6-cent tickets, and has approved a 1-cent transfer charge between 7-cent and 8-cent lines, continuing the latter without change. In this decision the commission states that it is far from convinced that the company's proposed tariff plan is superior to the zone method of rate-making adhered to by many of the other large companies of the State. The decision will be reviewed in a later issue.

Buffalo Fares Before Court

Effort to Secure Six-Cent Rate in That City Now Moving Toward Settlement Through Courts

As the result of a decision handed down by Justice Herbert P. Bissell in the Supreme Court of Erie County, Buffalo, N. Y., on July 1, a referendum will be held by the voters of the city to determine whether or not the action of the City Council shall be repealed by which that body voted to suspend the operation of the franchise of the International Railway fixing a 5-cent fare and recommending to the Public Service Commission of the Second District that a 6-cent fare be fixed within the city.

APPEAL HEARD ON JULY 2

An immediate appeal was taken by the International Railway and arguments were heard in the Appellate Division at Rochester on July 2, the last day of the Appellate Court term for the summer. An early decision is expected. Henry W. Killeen, of counsel for the International, says that if the Appellate Division affirms the judgment of the lower court, the case will be carried to the State Court of Appeals. This appeal would not act as a stay on the matter of a referendum.

The 6-cent fare question in Buffalo got into the courts as the result of a friendly action started by the International Railway against the city in which the company asked for a writ of mandamus to compel the corporation counsel of the city to execute a stipulation of discontinuance of a proceeding now pending in the Supreme Court of Erie County for a review of the company's special franchise assessment for 1916. The city, under the terms of an agreement with the company at the time the 6-cent question was left with the Public Service Commission for settlement, agreed to discontinue the action. The corporation counsel of the city refused to execute the stipulation until the expiration of thirty days after the adoption of the resolution by the Council. Under a provision of the new city charter, any resolution disposing of property rights of the city, shall not become operative until after the expiration of thirty days, and it shall be reconsidered and submitted to the electors for their approval.

NO PROPERTY RIGHTS DISPOSED OF

The International Railway maintained through its counsel, Thomas Penney, vice-president, and Henry W. Killeen, of Penney, Killeen & Nye, that no property rights of the city were disposed of in the resolution and that the thirty-day clause and referendum were not effective in the case. A citizens' committee was organized with fifteen members and five lawyers were engaged to co-operate with the municipal authorities in testing the legality of the matter.

The decision of Justice Bissell is based upon the action started by the railway. The court denied the writ of mandamum asked by the company and incidently upholds the legality of the action taken by the City Council; holds that the Council's resolution is subject to a referendum and also holds that property rights were disposed of by the city when the 6-cent fare action was taken.

Before a referendum can be held, however, petitions must be filed signed by voters, representing at least 5 per cent of the entire number of votes cast for all candidates for Mayor at the last preceeding election. Petitions have been in circulation since the action was taken by the Council on June 18, and it is stated these petitions now bear more than 10,000 names, about three times the number required by law.

One important point in the court's ruling is the fact that a City Council has the right to agree by resolution to amend a franchise with a railway and can grant the Public Service Commission right and power to fix a higher rate of fare. Without this power, the court holds, the Public Service Commission is without authorization to act. The decision upholds the contention of the city law department and defeats the efforts of the International Railway to secure permission from the Public Service Commission for an order to charge a 6-cent fare immediately pending the commission's investigation and the final determination of what a just and reasonable fare should be.

PRESIDENT CONNETTE SEES POSSIBLE CHAOS

In a statement to the Mayor of Buffalo, E. G. Connette, president of the International Railway, said that if the decision of the Supreme Court of Erie County is upheld by the Appellate Division, it will warrant the directors of the International Railway in withdrawing the wage advance recently granted the company's employees until the final determination of the 6-cent fare controversy. Such action on the part of the company's directors will probably mean a strike of motormen and conductors. The situation would then revert back to the time when the Government sent a representative to Buffalo to bring the company and the City Council into agreement. Following the entrance of the Government into the matter previously the Council approved the resolution which waives the provision of the company's franchise which fixes a 5-cent fare and gives the question of determining a just and proper rate of fare to the Public Service Commission.

Arguing the appeal before the Appellate Division in Rochester on July 2, Henry W. Killeen, of counsel for the International Railway, said that if the voters of Buffalo were allowed to vote on the question of affirming the action of the City Council, the 6-cent fare would be overwhelmingly defeated. He declared that if the question was given to the voters and they decided adversely, war industry in Buffalo would be sorely crippled for a strike of the company's employees would be inevitable. Mr. Killen told the judges there were about 140 industrial plants in the city serving war ends and in these plants are 80,000 men and women who would be affected by a strike. Mr. Killeen declared that the wage increase of 8 cents an hour would mean $800,000 a year to the railway. If there is delay, such as would be occasioned by a referendum, the company could not afford to pay the $2,000 a day that the raise in wages represents.

New York City Lines Appeal

Surface Lines Included in Old Metropolitan Street Railway System Ask Fare Increase

Frank Hedley, vice-president and general manager of the New York (N. Y.) Railways, on June 27 filed with Mayor Hylan a petition requesting, on behalf of the New York Railways, that for the period of the war and one year thereafter the Public Service Commission be permitted to determine rates of fare on lines of the New York Railways regardless of existing municipal agreements and franchises.

PETITION SHOWS FINANCIAL DEPLETION

The petition filed with Mayor Hylan says in part:

"Since the organization of the New York Railways to date no dividends have been paid upon its stock, and since June 30, 1916, no interest has been paid upon its 5 per cent adjustment bonds. Efficient regulation of public utilities must provide for a fair return to the investors and adequate service to the public.

"The New York Railways has been compelled to meet increases in taxes and increases in the cost of labor and material while its revenues have been decreasing. The period has now been reached where it cannot out of earnings meet its fixed charges prior to its adjustment bonds without any return upon its adjustment bonds or stock.

"Gross receipts have been diminishing, and, based upon the trend, the estimated deficit in the interest on the first mortgage 4 per cent bonds for the year ending June 30, 1918, will be $67,254. The company, notwithstanding this deficit, will be able to pay the interest due on July 1 out of funds realized from the settlement of the former receivership of the properties. Such funds, however, will not be sufficient to pay the interest on the first mortgage bonds during the six months following June 30, 1918. The service cannot be efficiently maintained without an increase in revenue.

COMPANY AT END OF HOPE

"We are now almost at the end of our resources. The actual figures of our condition and the difficulties that confront us are open for inspection and confirmation, and we ask relief only adequate to meet our necessity."

County Clerk William F. Schneider, in a letter to Mayor Hylan and Theodore P. Shonts, president of the railway, bearing on the question of raising fares, brings up the point, that the subway loses money on the passenger who rides for a long distance, and says that under the zone system the burden would not fall upon the rest of the passengers. In the course of his letter William Schneider said:

"Everyone concedes that the wages of the railway employees must be increased, and it seems equally true that present fares will not permit such increases. It is also important to take into consideration the economic status of those who pay the employee namely, the users of the traction lines, and in justice to all approach this question with an angle of vision taking in both sides. With this in mind, I am suggesting that before deciding upon a general increase to 6 cents for all rides, would it not be advisable first to consider whether it is not feasible to work out a plan of zone charges, thereby bringing up the rides showing a loss to profit rides."

Transportation News Notes

Birmingham Fare Election on July 22.—The matter of a 6-cent fare for the Birmingham Railway, Light & Power Company, Birmingham, Ala., will be submitted to the voters at an election to be held on July 22.

Trainmen Help Auto Crusade.—C. B. Quinn, Commissioner of Fire and Police of Memphis, Tenn., is trying to enlist the co-operation of the employees of the Memphis Street Railway in an effort to stop violation of the auto law.

Would Increase Long Island City Fares.—The New York & Queens County Railway, Long Island City, N. Y., has filed with the Board of Estimate & Apportionment of New York a petition for permission to increase fares.

Wants Six-Cent Fare in Lockport.—The International Railway, Buffalo, N. Y., has filed a petition asking for the approval by the Public Service Commission for the Second District of a 6-cent fare in Lockport. The commission will grant a hearing upon the petition.

Preparing for Traffic Survey at Dayton.—Ross W. Harris, Madison, Wis., was in Dayton, Ohio, on June 28 in conference with City Manager Barlow and Director of Law W. S. McConnaughy in regard to the survey he is to make in order to determine whether the electric railways there are entitled to a higher rate of fare.

Wheeling Hearings on July 8.—Hearings will be held at Charleston on July 8 before the Public Service Commission of West Virginia on the application of the Wheeling Traction Company for permission to increase fares on the lines referred to in the item published in this paper for June 29, page 1256.

Fare Increases Suspended Pending Hearing.—The New Bedford & Onset Street Railway tariff, effective on June 30, and the East Taunton Street Railway tariff, effective on July 1, both proposing increased rates of fare, have been ordered suspended by the Public Service Commission of Massachusetts until Aug. 1, pending a hearing on July 10.

It Costs 5.55 cents for Each Montreal Passenger.—The Montreal (Que.) Tramways Commission has presented a series of statements in support of its conclusion that it will cost 5.55 cents to carry each passenger expected to ride on the lines of the Montreal Tramways in the next twelve months. The commission is expected to announce a new scale of fares shortly.

Wants to Adopt Steam Rates.—The Railway Commissioners held a hearing in Montreal, Que., on June 10 to consider the application of the Montreal & Southern Counties Railway for permission to advance the passenger and freight rates over the company's lines "in the same manner and to the same extent as has been permitted by the board in the case of steam railways."

Raleigh Would Charge Seven Cents.—The Carolina Power & Light Company, Raleigh, N. C., has filed with the Corporation Commission a petition for permission to increase cash fares in Raleigh to 7 cents with four tickets for 25 cents and half fare of 7 cents for the round trip for school children. The present fare is 5 cents with twenty-five tickets for 90 cents and round-trip school tickets for 5 cents.

Five-Cent Fare Again in Des Moines.—The Des Moines (Ia.) City Railway has won temporarily at least its fight for a straight 5-cent fare. After being compelled to restore the sale of tickets for one week the company received authority from the City Council to charge 5 cents and to refuse to sell tickets. The Council action was not unanimous, and the one dissenting member promises further action on fares.

Elmira Surburban Rates Suspended.—Public Service Commissioner Fennell gave a hearing in Elmira on June 24 upon complaint against the Elmira Water, Light & Railroad Company, Elmira, N. Y., over increased rates which the company proposes to make effective between Horseheads and Elmira and between Horseheads and Clark's Glen and Elmira Heights. The commission suspended operation of the rates until July 20 pending the investigation.

Women May Be Used in Quincy.—The Quincy (Ill.) Railway, controlled by the Illinois Traction System, contemplates using women in the train service because of its inability to secure sufficient men to fill the regular schedule. The company operates twenty-two motor cars. It is proposed to use women only as conductors. A number of applications from women for these positions are now being considered. The same rate of wages will be paid to women as to the men.

Key Route Skip Stops on Survey Basis.—The San Francisco-Oakland Terminal Railways, Oakland, Cal., in introducing the skip stop on its city lines has done so in accordance with careful traffic surveys. Ordinarily this works out to a stop every other block or eight to the mile. The reason for the change and its coming was discussed in *Key System News* and by printed notices in cars. The public has made very little complaint. Various revisions in schedules are in prospect as the result of the skip stop.

Colorado Increase Allowed. — The Public Utilities Commission of Colorado has authorized the Denver & South Platte Railway, Denver, Col., to increase the fare between Englewood and Littleton from 5 cents to 10 cents. Englewood patrons may ride to Prescott, which is half-way between the towns, for 5 cents. Another 5-cent fare will be collected between Prescott and Littleton. Commutation fare books between Englewood and Littleton for twenty-five single fares for $1.50, with a ninety-day limit, will be issued.

Strict Jitney Regulatory Measure.—Jitneys running on the same streets with electric railway cars must cover the same distance each trip as do the electric cars, according to the jitney ordinance read for a second time by the Council of Sioux City, Iowa, during the week ended June 8. Over the protest of Mayor Short, who claimed that the jitney owners' bond was to be fixed at $3,000, the Council fixed the bond at $5,000. The meaasure was to come up for final passage within a few days. The indications were that it would be passed.

Rate Advance at Byllesby Properties.—Since Sept. 1, 1917, increased rates for utility service have become effective at 297 communities served by the following properties managed by H. M. Byllesby & Company: Fort Smith Light & Traction Company, Mobile Electric Company, Northern States Power Company, Oklahoma Gas & Electric Company, Ottumwa Railway & Light Company, Puget Sound Gas Company, San Diego Consolidated Gas & Electric Company, Tacoma Gas Company and the Western States Gas & Electric Company.

Seeking a Middle Ground for the Jitneys.—The committee recently appointed by Mayor Hansen of Seattle, Wash., to devise a plan for municipal regulation of jitney transportation in Seattle has held its initial meeting. It is intimated by the committee that city regulation would not only result in solving the transportation problem of the city, but might so change conditions that the jitney business would be more profitable for its operators. It is expected that the amount required by casualty companies in payment for bonds may be reduced.

Wants to Increase Suburban Fares.—The Alabama City, Gadsden & Attalla Railway, Gadsden, Ala., has filed a petition with the Public Service Commission of Alabama for authority to increase its rate between Gadsden and Attalla from 10 cents to 15 cents. The petition also asks authority to increase the rate between Gadsden and Alabama City from 5 cents to 7½ cents. The company is not asking at this time for an increase of its rates within the city limits of the three towns, but directs attention to the fact that the increase of 5-cent fares to 6 cents is becoming general.

North Carolina Fare Increase Allowed.—The Corporation Commission of North Carolina has granted the request of the Tide Water Power Company, Wilmington, N. C., to increase fares. The city fares have been increased from 5 cents to 7 cents. The gas rate has been increased from $1.35 to $1.65 net per 1000 cu.ft. The round-trip fare from Wilmington to Wrightsville Beach has been increased from 35 cents to 40 cents. The application of the company was noted in this paper for June 1, page 1074.

State-Wide Campaign in South Carolina.—The principal electric railway companies of South Carolina have undertaken a joint campaign of information on the need for increased revenue and modification of franchise restrictions as a result of the increased operating costs. The regulation of fares in South Carolina is a municipal function. The campaign is under the direction of Glenn Marston, New York. It is planned to ask for a joint conference between city officials and public utility executives for the discussion of utility problems and their remedies.

Rate Raise for California Company.—The Central California Traction Company, San Francisco, Cal., has been authorized by the Railroad Commission of California to raise its rates to a level with those ordered for the government-operated carriers. This amounts to 10 per cent on passenger fares and 25 per cent on freight rates. The company was the first of the interurbans in the State of California to apply for rate equality with the government railroads. The San Francisco-Oakland Terminal Railways applied for higher fares before the government rate policy was announced.

West Virginia Interurban Would Increase Fares.—The Charleston, (W. Va.) Interurban Railway has filed application with the State Public Service Commission, in which the company asks to be allowed to increase rates on the Cabin Creek and St. Albans lines. On the Cabin Creek branch, from Charleston to Dana, the company wants to increase rates from 5 cents to 10 cents; on the line running from Charleston to Cabin Creek Junction, from 30 cents to 35 cents. The company wants to increase rates on the St. Albans line, from Charleston to Stop 9, from 5 cents to 10 cents, and from Charleston to St. Albans from 20 cents to 25 cents.

Mayor Takes Broad Attitude on Fares.—Mayor George S. Karb of Columbus, Ohio, is not in sympathy with members of the Council who are opposing a temporary increase in the rate of the fare in order to tide the Columbus Railway, Power & Light Company over until some kind of a new contract is agreed upon for the future. In a letter written to that body, for consideration at its meeting on June 28, the Mayor took the broad view that nothing should be allowed to restrict activities at this time and that special thought should be given to the convenience of workmen in reaching the shops, so that production of war essentials shall not suffer.

Boston & Worcester Presents Its Case.—Pleading that recent increases in expenses, including wages, have made absolutely necessary further increases in fares, officials of the Boston & Worcester Street Railway appeared before the Commission of Massachusetts on June 25 and asked that body to approve a new fare schedule making the basis of fare 2½ cents a mile, an increase of 25 per cent over present fares. It is intended, however, to retain the present fare of 6 cents for single-fare limits. One of the reasons advanced by the company for immediate action is that its employees have asked for an increase in wages, to make their pay equal to that of employees of the Worcester and Springfield systems, recently established by Henry B. Endicott as noted in the ELECTRIC RAILWAY JOURNAL for June 22, page 1202.

One-Man Cars for Sheboygan.—The Railroad Commission of Wisconsin has authorized the Eastern Wisconsin Electric Company to operate the cars of the city lines at Sheboygan, Wis., with one man. The hearing of the application of the company was held on May 17. Testimony was presented showing that the net earnings of the city lines had fallen off 54 per cent in the last year. The equipment to be used for the one-man operation is the regular equipment of the company, which is suitable because of the light riding. In discussing the question of steam railroad crossings, the commission stated that a good view of approaching trains could be had by the motorman at all crossings except one if the car was stopped at a reasonable distance from the tracks. The one exception is at the crossing immediately north of the passenger station. The company signified its intention of employing a crossing flagman at this point.

Another Move in Jersey Regulation Case.—Chancellor Walker of the Court of Errors and Appeals of New Jersey has allowed an application made by Arthur F. Egner for a writ of error, carrying the recent decision of the Court of Errors and Appeals in the Atlantic Coast Electric Railway and Bradley Beach case to the United States Supreme Court. The writ was then filed in the United States Court. This is the case in which the Errors Court upheld the power of the Board of Public Utility Commissioners to abrogate franchise contracts. It involved an order requiring transfers to be issued by the railway. The company contended that was in effect a reduction of fares. The State Supreme Court upheld the inviolability of the franchise contract, but the ruling was reversed by the Court of Errors and Appeals. The case was referred to in the ELECTRIC RAILWAY JOURNAL for June 22, page 1208.

Public Willing to Pay the Price.—Mayor Hylan and Comptroller Craig of New York City and Borough President Connolly of Queens discussed the case of the New York & North Shore Traction Company for two hours recently before a crowd that packed the court room in Flushing, Long Island. The company has asked the city to allow it to charge 7 cents instead of 5 cents on its cars between Flushing and Whitestone and Flushing, Bayside and Little Neck. The purpose of the meeting in Flushing was to hear whether the public was willing to pay 7 cents or preferred to have the line abandoned. At the close of the meeting, Mayor Hylan put the question to a vote, and those present voted unanimously to increase the fare to 7 cents. Mr. Connolly explained that the reason the application of the company was before the Board of Estimate was that the Court of Appeals in the so-called Rochester case had ruled that the Public Service Commission had no right to grant an increase of fare and that an increase could only be obtained by a modification of a franchise by the Board of Estimate.

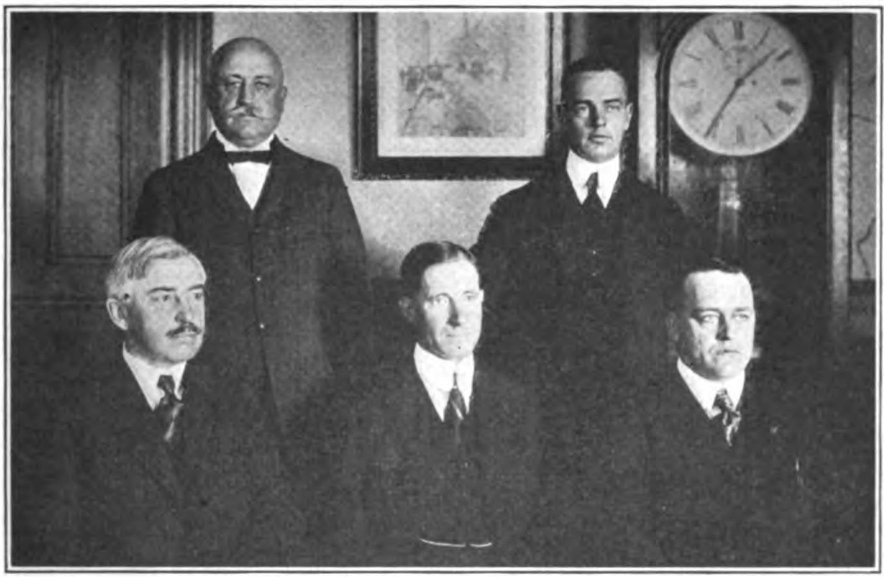
Joint I. T. S.-New York Central Rates.—Establishment of joint rates from the Illinois Traction System to all points on the New York Central Lines is practically certain to follow a temporary report issued by the examiner for the Interstate Commerce Commission who has been hearing the merits of the case. Should the commission's final order follow the recommendations of its examiner the Illinois Traction System will be in position to quote through rates to any point on the New York Central Lines. This will mean that elevators located on the Illinois Traction System and the many other industries in the company's territory will be given an outlet to the Eastern trade territory which they have not hitherto enjoyed, via Illinois Traction and the Big Four Railway. The merits of the case were largely based upon the suit instituted against the Big Four Railway jointly by the Illinois Traction System and the Lourie Manufacturing Company, Springfield, Ill., whose factory is located at Fetzer, Ill., a suburb of Springfield. The order of the Interstate Commerce Commission favored the establishment of joint rates in this particular case and efforts were then made by the Illinois Traction System, with the assistance of the Chamber of Commerce of Springfield, to broaden the order to include joint rates from all points.

Boston Elevated Trustees Organize

Careers of Men Who Have Taken Over Boston Elevated Railway Reviewed Briefly

The trustees appointed by Governor McCall of Massachusetts to manage the Boston (Mass.) Elevated Railway under the recent state control act assembled on July 1 at the company's offices for organization and at once took over the administration of the road's affairs. Former Lieut.-Gov. Louis A. Frothingham was elected chairman of the board and Stanley R. Miller was elected secretary. The other members of the board are William M. Butler, John F. Stevens and Galen M. Stone. The trustees voted to continue in office for the present all the officers and employees of the company, including President M. C. Brush.

The trustees were in session about two hours and a half. It is understood that much of their time was devoted to matters requiring immediate attention, such as the preparation of the new fare schedule which must be promulgated within sixty days and various labor matters which are to be adjusted with the employees.



BOSTON ELEVATED TRUSTEES
Front row, seated, left to right—William M. Butler, L. A. Frothingham (chairman), John F. Stevens
Back row, standing, left to right—Galen L. Stone, Stanley R. Miller

The personnel of the board is of much interest. Chairman Frothingham, former Lieutenant-Governor of Massachusetts, is a lawyer by profession. He is a native of Jamaica Plain, forty-six years of age, and was educated at Harvard College and Harvard Law School, graduating from the latter in 1896. For a short time he was private secretary to Congressman W. C. Lovering, and in 1898 was assistant attorney for the Metropolitan Park Commission. In 1901 he was elected to the Massachusetts House of Representatives, and he served four years, the last two of which he was speaker. He was the Republican candidate for Mayor of Boston in 1905. From 1908 in 1911 he served as Lieutenant-Governor, and in the last year ran for Governor, but was defeated. He is an overseer of Harvard College and is president of the Blackstone Savings Bank.

Galen L. Stone is a member of the banking firm of Hayden, Stone & Company, Boston. He is a director of the Boston Elevated Railway, a member of the executive committee of the Massachusetts Electric Companies, and is a director of numerous steamship, coal, textile and industrial-chemical companies.

William Morgan Butler is president of the Boston & Worcester Street Railway. He was educated at Boston University Law School. He served in the Massachusetts House of Representatives in 1890 and 1891 and in the State Senate from 1892 to 1895, being president of the latter for the last two years. Mr. Butler is a trustee of the Massachusetts Lighting Companies and is a member of the law firm of Butler, Cox, Murchie & Bacon, Boston. He is president of the Boston & Worcester Electric Companies, a trustee of Boston University, and a director of various insurance, textile and banking organizations.

John F. Stevens is president of the Boston Central Labor Union, a member of the executive committee of the Massachusetts Committee on Public Safety, business agent and president of the Stone Cutters' Union, president of the Building Trades Union, a member of the War Efficiency Committee, and member of the Exemption Board in the Roxbury district of Boston. As an executive member of the Public Safety Committee he has been influential in strike prevention work in Massachusetts during the last fifteen months.

Stanley R. Miller was private secretary to Governor McCall, and previously his law partner. He was graduated from the Harvard Law School in 1906. For a time he was in the law office of Fish, Richardson, Herrick & Neave. Mr. Miller was active in the final shaping of the Boston Elevated act in conjunction with the Attorney-General of Massachusetts.

Governor McCall made this statement relative to his selections:

"The making up of this board has been difficult not so much from the number of applicants to select from as from the difficulty of securing the men I wished. I believe the outcome is a good board.

"Mr. Frothingham is a man who will command general respect for his fairness and purpose to do just the right thing. Mr. Stone and Mr. Butler are excellent business men, the one an eminent financier and the other a practical street railway man.

"Mr. Stevens is a representative of labor. It seems to me that when the Commonwealth was appointing a board to operate a great public utility, there should be a man who could take the viewpoint of the men who do the work. I know they will appreciate and recognize him in the work of direction. Of course, Mr. Stevens goes on as a trustee representing all interests under the law. He has done excellent work upon the public safety committee.

"Mr. Miller has been my secretary for three years. He has had much to do in connection with the Attorney-General in the final shaping of the legislation. Methodical and conscientious in the transaction of business, I do not know his superior, and he will be of great use to the board."

Henry B. Endicott said in a statement which he made public:

"May I offer a word of caution to the public? I have had occasion to study this situation. These men are not going to have an easy job—I am sure they realize it—and the public must have patience. There are not going to be any more seats in the cars next month just because these men have been appointed, nor will there be any more seats next winter. There will be just as many straphangers. It is impossible to place orders to-day that will add sufficiently to the equipment so that the public will notice any material benefit for a long time to come. It is just as well for the public to realize that at this time and to prepare to be patient.

"There isn't the slightest doubt, from my investigations, but that fares will have to be raised, and raised very materially.

"There is one thing I am sure these men will do—they will keep the public informed at all times of the exact situation. When the public realizes the situation and the necessity for the different moves I feel sure they will not criticise. It is everybody's duty to give these men all the help possible because they have a hard task ahead of them."

Personal Mention

Mr. Weatherwax Elected

Vice-President United Traction Company, Albany, Made President New York Association

H. B. Weatherwax, who was elected president of the New York Electric Railway Association at the Bluff Point convention at its June 22 meeting, entered the electric railway field from the steam railroad side, like a number of other prominent electric railway executives. He is still actively connected with many of the subsidiary corporations of the Delaware & Hudson Company outside of its electric railway enterprises, and although only thirty-six years old is vice-president and director of some seventeen of these companies. Among them are: United Traction Company of Albany and Troy, Hudson Valley Railway, Troy & New England Railroad, Plattsburg Traction Company, Chateaugay Ore & Iron Company, Champlain Transportation Company, Lake George Steamboat Company and the Fort William Henry Hotel Company. Mr. Weatherwax was born in Van Etten, N. Y., but spent his early life at Cortlandt, N. Y. His first railroad service was with the New Jersey Central Railroad in its traffic department. He left that company on June 1, 1908, to enter the traffic department of the Delaware & Hudson Company at Albany, first as special agent and then as chief clerk. In June, 1913, he was made industrial agent and a year later became vice-president of several of the subsidiary companies of the Delaware & Hudson Company. Since his entry into electric railway work Mr. Weatherwax has taken an active part in the work of the New York Electric Railway Association, and during this past year has been first vice-president of the association as well as a member of its important committee of ten on ways and means to obtain additional revenue.

H. B. WEATHERWAX

A. G. Smith, formerly of the General Electric Company, has been appointed electrical engineer of the Boston & Albany Railroad, with headquarters at Boston, Mass.

Riece Ridgely has been appointed superintendent of the Arkansas Valley Railway, Light & Power Company at Ordway, Col., succeeding H. H. Lyons, who has entered the government service.

Jacob E. Burkley, who was master mechanic of the West Virginia Traction & Electric Company, Wheeling, W. Va., for a number of years, has resigned to engage in work not connected with the railway industry.

F. M. Hamilton, formerly superintendent of the department of accident investigation of the Puget Sound Traction, Light & Power Company, Seattle, Wash., has been appointed assistant to the general superintendent of railways.

E. A. MacMillan, superintendent of the Stroudsburg, (Pa.) Traction Company, has enlisted in the Royal Engineers of the British Expeditionary Force and will proceed to England shortly to enter the officers training corps.

W. H. McAloney, Halifax, N. S., formerly superintendent of rolling stock of the Denver (Col.) Tramway, has been appointed superintendent of rolling stock of the Winnipeg (Man.) Electric Railway to succeed George Garrett, resigned.

James Robinson has been promoted to master mechanic of the West Virginia Traction & Electric Company, Wheeling, W. Va., succeeding Jacob E. Burkley. Mr. Robinson received his training in the Wheeling shops and prior to his promotion was shop foreman.

Obituary

Wilford Phillips, for seventeen years manager of the Winnipeg (Man.) Electric Railway, is dead. In March, 1890, Mr. Phillips accepted a position with the Metropolitan Railway, North Toronto, and remained with the company until July, 1892. He then accepted the position of engineer and superintendent of North Toronto Waterworks & Electric Light Company. In March, 1893, he became engineer of the Niagara Falls, Park & River Railway, and in 1896 was appointed manager of that company. In June, 1900, he resigned, and in August, 1900, he accepted the position of manager of the Winnipeg Electric Railway.

Peter E. Hurley, general manager and purchasing agent of the Trenton & Mercer County Traction Corporation, Trenton, N. J., died on June 26. Mr. Hurley was born in Monmouth County, N. J., fifty-two years ago. He worked on his father's farm for some time and then decided to strike out for himself. He went along the Jersey coast and engaged in the hack business. Later he drove a stage in the city of Trenton on what was known as Wayman's Line, carrying passengers between the City Hall and Riverview Cemetery. He next became a driver on the old horse car line, then the only one in the city, operating between the Clinton Street station and Prospect Street. When the Center Street railway was built many years ago, Mr. Hurley was promoted to the position of superintendent and later was advanced to general manager. When the present interests took charge of the Trenton & Mercer County Traction Corporation Mr. Hurley continued with the company for several months, but resigned owing to ill health. He next entered the contracting business, but two years later returned to the company as general manager. All Trenton knew him as "Pete" Hurley.

Charles B. Fairchild, who from 1889 to 1895 was one of the editors of the Street Railway Journal and later was a frequent contributor to its columns on technical subjects, died on June 28 at his home in Williamstown, Mass. Mr. Fairchild was born in Berkshire County, Mass., in 1842, and served throughout the Civil War, first for two years in the Twenty-seventh Regiment, New York Infantry, and then in the First New York Veteran Cavalry as first lieutenant. During the first battle of Bull Run he was captured and later spent eleven months in Confederate prisons at Richmond, New Orleans and Salisbury, N. C. After the war he entered and graduated from the State Normal School at Brockport, N. Y., and later became a member of the faculty. He also received the degree of A. M. from Amherst College. Later, for several years, he taught in the public schools of New York City. Mr. Fairchild became interested in railway matters through the invention of a cable railway system which was installed on Asylum Hill, Binghamton, N. Y. While with the Street Railway Journal he wrote "Street Railways: Their Construction, Operation and Maintenance," for many years the standard treatise on the subject. He was also the author of the "History of the Twenty-seventh Regiment, New York Volunteers," a work of 335 octavo pages. After leaving the Street Railway Journal, Mr. Fairchild was for a short time connected with the Chicago, (Ill.) City Railway in an advisory capacity. He also invented and developed an emergency brake for electric cars which was put on the market by the Standard Air Brake Company. His son, C. B. Fairchild, Jr., is executive assistant of the Philadelphia Rapid Transit Company.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Recent Incorporation

***Sacramento Northern Railroad, Sacramento, Cal.**—Articles of incorporation have been filed in San Francisco by the Sacramento Northern Railroad, which is to take over the Northern Electric Railroad and its subsidiary lines. Capital stock, $5,200,000. Among the directors are E. D. Sullivan, F. M. McAuliffe, E. K. Pedler and G. S. Sahlender. The company will build 5 miles of standard-gage track from the M Street bridge over the Sacramento River to a point in Yolo County.

Franchises

Sault Ste. Marie, Mich.—A special election will be held in Sault Ste. Marie on July 22 to vote on the granting of a thirty-year franchise to the St. Mary's Traction Company.

Roanoke, Va.—The Virginia Railway & Power Company has received a franchise from the City Council of Roanoke to construct a line on York Street, between Boush and Granby Streets.

Track and Roadway

Anniston & Camp McClellan Transportation Company, Anniston, Ala.—Definite plans have been made for the construction of this company's proposed line from Anniston to Camp McClellan and it is expected that operation of the line will begin about Nov. 1. L. L. Crump, Anniston, secretary. [June 8, '18.]

Municipal Railway of San Francisco, San Francisco, Cal.—The construction of the proposed extension of the Municipal Railway from Church Street to the new government dry dock at Hunter's Point will cost approximately $613,618, according to figures compiled by M. M. O'Shaughnessy, city engineer, at the request of the public utilities committee of the Board of Supervisors. Only a tentative outline for the construction of this extension is at present before the committee. It contemplates the use of certain United Railroad tracks and the construction of private municipal line tracks from Revere and Hawes Streets to Alvord and Fairfax Streets.

Savannah (Ga.) Electric Company.—The right-of-way has been secured for the entire length of the proposed 5-mile extension to be built by the Savannah Electric Company to Port Wentworth, and it is expected that the line will be in operation some time in August.

Caldwell (Idaho) Traction Company.—Electrification of the Wilder line from Caldwell to Wilder, a distance of 12 miles, will be completed within six weeks by the Caldwell Traction Company. The work will cost about $40,000. The line was leased from the Oregon Short Line Railroad.

Gary (Ind.) Street Railway.—The Gary Street Railway has under consideration the construction of an extension on Buchanan Street from Fifth Avenue to the bridge connecting with the tracks already installed by the American Sheet & Tin Plate Company to its plant. The cost to the Gary Street Railway is estimated at $125,000.

Des Moines (Ia.) City Railway.—Patrons of the Des Moines City Railway have petitioned for the abandonment of the double track on West Nineteenth Street and running cars one way on Nineteenth Street and the construction of new track on Twentieth Street for the return trip.

***Columbus, Kan.**—Members of the commercial clubs of Pittsburg, Miami, Picher, Treece and Columbus recently met at Columbus and revived the subject of an interurban line to connect with the Joplin & Pittsburg Railway in Columbus and to extend through the principal mining towns of the Kansas-Oklahoma lead and zinc field and to Miami. A committee was appointed to go over the possibilities of building a line and ascertain the probable cost of the project and also to learn about how much money would be subscribed to stock of the company by each of the towns which would be tapped by the proposed line.

***Indian Head, Md.**—A project is now under way to connect Indian Head, Md., with Washington, D. C., by an electric railway. This will either be built all the way from Washington to Indian Head or from White Plains, Md., to Indian Head, using the Pennsylvania Railroad from Washington to White Plains. Civil Engineer Smith, bureau of yards and docks, Navy Department, 1319 F. Street, N. W., Washington, D. C., has charge of the plans being drawn and they are now waiting an appropriation from Congress to build this road.

Bay State Street Railway, Boston, Mass.—Judge Dodge in the United States District Court recently authorized Receiver Donham of the Bay State Street Railway to borrow $82,000 from the United States Shipping Board Emergency Fleet Corporation, to be used to provide necessary extensions and improvements for the transportation of employees engaged at the Fore River Shipbuilding plant.

Southwest Missouri Railroad, Webb City, Mo.—An 18-mile extension will be built by the Southwest Missouri Railroad from Picher to Miami, to cost about $150,000.

Interborough Rapid Transit Company, New York, N. Y.—Operation was begun on July 1 by the Interborough Rapid Transit Company on its Seventh Avenue subway line from Times Square south to the Battery on the main line and by shuttle from Chambers Street to Wall and William Streets. Operation on the Lexington Avenue line will be begun in about a month. The opening of the Seventh Avenue line is referred to elsewhere in this issue.

Philadelphia, Pa.—Mayor Smith has signed a resolution recently passed by the City Councils, authorizing the cancellation of four subway contracts in Broad, Arch and Locust Streets, which are held by the Keystone State Construction Company. The Mayor, city solicitor and Director of City Transit will make the financial arrangement with the company for reimbursing the contractors for their expense in preparing for completion.

Levis County Railway, Levis, Que.—It is reported that the Levis County Railway has awarded a contract for 200 tons of 60-lb. steel rails and is in the market for 16,000 ties, 70 kegs of track bolts, 300 kegs of track spikes and 2500 continuous rail joints.

Power Houses and Substations

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—Work has been begun by the St. Joseph Railway, Light, Heat & Power Company on the construction of a new substation on Felix Street, between Second and Main Streets, to cost about $4,000.

Interborough Rapid Transit Company, New York, N. Y.—The proposed extensions and improvements to be made by the Interborough Rapid Transit Company, to provide for which a bond issue for $37,700,000 is being arranged, include extensions in the power plants, electric substations, and transmission lines of the company, also improvements in existing electrical apparatus, to cost about $2,391,000; improvements in electric interlocking and other signal apparatus, $3,371,000; electrical machinery and equipment for substations, equipment for electric transmission and distributing systems, $7,886,000.

Southern Pennsylvania Traction Company, Chester, Pa.—The contract for constructing a second track on the Chester Pike from Darby to Eddystone, awarded to MacArthur Brothers, New York, by the United States Shipping Board, includes the erection of a new power house.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Production of Rails in the United States During 1917

Consumption by Electric Lines 200,000 Tons—Supply Expected to Be Reduced This Year

An analysis of the statistics of rail production in 1917, made by the American Steel & Iron Institute, and embodied in its special statistical bulletin No. 2, bearing date of June 10, indicates that the supply of rails for replacement purposes during the year was above normal. The total production reported was 2,944,161 gross tons or the largest amount since 1913. Of the total, 308,258 tons were light rails, under 50 lb. a yard, while 91,674 tons were girders and high T-rails. Exports were a trifle in excess of 500,000 tons.

The consumption by electric lines, including girder rails, etc., was in the neighborhood of 200,000 tons. The appended tables furnish the details:

TABLE I—PRODUCTION OF RAILS, SHOWING INCREASE BY PROCESSES, 1916-1917

Kinds	1916	Per Cent.	1917	Per Cent.	Increase	Per Cent
Open-hearth	2,269,600	79.51	2,292,197	77.86	22,597	9.95
Bessemer	440,092	15.42	533,325	18.11	93,233	21.18
All other	144,826	5.07	118,639	4.03	*26,187	*18.08
Total	2,854,518	100.00	2,944,161	100.00	89,643	3.14

* Decrease.

TABLE II—PRODUCTION OF RAILS BY WEIGHT PER YARD, 1902-1917

Years	Under 45 Lb.	45 and Less than 85	85 and Less than 100	100 Pounds and Over	Total Gross Tons
1902	261,887	2,040 884	645,162		2,947,933
1903	221,262	1,603.088	1,168,127		2,992,477
1904	291,883	1,320.677	672,151		2,284,711
1905	228,252	1,601,624	1,546,053		3,375,929
1906	284,612	1,749.650	1,943,625		3,977,887
1907	295,838	1,569.985	1,767,831		3,633,654
1908	183,869	687,632	1,049,514		1,921,015
1909	255,726	1,024,856	1,743,263		3,023,845
1910	260,709	1,275,339	2,099,983		3,636,031
1911	218,758	1,067,696	1,536,336		2,822,790
1912	248,672	1,118,592	1,960,651		3,327,915
1913	*270,405	†967,313	2,265,062		3,502,780
1914	*238,423	†309,865	868,104	528,703	1,945,095
1915	*254,101	†518,291	742,816	688,995	2,204,203
1916	*295,535	†566,791	1,225,341	766,851	2,854,518
1917	*308,258	†882,673	989,704	763,526	2,944,161

* Includes rails under 50 lb. † Includes 50 lb. and less than 85 lb.

TABLE III—PRODUCTION OF ALLOY-TREATED STEEL RAILS, 1917

Alloys	Total Production	Production by Open-Hearth Process	Production by Weight per Yard: 50 Lb. to 84 Lb.	85 Lb. to 99 Lb.	100 Lb. and Over
Titanium	15,273	15,273	335	6,671	8,267
Manganese	1,262	1,262	...	....	1,262
Total	16,535	16,535	335	6,671	9,529

Girder and high T-rails for electric and street railways are included in the figures given in Table I. For recent years the tonnage was as follows: 1912, 174,004; 1913, 195,659; 1914, 136,889; 1915, 133,965; 1916, 127,410; 1917, 91,674 gross tons. The total production of rails as given in Table I includes, in addition to new rails rolled during the year, rails rerolled from defective rails and from old rails. In 1917 the open hearth and Bessemer rails of this description totaled 9007 tons, rolled from old rails, 118,639 tons, making a total of 127,646 tons.

Effect of Steel Order on Stock Accumulation

Necessity of Shoving Orders of War Nature Ahead Affords No Opportunity for Replacing Goods

Now that it is impossible to obtain steel except where the goods are to be used for war work of some nature, a number of problems are arising that require a quick answer. According to a strict interpretation of the ruling, a manufacturer must show a bona fide war order before he can obtain a priority for steel shipment. Priority orders, however, constitute 100 per cent of steel production. Steel will not be shipped, therefore, for the manufacture of stock parts.

To carry this one step further, a manufacturer buying from a fabricator of parts cannot buy parts except for war work. If such be the condition, the manufacture for stock of goods involving steel is forbidden automatically. Such a condition would, of course, defeat the purpose of the government in many instances. In these cases business men have suggested that a remedy will soon be found and applied. Generally speaking, however, factories are filled up ahead of capacity and consequently will be able to place orders for steel coincidently with receipt of order for finished products.

Price Increases on Railway Accessories and Supplies

Cost of Production and Scarcity of Material and Freight Advance the Primary Causes

Prices in very many lines of electric railway equipment and accessories continue to be revised on higher levels. Material, freight and greater production costs are the primary causes of the new quotations. The manufacturer of a self-lubricating trolley wheel, who has been advancing his prices from time to time, says another increase of at least 10 per cent is almost a certainty in a short while. This manufacturer finds something of a difference between the buying cost of copper and brass and the figures usually quoted for publication: it is much higher. Of course, there is a conceded difference—marked at times—between a casual inquiry for a quotation and when the metals must be had. Nearly every bona-fide buyer has the same experience in a seller's market. On an inquiry for a price on some material it was stated a quotation could not be made before the goods were secured. This now is general practice.

Fabrikoid, extensively used for railway car upholstery—seatings, curtains, etc.—was marked up 10 per cent on June 10. Another 10 per cent advance is expected almost any time by the manufacturers' representatives in this field. A prominent manufacturer of plush for car seatings is now revising his prices on a higher plane, which will be announced shortly. On all other material for seatings and curtains produced by this manufacturer, all prices were withdrawn last week.

An increase of 10 per cent is due to arrive on one well-known make of brushholders in the near future, owing largely to frequent increases in manufacturing material.

Car ventilators of a certain type, which have had the selling price revised but little in the past year, are about due for a raise. The manufacturer has retained his old list up to the present time because the last production had not been exhausted when the jump in prices on almost everything in the electric railway line came along. He has been notified already that the cost of one part of the device will be from 40 to 50 per cent higher than before and as a matter of fact it has been estimated that the next production will exceed the former lot in cost by fully 40 per cent. As this increase cannot be wholly absorbed the price must of necessity advance. This advance is expected to be 10 to 15 per cent.

An inquiry last week for a lot of No. 516 double-cotton magnet wire, listed at 39 cents a pound, was answered by a manufacturer this week with a quotation of 45.30 cents a pound, an advance of about 15 cents a pound over list.

Transmission cable, on account of the rising cost of lead, will be marked up from 5 to 10 per cent, going into effect immediately. About a 5 per cent advance was made on rubber-covered wire on June 22 on sizes from No. 14 up to No. 0000. An increase of 3 per cent on crossarms went into effect on June 25.

With the government's restrictive order on the importation of asphalt from Trinidad and Venezuela, no increase in price has occurred, but deliveries are later. Turpentine, used in paints, has been steadily rising in price for several weeks. It is now quoted at 75 cents a gallon, a jump of more than 30 cents in three months.

Reports from Chicago are to the effect that an increase in price on pole-line hardware can be expected shortly although no estimate was made as to the extent of this advance.

Railway Market Still Restricted

Purchasing Agents of Prominent Road Are Directed to Suspend Buying During Summer Months

Electric railways have not been placing orders for needed rolling stock, equipment or accessories in any but a restricted sense for some time. At present they have refrained from buying for their fall requirements beyond the absolute maintenance of their systems or the necessary replacements. Various reasons are ascribed for this curtailment, chief of which, of course, is lack of income and inability to market their securities in order to obtain sufficient working capital.

As a concrete instance of this condition it may be stated that a large Eastern traction system, operating several interurban lines of importance, notified its local purchasing agents that under no circumstances is any material or equipment to be bought for the next sixty days. This period covers the months of July and August. Just why this order was made has not been explained.

Traction Companies Running Behind on Accounts

Supply Concerns Say Bills Are Not Met Promptly—Settlements Deferred—Credits Weakened

A few weeks ago the credit standing and buying power of traction roads were referred to favorably by the ELECTRIC RAILWAY JOURNAL. The information was authentic and obtained from the most conservative concerns in the equipment and supply field. For one reason or another, rather difficult to explain, a change has occurred since then. The accounts of electric railways are now reported as not being settled so promptly. Normally bills were discounted, 2 off ten days, and rarely were more than thirty days required. In many instances accounts are allowed to run sixty and ninety days and sometimes even six months at the present time.

Firms in the supply lines not heavily capitalized are feeling the pinch more keenly than the stronger financed companies, though complaints of deferred payments of bills are general. Concerns which formerly seldom sent out a dozen letters a year asking for remittances to cover current bills, are now obliged to forward reminders monthly. The returns are said to be far from satisfactory.

Where concerns are running behind in their collections additional capital is needed to finance their business, with credits being sharply curtailed besides. One company in this position is of the opinion that with the advance of material and the slow payment of bills there is but one course to pursue. The additional cost cannot be entirely absorbed, but the burden must eventually fall on the purchaser. In other words, the buyer of equipment, supplies, etc., it is stated, will have the charges increased by the sellers in self-defense to make up the deficit, and selling terms will be promptly enforced.

Price of Copper Raised by War Industries Board

Advance to 26 Cents a Pound Granted—Became Effective July 2—Producers' Data Convincing

Contrary to expectation, a new price of 26 cents a pound for copper was fixed by the War Industries Board on Tuesday, taking effect immediately and to remain in force until Aug. 15. This is an advance of 2½ cents a pound from the former price of 23½ cents a pound. An increase of 5 cents a pound was asked by the producers to meet the extra costs of labor, freight and every phase of production where increased expenses due to war conditions have made themselves felt.

An impression prevailed that if a new price were decided upon by the board it would not take effect before the time for a revision of prices, Aug. 1. But the producers were permitted to receive the benefit of the increase by putting the new schedule into effect at once. When Aug. 1 arrives the prices as determined upon on Tuesday again will be taken up for consideration, to ascertain whether the compromise in price is higher than is reasonable or too low to meet expenses and include a fair profit.

Rolling Stock

Wilmington (Del.) City Railway has ordered twenty-two new double-truck passenger cars from the J. G. Brill Company, Philadelphia, Pa.

Empire State Railway Corporation, Syracuse, N. Y., has purchased a No. 3 snowplow from the Russell Snow Plow Company, via Wendell & MacDuffie, for fall delivery.

International Railway, Buffalo, N. Y., has ordered four snow broom sweeper equipments from the Russell Snow Plow Company, through Wendell & MacDuffie, to be attached to its passenger cars.

United Railways & Electric Company, Baltimore, Md., which is in the market for fifty new double-truck cars of the standard type, has specified that all bids must be placed on file July 5 (yesterday) at noon.

Pacific Electric Railway, Los Angeles, Cal., has placed an order for fifteen additional one-man cars with the American Car Company, St. Louis, Mo. This company had previously bought twenty cars of the same type, as mentioned in the ELECTRIC RAILWAY JOURNAL of June 15, making thirty-five in all.

Tampa (Fla.) Electric Company is reported to have received eight new Birney-type cars built by the St. Louis Car Company. Before being placed in operation on the company's Ybor City—West Tampa line they will be equipped with a compressed air device which registers transfers independent of hand power on the part of the motorman.

Charleston Consolidated Railway & Lighting Company, Charleston, S. C., furnishes the appended specifications for sixteen double-truck center entrance cars, ordered from the Cincinnati Car Company for delivery in August and referred to in last week's ELECTRIC RAILWAY JOURNAL:

Number of cars ordered	16
Date of delivery	August
Builder of car body	Cincinnati Car Co.
Type of car	Double-truck, center-entrance
Seating capacity	56
Weight (total)	56,000 lb.
Bolster centers, length	23 ft. 10 in.
Length over bumpers	41 ft.
Width over all	8 ft. 3 in.
Body	All steel
Interior trim	Cherry
Headlining	Carline finish
Roof	Arch
Air brakes	Westinghouse A. M. M.
Axles	Laclede Steel Co.
Bumpers	Rico anti-climber
Conduits and junction boxes	Duraduct
Control, type	H L D
Couplers	Tomlinson, air and electric
Curtain fixtures	Curtain Supply Co. No. 88 ring
Curtain material	Pantasote
Designation signs	Keystone
Door operating mechanism	National Pneumatic
Fenders or wheelguards	Company's standard
Gears and pinions	Nuttall
Hand brakes	Cincinnati drop handles
Heaters	Consolidated
Headlights	Crouse-Hinds S. D. P.
Journal boxes	Symington
Lightning arresters	Westinghouse
Motors, type and number	Four West. 514, inside hung
Paint, varnish or enamel	Flood & Conklin
Registers	International
Sanders	Ohio Brass
Sash fixtures	Cincinnati
Seats, style	Hale & Kilburn
Seating material	Rattan
Step treads	Feralun
Trolley catchers or retrievers	O B retrievers
Trolley base	U. S. No. 14 on motors, O B on trailers
Trolley wheels or shoes	U. S.
Trucks, type	Cincinnati
Ventilators	Automatic
Wheels (type and size)	C 1-24 in.

Trade Notes

R. P. Dryer, assistant sales manager of the Canadian Allis-Chalmers Company, Ltd., Toronto, Can., has resigned to take a position in the Pittsburgh (Pa.) office of the Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

J. R. Palmer, who had charge of the line material sales of the Ohio Brass Company, Mansfield, Ohio, for a number of years, is now in Philadelphia, Pa., where he will be engaged in naval airplane productive work.

Railway Improvement Company, New York, N. Y., advises that it has received an order for six Rico coasting recorders from W. R. Grace & Company, New York, for use by the Electric Companies Association, Lima, Peru.

Public Service Railway, Newark, N. J., has placed H-B life guards of the Consolidated Car Fender Company, through Wendell & MacDuffie, its sales representatives, on the thirty-three new cars now under construction by the Cincinnati Car Company.

Perley A. Thomas, manufacturer of cars and car materials, High Point, N. C., writes that he did not take over the car manufacturing plant of the Southern Car Company, as mentioned in a recent note in these columns, but conducts only the Perley A. Thomas Car Works.

Consolidated Car Fender Company, Providence, R. I., through Wendell & MacDuffie, general sales agents, New York, N. Y., filled an order for twenty-five H-B life guards to be installed in the equipment, now in service, of the Norfolk lines of the Virginia Railway & Power Company, Richmond, Va.

Joseph Leidenger, for many years Eastern sales manager of the Dayton Manufacturing Company, manufacturers of car trimmings at Dayton, was elected vice-president of the company at its last annual meeting. The other officers elected were: John Kirby, Jr., president; Nelson Emmons, Jr., vice-president, and H. D. Hendrick, secretary and treasurer. Mr. Leidenger is a veteran in the car trimming business, having started with Mr. Kirby in the firm of Post & Company in Cincinnati in 1882, and continuing with him when he became associated with the Dayton Manufacturing Company in 1888.

Dwight P. Robinson and **John W. Hallowell** have retired from the firm of Stone & Webster, as of July 1, and the business will be continued by the remaining partners, Charles A. Stone, Edwin S. Webster, Russell Robb and Henry G. Bradlee. Dwight P. Robinson has been with Stone & Webster since 1893. In 1908, he was elected president of the Stone & Webster Engineering Corporation, and he has been a member of the firm since 1912. John W. Hallowell has been with Stone & Webster since 1901 and a member of the firm since 1912. Since May, 1917, he has been in Washington with Mr. Hoover as a member of the United States Food Administration and expects to continue in that work for the duration of the war.

New Advertising Literature

Sprague Electric Works of the General Electric Company, New York, N. Y.: Circular describing the Sprague type SS flexible-steel conductors.

Ingersoll-Rand Company, New York, N. Y.: The following new publications are being distributed:—Form 4039, eight-page bulletin on Leyner shank and bit punch for punching out holes in bits and shanks of hollow drill steel. Form 901, four-page flyer showing the complete line of "Little David" pneumatic tools. Tables of sizes and capacities are given and illustrations show all the tools and their applications. Form 9028, eighteen-page catalog illustrating and describing equipment for sugar factory and refinery service. A separate Spanish edition of this catalog is also available for those who desire it. Form 9010, four-page catalog on the "Sergeant" ticket-canceling box. Form 901-1, single-page flyer on "Little David" caulking machine. Form 888, four-page flyer on "Little David" evaporater tube, cleaning and other labor-saving pneumatic tools. Form 876, single-page flyer on Ingersoll-Rand barometric condensing plants. Form 883A, single-page flyer on Class "FP" steam engines, horizontal center crank type with piston valves. Form 3015-1, four-page bulletin on "ER-1" portable mine car air compressors. Copies of the publications will be sent free on request.

NEW YORK METAL MARKET PRICES

	June 26	July 3
Copper, ingots, cents per lb	23½	26
Copper wirefbase, cents per lb	26½	28½
Lead, cents per lb	8	8
Nickel, cents per lb	40	40
Spelter, cents per lb	8.62½	8.87½
Tin, Chinese*, cents per lb	92	92
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	June 26	July 3
Heavy copper, cents per lb	22	22
Light copper, cents per lb	19½	19½
Red brass, cents per lb	19	19
Yellow brass, cents per lb	13	13
Lead, heavy, cents per lb	6½	6¾
Zinc, cents per lb	5¾	5¾
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	June 26	July 3
Rubber-covered wire base, New York, cents per lb	27 to 30	27 to 30
Weatherproof wire (100 lb. lots), cents per lb., New York	32.25 to 37.10	34
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35 to 35.42	35.00 to 35.42
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross tons	$62.50	$62.50
T rail, high (Shanghair), cents per lb	4½	4½
Rails, girder (grooved, cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount	80%	80%
Car window glass (single strength, first three bracketl, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste, cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.60	$1.62
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.60	$1.63
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	70	75

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* Government price.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, July 13, 1918 *Number 2*

Increased Postage Rates in Effect

NEW rates of postage on magazines became effective on July 1. These increases are material, particularly at distances of more than 300 miles from the place of publication. The obvious step would be to raise the subscription rates in distant zones to cover the added postage.

For the present, however, the publishers of the ELECTRIC RAILWAY JOURNAL have decided not to increase the subscription price, trusting that in the interests of national unity Congress will before long repeal the zone law and revert to the universal flat-rate system. The importance of such a policy is especially evident now when united action along lines of nationwide efficiency is so necessary.

Why Sell Transportation Cheapest When it Costs the Most?

THE dawn of reason in the sale of electric railway transportation may be discerned in the Bay State Street Railway's plan to charge less instead of more for off-peak riding. We wonder who it was that first conceived the idea of carrying people for less money during the rush hour. He must be quite dead by this time, for the custom dates back to the early European steam railways. Then there may have been an atom of sense in it, for anyone who has traveled fourth class in Europe will admit the possibility of making money at any rate of fare when people are put in a cattle car. In Canada and the United States, however, it is customary to give as good accommodation on the workmen's ticket as on the full-fare ticket. In the few cases where fertilizer experts or coal miners have been segregated the welkin has clanged with indignation.

Not content it seems with subsidizing the suburbanite, the electric railway has also felt obliged to hand something to the once-humble son of toil. We say "once-humble" advisedly for it is only the manual worker, whether in factory or shipyard, who has been able to outstrip the rising cost of living. There is something grossly unfair in making a $20 a week clerk pay full fare at 9 a.m. for the short ride to the business section while at 7 a.m. the $40 a week mechanic pays half as much for the usually longer ride to a factory district. We venture to prophesy that if the peak period carried an extra rate as light and power loads do, the labor organizations would force their employers to put through a staggered hour plan in double-quick time. The Bay State change is the first plunge in the right direction. May it succeed and inspire others to put fares on the basis of selling on some common-sense relation to cost.

Commutation in Direct-Current Machines in the Limelight Again

FOR a number of years that former *bête noire* of the electrical engineer, sparking and flashing at the commutators of direct-current motors and generators, has troubled neither the waking nor the sleeping hours of the manufacturer or operator of electrical machinery. There was a time, within the memory of engineers still far from old, when this difficulty threatened the further development of direct-current apparatus, and it certainly furnished a great stimulus to the progress of the rival alternating current. As soon as the theory of sparking and flashing was thoroughly understood suitable correctives were applied and the "black beast" vanished into the obscurity whence he came.

Credit for this happy consummation must be given largely to those engineers of scientific mind, who reasoned that if sparking and flashing are due to the unwillingness of an armature coil to have its current reversed as its terminal passed out from under the brush, then something must be done to force this reversal. Two means were found for this purpose and both are in use in all commutating machines to-day. One is to generate in the armature coil while it is short-circuited by the brush an electromotive force in a direction opposite to that produced by the reversal of the current. The commutating pole is the full development of this principle. The other means for improving commutation is the introduction of resistance into the circuit of the short-circuited coil. This is the primary cause of the success of the carbon brush which has done more than any other one device to bring about the present satisfactory condition at the commutator. In practically all of this progress the aim was to remove the source of the trouble and hence the trouble itself. An exception, of course, was the use of air jets at the brush tips to chill the "sparks" in the early Thomson-Houston arc generator, but this was a highly special machine, and it was successful in spite of its commutator rather than because of it.

Within a few years past the high-frequency (60-cycle) rotary converter, the high-voltage generator for heavy traction and the automatic substation, all electric railway machines, have forced attention again to commutation. The difficulties now are largely those incident to short-circuits, which impose a heavy task upon the commutating ability of a machine. At the same time they occur only occasionally. Hence it would appear to be logical to prevent the evil effects of flashovers by external means rather than radically to change the internal design so as to make it practically impossible for a machine to flash over. No doubt this could be done but results would not justify the cost and probable clumsiness of an inherently non-flashing rotary or generator for the special classes of work mentioned. Two radically new such external devices have recently come into prominence, in one of which the armature is short-circuited to prevent damage, while in the other flash barriers and arc coolers are mounted around the commutator. Both are apparently beyond the experimental stage. It will be interesting to see if either or both persist as a permanent anti-flashover device. Experience only will tell.

It Is No Time to Drift, and There Is No Time to Do So

COMMENTING upon the editorial in our issue of June 29, entitled "The Debacle or the Dawn," the *Philadelphia Ledger* agrees that "the plea of the electric railways for a generous and broad treatment of the situation is a just one." But after stating that "no general order governing rates could possibly meet the infinite variety of conditions governing electric railways in different localities," the *Ledger* concludes its remarks as follows:

"The absence of uniformity surrounding conditions under which these public utilities operate makes it more than doubtful whether a solution is going to be reached by any such hasty action by the federal government as is now advocated by the railroads."

All of which makes one think of the rhyme regarding the mother who, when asked by her daughter if she might go for a swim, naively abjured her:

"Yes, my darling daughter;
Hang your clothes on a hickory limb
But don't go near the water."

Of course there are different situations in different localities. To that very point our editorial directed specific attention. The situation cannot be met either as to wages or as to fares by any general order covering the electric railways as a whole. What we did say and still maintain is that it is perfectly proper that the War Labor Board should consider the *wage* problem of the electric railways and that it should establish bases of minimum wages *in accordance with the conditions of life in the different communities and without primary reference to the financial ability of the companies to pay.*

As a corollary of that proposition, it is suggested that the War Labor Board should take steps to aid the electric railway companies to meet the bases of wages thus established.

It is clear to anybody that if the slow-going processes of adjustment by local authorities, responsive to local prejudices based on local political aspirations, are permitted to interfere with the prompt solution of this fundamental problem, the result will be the debacle and not the dawn. In other words, what is clearly needed to save the electric railway industry from disaster is a change of venue.

Washington can deal with this situation from the point of view of national interest, and to the national government alone can the electric railways look for settlement of the problem on a natural basis.

That does not mean that Washington will not inquire into local difficulties and into local situations; it does mean that the authority from which action will proceed will be Washington and not the local governing agencies. Washington will have to subdivide its authority and act on the basis of recommendations and investigations, but what it does will be and should be in recognition of the conditions which confront the nation as a whole, rather than with reference to the trivialities of local prejudices and local politics.

We understand that the War Labor Board is to render in a few weeks its decision in the pending cases. Between now and that time it will have ample opportunity to consider its rights and prerogatives. There is no question that the War Labor Board will substantially increase the wages of the men employed by the companies whose cases have been brought specifically before the board. There is no question that this will have a very great influence on the whole situation affecting electric railways throughout the country. But if the subject is left there, it means disaster to the companies financially, and it ultimately means a series of wholesale receiverships or taking over of the electric railways by the federal government. This latter course is absolutely unnecessary and ought to be avoided at all hazards. There could be no more perfect advertisement of the failure of democratic government than that the nation should be forced to take over the electric railways because local authorities refused to permit them to earn sufficient revenues to keep in them the breath of life.

The alternative is clear: either the federal government, through the recommendation of the War Labor Board, should take such steps as will induce local authorities to make a proper adjustment of street railway charges, or it should avail itself of its implied powers to regulate the whole situation in the national interest.

If the state commissions or municipal governments were alive to their obligations, the situation would be adjusted immediately by them to permit adequate earnings. No company should be permitted to make anything out of the war, but every company should be permitted to maintain its full efficiency during the war, and there is the highest presumption that the conditions existing before the war were, in general, not unreasonable. In fact, the most superficial examination of electric railway conditions shows that for many years prior to our entry into the war, the trend was steadily against maintaining the earning power and the financial integrity of these companies.

It is no time to drift. There is no time for it. As Mr. McCarter says in his message this week: "All should recognize the full measure of the problem involved in the greatest catastrophe that has overtaken the world." Every electric railway company should bring the facts in its case, as aggressively as it knows how, to the notice of everybody concerned. Only by the most complete ventilation of the facts can the public be aroused to the situation. Once the public is aroused, local authorities will trail along according to their time-worn habit.

In the meantime, and pending a treatment of the problem fundamentally, we are justified in expecting the federal government to deal as the national interest demands with this vital problem. For the impulse to deal with it in such a spirit, we look with complete confidence to the national War Labor Board, presided over by ex-President Taft and Frank P. Walsh.

What Constitutes a Fair Rate of Return in War Time?

THE question of a proper rate of return on utility investment during war time is a live topic, and for this reason we think our readers will welcome Professor Bauer's article this week, whether or not they agree with him on all points. His primary thought is that the proper answer does not lie along the line of extremism in favor of either the stockholder or the public. On the one hand, the public has no right to insist that inadequate returns on investment shall not give rise to fare increases; on the other hand, the security holders have no right to expect that their former returns will be raised to counteract fully the now low purchasing power of money.

We imagine that much of the existing confusion is caused by the infrequent expression of the fact which most men must recognize—that the rates of return on old and on new utility investments need not be the same. It is obvious that the capital cost for new investment must depend upon the exigencies of the money market, and it is equally clear that no practicable means exists for readjusting the return on old investment in accordance with current conditions. It may be a fine theoretical idea to conceive of the real income of security holders being maintained in accordance with the changing worth of money, but such a procedure could not fairly be adopted for utility investors to the exclusion of all others. To make such a plan universal would mean a revolution of the whole investment system—an utterly impracticable proposition.

Those interested in old utility investments, however, are thoroughly justified in demanding the maintenance during war time of the rate of return judged fair in pre-war days. Where the prior investment has been determined there should not be a minute's delay in granting a fair return to all investors. The situation is complicated by the fact that so much indefiniteness exists in regard to old utility investments. Both the companies and the commissions have been at fault because of their mutual distrust. Now the prolonged bickerings should be ended. In cases of undefined investment the commissions should hasten to grant the necessary fare increases to provide for operating expenses and fixed charges. This will at least save the railways until a more equitable program is developed, based possibly at first on the average pre-war earnings but eventually, when there is opportunity to develop it, on fair appraisals of the property used and useful in the public service. Delay for appraisals now, however, would be most unjust.

As for new capital, this must be paid for, as before stated, at current market prices. Some men appear to believe that the maintenance of different rates of return upon old and new investments involves practical difficulties. Such is not the case. By the sale of new bonds at a discount, or the attachment of preferential rights to the new securities, the higher rate of return on new capital can be easily managed. The fundamental requirement now is that the net income must be sufficient to pay the fair rate of return upon the old investment and the also fair, though higher, rate upon the new. Similarly, in a period of declining interest rates, the net income must suffice to meet the rate of return judged fair when the old investment was made and in addition the fair, though lower, rate upon the new. The propriety of this fundamental principle has been recognized in New York and other partnership contracts, and it is only reasonable to expect that it will be recognized by regulatory bodies in all cases.

The public, however, does not sufficiently realize that the conditions governing the acquisition and the disbursement of railway net income are subject to change, and that therefore the net income itself must be correspondingly alterable. To educate the public to an understanding that all franchise agreements and regulatory laws must permit this is the duty of the commissions.

Preservation of Utilities a National Necessity

THIS COUNTRY is now alive to the fact that it is to be the decisive factor in the winning of the world war and its men and resources are being mobilized with astonishing results. The people in general are prepared for sacrifice. The flower of the land are readily going forth and the people are accustoming themselves to previously unheard of taxes and are generously contributing to all war funds and to the support of the government through the purchase of bonds. Money does not count as against the rightful settlement of the great conflict, but the public does not seem to realize that the preservation of the utilities, by maintaining them in a high state of physical and financial efficiency, so that they can carry on the tremendous work already intrusted to them and obtain funds for increases in plant made necessary by the war, is a national necessity of prime importance, without which no other substantial war industry can be operated to the maximum of its efficiency. Why spend billions for war work of one kind and another and neglect to provide the pennies necessary for the electric railway industry, if it is to keep the wheels of shipyards, munition works, aircraft factories and cantonments revolving? This is no time for the harboring of old-time prejudice, but all should recognize the full measure of the problem involved in the greatest catastrophe that has ever overtaken the world.

Thos. N. McCarter.

Chairman American Electric Railway Association War Board.

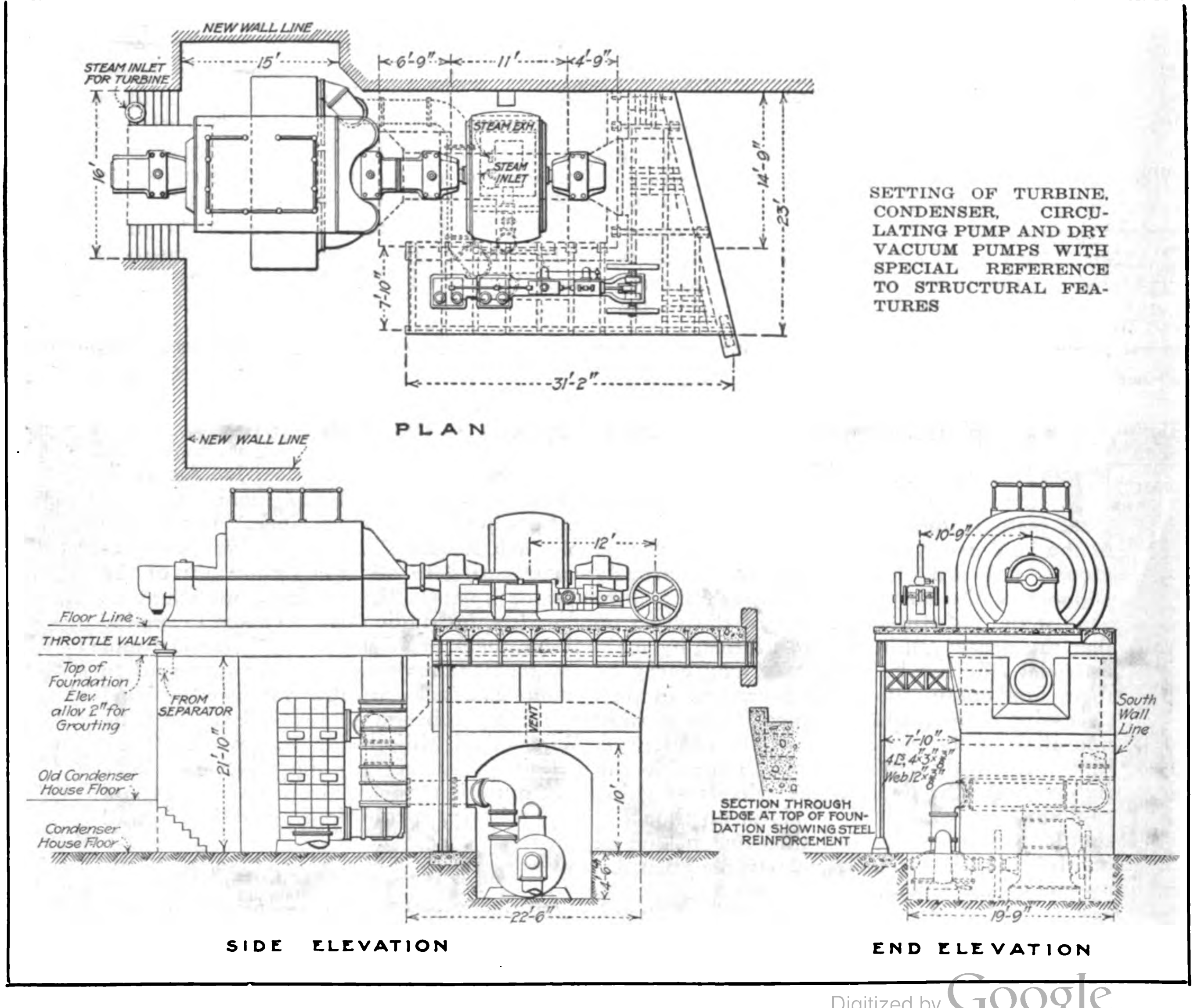
International Railway Installs Steam Turbine in Unique Location

For a Peak-Load Power Supply a 5500-Kw. Second-Hand Turbine Was Purchased and Installed on the Ledge of a Rock Under the Niagara Street Power House

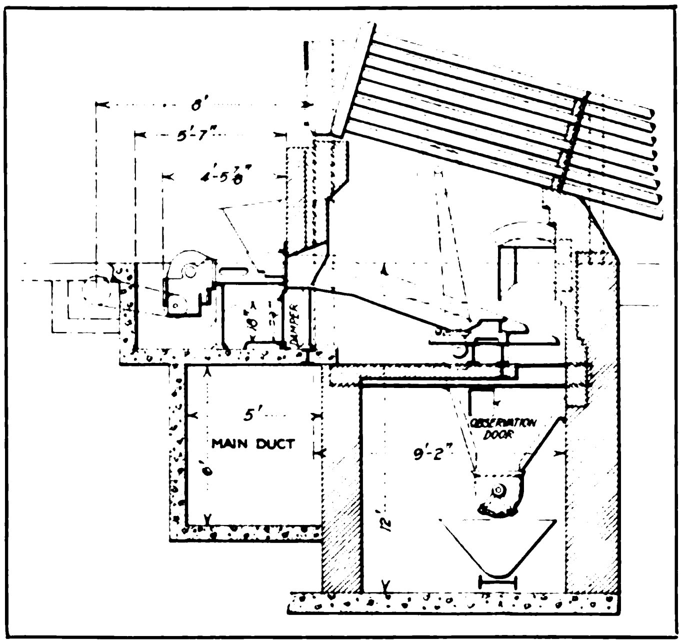
AS PART of the general power system improvements on its property, the International Railway, Buffalo, N. Y., has partly remodeled the famous old Niagara Street power house in Buffalo. A preliminary account of the changes was given in the issue of the ELECTRIC RAILWAY JOURNAL for April 14, 1917, page 683. At that time reference was made to the future addition of a steam turbine to the plant equipment. This increase in power capacity was made necessary partly by the limitation in available water power and partly by the augmented demand for power. The turbine was installed last fall and after a preliminary limbering up took its full load towards the end of November. Since that time it has been giving excellent service and supplementing the peak load carrying capacity of the storage batteries and hence keeping down the charges for excess power.

The turbine is of 5500-kw. capacity and it was purchased from the Long Island Railroad. It is a three-phase, 25-cycle, 1100-volt machine, of Westinghouse-Parsons type. It operates at the steam pressure of 150 lb. per square inch with no superheat. The turbine was bought from the railroad company complete with piping, and in its installation at Buffalo the fittings that came with the machine were utilized as far as possible.

There was no exciter with the turbine, but a second-hand machine was bought from another source and installed at the same time. For reasons to be explained the turbine unit was set deep in the rock


NEW WALL LINE
STEAM INLET FOR TURBINE
15'
6'-9"
11'
4'-9"
16'
STEAM EXH.
STEAM INLET
14'-9"
23'
7'-10"
31'-2"
PLAN
NEW WALL LINE
12'
10'-9"
Floor Line
THROTTLE VALVE
Top of Foundation Elev. allow 2" for Grouting
FROM SEPARATOR
21'-10"
VENT
10'
Old Condenser House Floor
Condenser House Floor
4'-6"
22'-6"
SECTION THROUGH LEDGE AT TOP OF FOUNDATION SHOWING STEEL REINFORCEMENT
7'-10"
4 Ls, 4"×3"×3/8"
Web 12"×3/8"
South Wall Line
19'-9"
SIDE ELEVATION
END ELEVATION

SETTING OF TURBINE, CONDENSER, CIRCULATING PUMP AND DRY VACUUM PUMPS WITH SPECIAL REFERENCE TO STRUCTURAL FEATURES



CROSS-SECTION OF BOILER SETTING SHOWING FURNACE, ASH PIT, AIR DUCT AND STOKER PIT

underlying the plant, but the exciter was placed in the old engine room.

It will be remembered that the Niagara Street power plant is situated on a rock ledge high above the Niagara River. As the river is the source of circulating water it was necessary to set the turbine and condensers at a very low level to economize power in circulating condensing water. Moreover, the capacity of the available circulating pump was limited, so that to avoid the purchase of a new pumping outfit there was an additional reason for setting the equipment at a limited elevation above the river level. When the original power plant was built a certain amount of excavation was made in the rock ledge for the purpose of accommodating pumps, etc. In the remodeling this excavation was utilized to the limit and enough additional rock was excavated to provide room for the removal of the condenser tubes. As finally arranged the turbine was set 23 ft. below the level of the old engine room floor, and the condenser house floor was placed 21 ft. below this. In addition a pit 4½-ft. deep was excavated for the circulating pump.

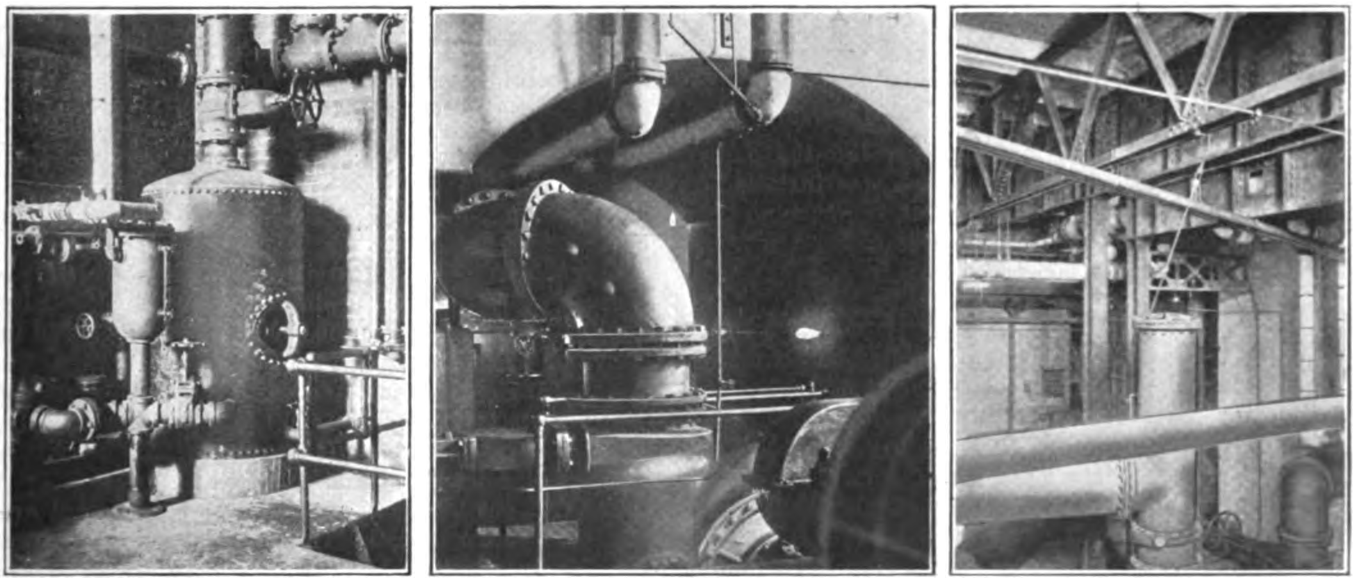
It is difficult to show the complete layout by means of drawing on account of the nature of the rock excavation. One of the accompanying illustrations shows the most important dimensions.

The turbine is supported on a concrete foundation and its floor is extended to accommodate the vacuum pump, piping, etc. The pump rests upon a floor extended out from the turbine foundation and supported at one corner on a steel column, at a second corner from the wall of the building and along one edge by a projection from the turbine foundation. Under one edge of the floor is a 16-in. I-beam, and resting on the batten projecting from the turbine wall is a 12-in. I-beam. The concrete floor and foundations were all poured at once with foundation bolts in place.

On account of space limitations it was necessary to utilize every square foot of space under the turbine for the accommodation of the circulating pump and the condenser. The condenser is of the Alberger surface type, with a centrifugal circulating pump of the same make driven by a Westinghouse "Kodak" engine. This pump with its engine are directly under the generator end of the turbine in a tunnel molded in the concrete foundation. The dry vacuum pump, already referred to as being on an extension of the turbine floor, is also of Alberger make, reciprocating type.

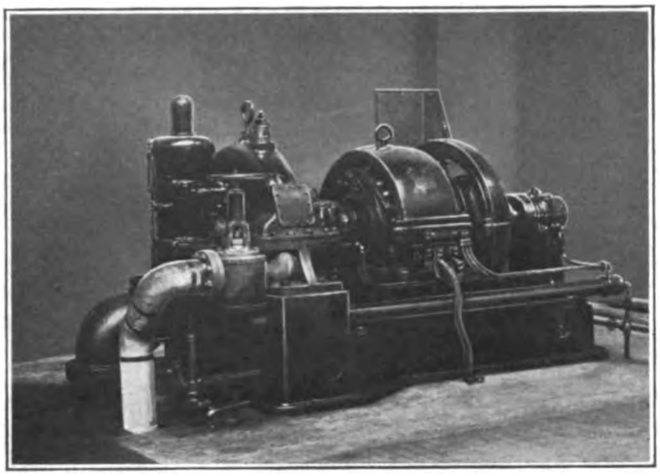
The condensate pump, located on the condenser house floor but not shown in the drawing, is of the centrifugal type and it is driven by a General Electric direct-current constant speed motor of 20-hp. capacity. This pump was purchased new.

One of the most interesting features of the plant is the oiling system in which the gravity plan is used. It comprises a storage tank of a capacity of 1000 gal., and a Turner filter of 700-gal.-per-hour capacity is connected in the oil circuit. Two small steam pumps are used for circulating the oil. The storage tank is lo-

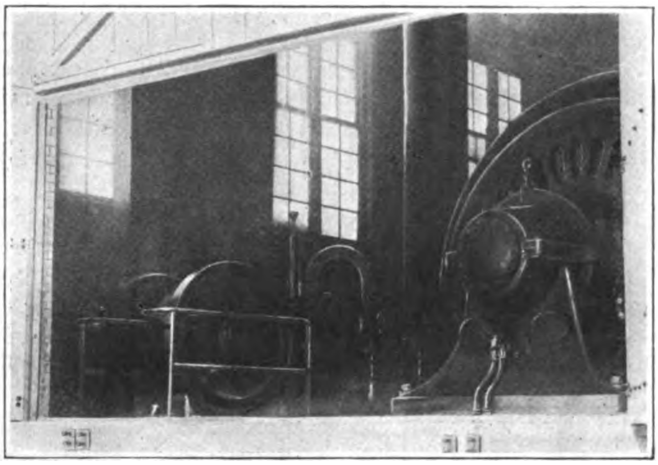


AT LEFT, DRIP TANK AND ACCESSORIES. IN MIDDLE, CONNECTION TO CIRCULATING PUMP. AT RIGHT, GIRDERS FOR SUPPORTING TURBINE AND AIR PUMPS cated on the upper level of the plant and supplies oil at 4 lb. per square inch pressure.

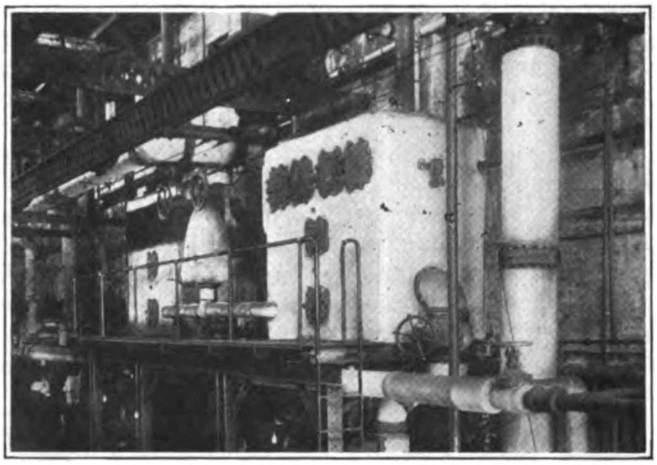
Among other equipment in the turbine room worthy of special mention is the steam separator of the Sweet type. The separator is a steel cylinder 52 in. in diameter and about 8 ft. long. It is supported on springs designed by the railway company's engineers, for the purpose of taking up expansion and contraction. The separator is hung on brackets from one of the I-beams supporting the turbine, the weight being taken on the steel springs which are 6 in. in diameter, 8 in. long and made of four turns of 1-in. stock.



STEAM-DRIVEN EXCITER PLACED IN OLD POWER HOUSE



VIEW THROUGH DOORWAY INTO TURBINE ROOM



TWIN FEED-WATER HEATER EQUIPMENT IN BOILER ROOM. (See drawing on page 47)

In connection with the separator, and to take care of the discharge from it and the pipe line, a steel drip tank 3½ ft. in diameter and about 5½ ft. long was installed under the separator. Bundy traps are used to remove the water. From this tank the water is pumped back into the condensate lines. A very convenient annunciator, consisting of a box divided into sections, with suitable lettering on the glass covers and with provision for lighting one or another of the sections as required, was installed on the wall opposite the steam end of the turbine unit. This, like many other conveniences about the plant, was of "home-made" construction.

PROVISION FOR HEATING THE FEED WATER

While the turbine was being installed improvements were being made also in the boiler room. The most important one was the installation of two Cochrane open feed heater units, each having a capacity of 4000 hp. These heaters are mounted on a framework made up of old angle-iron built-up trolley poles, thus utilizing scrap material. A section of this framework is shown in an accompanying drawing. The boiler feed pumps are located below this structure. The location of the feed heater was complicated by the fact that space in the firing aisle of the boiler room was limited and it was necessary to have room to remove boiler tubes and parts of the boiler feed pumps. The arrangement of the pair of Cochrane heaters on the steel structure is shown in the same drawing.

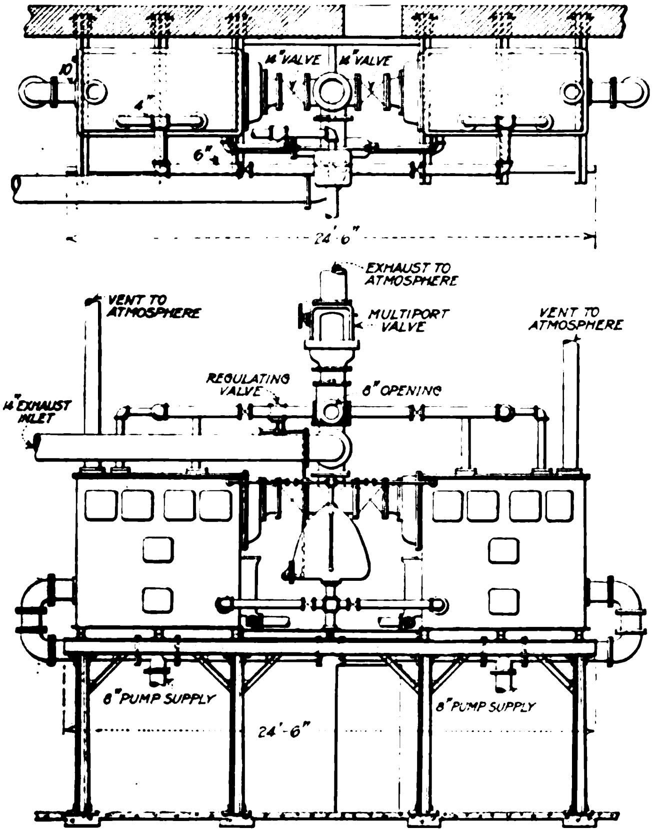
The boiler feed pumps referred to are of Worthington make, pot-valve type, duplex compound, outside packed plungers, 14 in. x 20 in. x 10 in. x 15 in., having a maximum speed of sixty-five strokes per minute. They are now running at fifty strokes.

The boiler house contains nineteen Babcock & Wilcox boilers, formerly equipped with Roney stokers. Later fifteen of these stokers were replaced with Riley underfeed stokers in order to permit of forcing the boilers. The remaining four boilers are now entirely laid up. The combined capacity of the newly equipped boilers is 3450 hp. and they can be forced to 250 per cent of rating. The warm air taken from the boiler room is forced into the furnaces through a 5-ft. x 6-ft. conduit in the floor directly in front of the boiler setting as shown in cross-section in one of the figures. Soot pockets were also placed under the boilers.

The air supply is from two Sturtevant multivane fans driven by steam turbines of 113 b.hp. capacity. Each fan has a rating of 55,000 ft. per minute at 6 in. of water pressure, if needed, the usual value being 4 to 5 in. The fans are 44 in. in diameter and the speed is from 1400 to 1500 r.p.m., being controlled by means of an automatic regulator which in turn is controlled by the steam pressure.

The changes in the Niagara Street power plant are, of course, rather special. The material source of power for the International Railway is the water power in which the neighborhood abounds. However, the restrictions upon the use of this water power imposed by the government are such as to make necessary the use of steam power, and this condition will presumably continue for many years to come. In addition the water power is necessarily sold on a "firm power," or twenty-four-hours-per-day basis, very high charges being made for excess power. This makes it economical to use a steam plant which is less economical than one designed to furnish the entire power supply for an electric railway.

Only occasionally would it be necessary to install a steam turbine under space restrictions as occurred in the present case. However, there are general lessons to be learned from such special cases, particularly when the exigencies of war time require unusual ingenuity in accommodating material in hand to the time and space requirements. Special credit is due G. W. Dunlap, superintendent of power of the company, for the design and carrying out of the layout of this extension to the plant. A part of the output of this plant will be used for the operation of the new high-speed line between Buffalo and Niagara Falls.



DOUBLE-UNIT ARRANGEMENT OF FEED WATER HEATERS AND PURIFIERS MOUNTED ON FRAMEWORK SUPPORTED BY OLD TROLLEY POLES

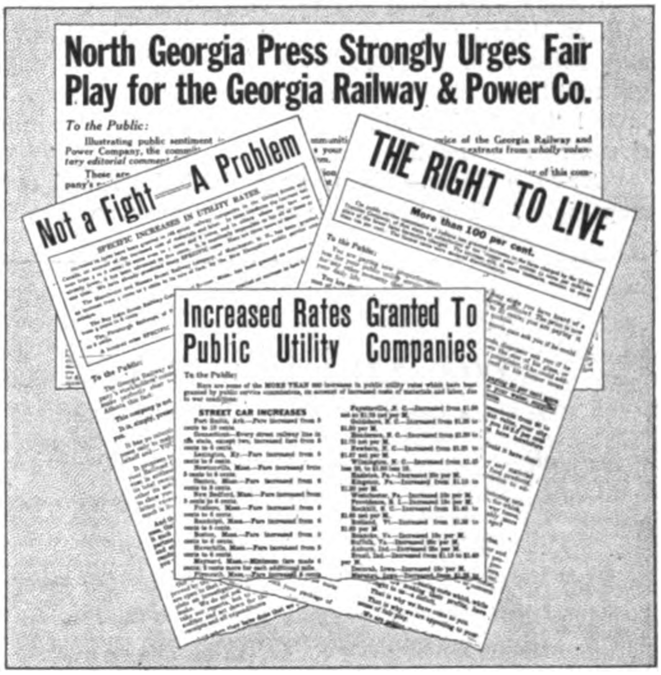
Various ways of cleaning brake rigging are used in different shops. Most companies use elbow power and a few use acid. However, Jesse M. Yount, master mechanic, United Railroads of San Francisco, has a still more effective way. The dirty, incrusted brake rigging is simply put into a furnace until it reaches a cherry red heat, by which time all of the dross has been burnt off.

Stockholders Tell Atlanta's Story

Why the Georgia Railway & Power Company Needs Higher Rates Is Ably Set Forth in a Newspaper Campaign Covering Northern Georgia

WHILE the Georgia Railroad Commission is the only body legally empowered to grant relief, the Georgia Railway & Power Company, Atlanta, Ga., has naturally been anxious to have the general public know the facts in regard to its pending application for increased rates. Hence it began during the middle of April an intensive newspaper campaign to show why it needs higher rates for gas, electric light, electric power and electric railway service, the new charges for the last covering a 6-cent fare and a 2-cent transfer charge in the city of Atlanta.

The most striking feature of the newspaper campaign is the fact that the advertisements, frequently of full-page size, were signed by a committee of stockholders, all of them being prominent Georgians. It was felt that this method, if any, would make it clear that the company was not merely a corporation but a group of sincere investors, many of whom were personally interested in the prosperity and the well-being of northern Georgia. The signers were aided by the management in securing the basic data, and the copy itself was written by an Atlanta publicity man.


North Georgia Press Strongly Urges Fair Play for the Georgia Railway & Power Co.

To the Public:

Not a Fight—A Problem

SPECIFIC INCREASES IN UTILITY RATES

THE RIGHT TO LIVE

More than 100 per cent.

To the Public:

Increased Rates Granted To Public Utility Companies

To the Public:

STREET CAR INCREASES

SPECIMENS OF ADVERTISEMENTS USED BY GEORGIA RAILWAY & POWER COMPANY TO TELL STOCKHOLDERS' STORY

The advertisements, of which specimens are shown in the accompanying illustration, have taken up in turn the different branches of the company's activities. In one electric railway advertisement, the company published a long list of cities in which fare increases had been granted. In another it commented on the reasons for this general tendency, and in a third it discussed increases in the cost of newspapers and other articles. In a fourth it gave specific examples of increases in the cost of labor, including a 41.4 per cent increase ($52,890) in its own payroll and that of the Atlanta Gas

Light Company for April, 1918, as compared with April, 1916. Other advertisements quoted the recent correspondence between President Wilson and Secretary McAdoo, and the monograph of John Skelton Williams.

During the campaign the Atlanta newspapers made no editorial comment on the merits of the case, apparently waiting for developments at the hearings before the commission. The papers of northern Georgia, however, are giving the company strong editorial support under such captions as "Let Us Be Reasonable," "A Just Claim," and "Demands of Justice Must Be Met."

As far as the merits of an increased fare for Atlanta are concerned, it may be pointed out that straight 5-cent rides in that city are now as long as 9.5 miles, and with transfers 18 miles or more.

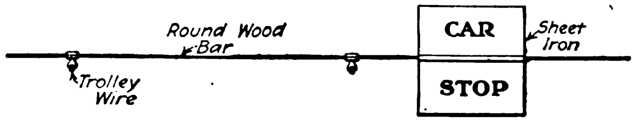
Car-Entrance Street Signs at Pittsburgh

IT WILL be recalled that in the Jan. 5 issue of the ELECTRIC RAILWAY JOURNAL an article by J. F. Layng on "Engineering and Selling Principles Applied to Electric Railway Transportation" directed attention to the ride-selling and time-saving advantages of 100-per cent installation of stop signs and to the location of such signs directly at the car entrances.

P. N. Jones, general manager Pittsburgh Railways, may point with pride to his anticipation of this suggestion, for about two years ago the company began to install "stop" signs, in regard to which it said in a circular to the public:

"Car-Stop Signs.—Have you noticed the round car-stop signs? The motorman stops his car so that it comes directly under this sign. Will you co-operate with us in saving time by standing directly underneath the sign?

"Car-Stop Signs at Congested Traffic Points ('First Car,' 'Second Car,' 'Third Car') mean that a car stopping at these points will make its stop under the 'First Car' sign if possible. If a car is already at that point it will stop under the 'Second Car' sign. If both places are taken, the car will stop at the 'Third Car' sign.



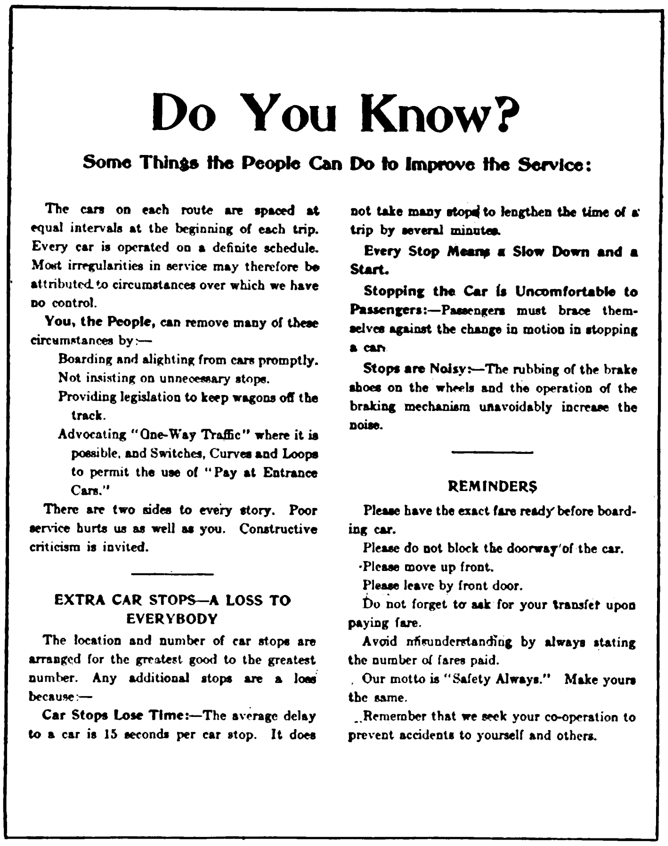
SKETCH OF PITTSBURGH RAILWAYS' CAR STOP SIGN

Thus, if necessary, three cars can be loaded at once without loss of time. Save time for yourself and others by being at the proper point when the car stops.

"Cars having made a stop under one of these signs will make no additional stop at the same loading point."

The accompanying reproduction of a page from the same circular also shows that the Pittsburgh Railways is doing all it can to promote faster interchange and speedier transportation of its passengers by direct appeal to the passengers themselves.

The stop signs now being installed are of the more convenient rectangular form, as illustrated, in preference to the round shape.



Do You Know?

Some Things the People Can Do to Improve the Service:

The cars on each route are spaced at equal intervals at the beginning of each trip. Every car is operated on a definite schedule. Most irregularities in service may therefore be attributed to circumstances over which we have no control.

You, the People, can remove many of these circumstances by:—

- Boarding and alighting from cars promptly.
- Not insisting on unnecessary stops.
- Providing legislation to keep wagons off the track.
- Advocating "One-Way Traffic" where it is possible, and Switches, Curves and Loops to permit the use of "Pay at Entrance Cars."

There are two sides to every story. Poor service hurts us as well as you. Constructive criticism is invited.

EXTRA CAR STOPS—A LOSS TO EVERYBODY

The location and number of car stops are arranged for the greatest good to the greatest number. Any additional stops are a loss because:—

Car Stops Lose Time:—The average delay to a car is 15 seconds per car stop. It does not take many stops to lengthen the time of a trip by several minutes.

Every Stop Means a Slow Down and a Start.

Stopping the Car is Uncomfortable to Passengers:—Passengers must brace themselves against the change in motion in stopping a car.

Stops are Noisy:—The rubbing of the brake shoes on the wheels and the operation of the braking mechanism unavoidably increase the noise.

REMINDERS

Please have the exact fare ready before boarding car.

Please do not block the doorway of the car.

Please move up front.

Please leave by front door.

Do not forget to ask for your transfer upon paying fare.

Avoid misunderstanding by always stating the number of fares paid.

Our motto is "Safety Always." Make yours the same.

Remember that we seek your co-operation to prevent accidents to yourself and others.

A PAGE OF STOPS AND OTHER MATTERS FROM A PITTSBURGH FOLDER

Key Route Went Over the Top Through Good Inside Work

THE San Francisco-Oakland Terminal Railways, Oakland, Cal., was brilliantly successful in securing a 100 per cent subscription to the third Liberty Loan. Nineteen hundred employees bought $113,150 of bonds, which compares with 708 subscribers for $44,800 of the first loan and 280 subscribers for $18,500 of the second loan. The bonds are carried on the basis of payment in ten monthly installments.

The local Liberty Loan committee offered to send four-minute orators around, but the company decided that it would be better to do the work through the department heads who knew the status of each man in his department better than any outsider could. In some cases where an outsider might create a feeling of resentment, the company official would inspire the desire to seek counsel. Each department head acted as a chairman of a sub-committee. The plan of working from the inside as a great family proved thoroughly satisfactory, and was the occasion of a banquet by W. R. Alberger, general manager of the company, to the department heads and their co-workers on the department sub-committees.

Thus arose the Key System War Savings Society which also came through 100 per cent perfect in the second Red Cross campaign. It is now conducting whist parties at which the prizes are Thrift and War Savings stamps. Any profits from dances and other entertainments, to which the public is invited, also are devoted to win-the-war purposes. The volunteer for all this war financing is S. H. Pickhard, purchasing agent and assistant to Mr. Alberger.

Zone System Does Not Cause Congestion

Oft-Repeated Analogy Based on European Cities Is False—City Congestion Abroad Is Due to Other Causes—Zone System Is Apparently Needed Here

BY FRANK PUTNAM
The North American Company, New York, N. Y.

HERE is a typical editorial comment: "The zone system of street car fares, as a practical proposal for ————, is not even worth talking about. It would be certain to have the effect of herding population in the inner zones, discouraging expansion and suburban growth and creating a new and acute housing problem. It would be a long step backward."

The opinion quoted above is the one commonly held and thoughtlessly uttered by most Americans who have made no practical study of electric railway service. Persons who express such an opinion as if it were indisputable and conclusive of debate on the subject usually cite European cities as proof of the tendency of the zone system to foster congestion.

EUROPEAN CONGESTION NOT DUE TO ZONES

It is true that most of the larger European cities have the zone system of car fares, both on municipal and on company-owned lines. It is true also that most of them are more densely populated than any except one or two of the largest American cities.

But these old cities of Europe had their congested areas long before the first electric railways were built. The zone system did not cause their congestion and has not added to it. On the contrary, it has helped relieve it.

The chief cause of congestion in European cities, before recent times, was their people's need to huddle together within restricted city walls for protection against military attack. The chief contributing cause, within recent times, has been the heavy cost of providing other public services which must be supplied whenever the extension of cheap transportation into outlying regions enables a considerable group of persons to make homes there. New residential districts of this kind must be provided, at the expense of their occupants or of the city as a whole, with drains, sewers, gas, electric and telephone services, pavements, sidewalks, schools and other communal buildings.

During the last forty or fifty years most of the larger cities of central and western Europe have been trying to control city growth, in conformity to scientific city plans, to the end that the people should get ample good service of all kinds without waste of their meager earnings in the construction of such services over larger areas than were actually needed. They have tried to keep down the "overhead," the fixed costs of living cleanly and comfortably in cities. European cities west of Russia have during that period been far more active than most American cities in procuring comfortable, healthful and economical housing for the people. Compared with them, our own cities, like Topsy, may be said to have just "growed."

In most of the larger American cities there has been a vast waste of public and private capital through the abandonment of comfortable residential districts relatively near to the city centers and through the creation, for the housing of the same population, of new residential districts farther out. Our city governments have permitted obnoxious industries to destroy, without recourse, the residential value of hundreds of thousands of comfortable small homes paid for by wage earners through long years of painful if commendable self-denial. We have permitted the makers of needless smoke and noises to destroy the residential usefulness and value of large sections once inhabited by the rich. We have only too often seen large areas degenerate into "blighted districts," unprofitable to their owners and injurious to the community as a whole.

The new outlying and suburban residential districts, always farther and farther out, have as a rule been planned and sold upon the quaint assumption that the railways would always, world without end, be able to carry their residents to and fro, regardless of length of ride, for a flat 5-cent fare. When I contemplate this fact, I am puzzled to account for any public hostility to electric railways, since in this respect at least the public appears to have shown more faith in the railways' ability to perform miracles than many have in the miracles of the Holy Writ.

The steadily increasing length and cost of the average street car ride, however, have broken down that ingenuous assumption. The electric railways of the larger American cities have exhausted their power to perform this miracle for the profit of the developers and purchasers of outlying residential districts. War costs did not cause the breakdown; they merely hastened it a year or two.

ZONE SYSTEM IS APPARENTLY NEEDED

From one end of the country to the other agencies created by the public are engaged in readjusting oldtime street car fares to new demands upon the service. The most far-sighted of these public authorities are trying to procure the adoption of a fare basis which will not only meet the present emergency but, being flexible and equitable, will provide for future city expansion. This apparently means the gradual and general introduction of the zone system.

Habit is a hard master. The American people have the habit of paying a flat-rate fare. It is possible that they may prefer to continue paying such a fare, no matter how high the actual cost of the service may carry it. It is possible, on the other hand, that when the subject is better understood, the public will prefer a zone system—the same rule as is applied in buying steam railroad rides, gas, electricity, shirts, sugar, shoes, newspaper advertising space or anything else except street car service.

In this connection the Missouri Public Service Commission, in its recent order establishing a 6-cent fare for the United Railways of St. Louis, said:

"The adoption of a zone system of fares, with a reduction in the fares for short rides to 3 cents or 4 cents and an increase in the fares for long rides approximately proportional to the distance traveled, would offer the most equitable solution, although it would entail some readjustment of real estate values and would undoubtedly be opposed at present by a large portion of the people of the city. Moreover, it would probably require the reconstruction of the cars at considerable expense, so as to permit of the 'pay as you leave' system of collecting fares, in place of the 'pay as you enter' system.

"The company is averse to the adoption of the zone system at this time. Under all the circumstances we have concluded, for the present at least, to retain the system of uniform rates for all distances within the city limits, though we urge upon both the city and the company a careful consideration of the zone system, with a view to its ultimate adoption, *as soon as the public can be brought to a realization of its advantages.*"

That puts it up to the company to sell the zone system to the public, just as it lately sold the public its need, in the public's interest, for a higher fare and lower taxes. It is another job of straight salesmanship, through the advertising columns of the newspapers. In effect, the commission says to the company:

"We know, as you do, that the zone system is the only fair way to sell street-car service. We realize that the 6-cent flat fare is the easiest way for you to get the necessary revenue to pay good wages, give good service and pay your investors a fair return. We realize that your present troubles would probably be doubled if you tried to get the necessary revenue by making a radical change in the system of fares without first explaining it to the public. But any time you make the public see the advantages of it, we are willing to order the change made."

This can easily be done. It certainly is not unreasonable to ask the utility to sell its propositions to the public before it asks regulatory agencies to approve them.

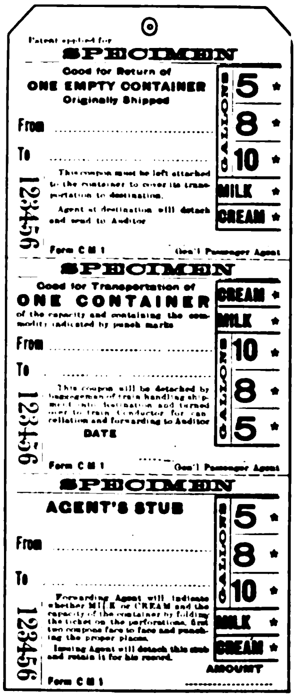
How Autos Steal Morning Travel

WHEN a certain Pacific Coast railway analyzed its traffic losses on an hour-by-hour basis it made the discovery that almost all the loss was from 7.30 and 9 a.m. In fact, the difference between the town-bound and home-bound travel was nearly 20 per cent. This difference was due entirely to the fact that in the morning many people while standing at corners or walking forward were picked up by their auto-owning neighbors. In the evening, however, there were many less pick-ups because autos, in the downtown section, radiate in every direction and it is therefore harder to single out the machine that is going to any particular district. So the tendency is to take the street car at once.

This condition of affairs has satisfied the railway that car-in-sight operation is the only way to regain the business. Naturally, this means modern one-man car operation, which is now being planned for the entire community.

Simplified Milk Ticket Devised

SIMPLICITY and economy are the strong points of a new combination milk and cream ticket that has been invented by Raymond C. Fiscus, chief clerk passenger department, Lake Erie & Western Railroad Company, Indianapolis, Ind. The ticket combines in one form the features for which, under the ordinary ticket system, as many as eleven forms are sometimes required.



Patent applied for

SPECIMEN

Good for Return of
ONE EMPTY CONTAINER
Originally Shipped

From ....
To ....

This coupon must be left attached to the container to cover its transportation to destination.

Agent at destination will detach and send to Auditor

GALLONS 5 ★ 8 ★ 10 ★
MILK ★
CREAM ★

123456

Form C M 1 Gen'l Passenger Agent

SPECIMEN

Good for Transportation of
ONE CONTAINER
of the capacity and containing the commodity indicated by punch marks

From ....
To ....

This coupon will be detached by baggageman of train handling shipment into destination and turned over to train Conductor for cancellation and forwarding to Auditor

DATE

CREAM ★
MILK ★
GALLONS 10 ★ 8 ★ 5 ★

123456

Form C M 1 Gen'l Passenger Agent

SPECIMEN

AGENT'S STUB

From ....
To ....

Forwarding Agent will indicate whether MILK or CREAM and the capacity of the container by folding the ticket on the perforations, first two coupons face to face and punching the proper places.

Issuing Agent will detach this stub and retain it for his record.

GALLONS 5 ★ 8 ★ 10 ★
MILK ★
CREAM ★
AMOUNT

123456

Form C M 1

SIMPLIFIED MILK TICKET USED BY LAKE ERIE & WESTERN

The ticket, as shown in the accompanying illustration, contains an agent's stub, a coupon for the transportation of the full container and a coupon for the return of the empty container to the point of origin. In the margin of each coupon are shown the sizes of the containers ordinarily transported, 5, 8 and 10 gal., and the contents, milk and cream. By simply folding the ticket on the perforated lines between coupons and canceling by punch, the agent indicates the size of the container and the contents in his stub and in each coupon.

The points of origin and destination are filled in with pen and ink or by rubber stamp. In cases where the volume of shipments require it, a printed form can be used. The going portion of the ticket is detached by the train baggageman handling the shipment into its destination and is forwarded to the auditor. The return coupon remains attached to the container and is authority for the train baggageman to carry it to the point of origin. Here the agent detaches the coupon and forwards it to the auditor, thus completing the office record of the movement.

The new form has already been adopted by several steam railroad lines and is being carefully studied by the representatives of many others.

Safety Code for Building Construction

The United States Bureau of Standards has in preparation a set of safety and sanitary requirements for federal industrial establishments which should prove helpful to electric railway men. These have been prepared by the safety engineers of the United States arsenals and navy yards. The code will contain sections on ventilation; heating and lighting; doors and windows; stairs and ladders; floors and floor openings; railings, platforms, runways and tunnels; cranes and elevators; roofs, skylights and elevated tanks; railroad tracks and clearances; drydocks, and general matters. The rules will occupy a pamphlet of slightly more than 100 pages and should be available soon.

Saving that "Extra Shovelful of Coal" by Increased Coasting

The Writer Describes the Experiences and Results Obtained by the Use of Coasting Recorders in Denver

BY HARRY C. KENDALL
Formerly Efficiency and Traffic Engineer, Denver (Col.) Tramway

THE theory that the amount of coasting obtained is a relative measure of the saving in power and brakeshoe wear that can be expected and indirectly brings about other economies in car operation is well known.

In the ELECTRIC RAILWAY JOURNAL for Jan. 29, 1916, page 215, it is stated that the Interborough Rapid Transit Company, made annual savings in fuel, water and brakeshoes through coasting as follows:

Coal and water—subway—16 8 per cent	$174,000
elevated—10 4 per cent	67,000
Brake shoes—subway	36,000
elevated	16,000
	$293,000

On the Denver Tramway System the absence of complete records of power used for car heating and auxiliaries makes it impossible to calculate the exact saving in power effected by the use of coasting recorders, but a most conservative estimate of the annual saving in coal is more than $15,000. The annual saving in brakeshoes averages more than $1,500. The annual expense of the follow-up system, inspection and maintenance is about $4,000, which leaves a net annual saving of more than $12,500, sufficient to amortize the investment in about two years.

With the present increased cost of fuel and brakeshoes the opportunity for savings is greatly increased. It is the purpose of this article to relate some of the Tramway Company's experiences with coasting in the hope that they may be of value to other street railways.

COASTING PRODUCED QUICK RESULTS IN POWER SAVING

Coasting recorders were installed on the Denver Tramway System in December, 1912, at which time the average coasting was about 10 per cent. In 1913 the coasting per cent jumped to 28, and the total kilowatt-hours per car-mile dropped from 3.06 for 1912 to 2.88 for 1913, in spite of increased use of power for heating and auxiliaries. The cost of brakeshoes dropped from $5,255 to $3,880.

In 1914 the increase in coasting was only slight, namely to 29.35 per cent and, although the power used for purposes other than traction was still further increased the total power consumption was reduced to 2.89 kw.-hr. per car-mile. Brakeshoe this year cost $3,720.

In the "spring drive" of 1915 the coasting was driven up rapidly, reaching a maximum of 42 per cent in August. The average for the year was 39 per cent and the power consumption was reduced to 2.68 kw.-hr. per car-mile. Brakeshoes cost only $3,230 that year.

In the latter part of 1915 it was decided to make a thorough investigation of the whole matter for the purpose of convincing some of the doubters that the claims made for coasting were well founded. In the meantime the system in effect, with respect to coasting averages, was suspended. A committee of four motormen, three of whom felt strongly that the existing basis was unsatisfactory, was appointed to investigate the coasting problem. The Railway Improvement Company co-operated heartily, sending two engineers to assist us, and we went into the question with a determination to get all the facts and to put our coasting on a basis that would command the loyal support of every trainman. Every question asked by the committee was openly investigated and frankly answered. For example, certain members of the committee questioned whether coasting percentage is a direct and reliable indication of power economy. In answering this question it was first explained that theory indicated three ways of saving power with a given equipment on a given schedule:

1. Increasing the rate of acceleration.
2. Increasing the rate of braking, particularly at the lower speeds.
3. Making fewer or shorter stops.

Further, it was claimed that if 10 per cent of power were saved in any one of these ways an increase of approximately ten points in coasting percentage would result. Consequently it appeared clear that if power were saved by any combination of the three, it would be directly reflected by coasting percentage.

To prove whether practice bore out theory, we made a number of tests on a car equipped with a watt-hour meter and coasting clocks. The tests were planned also to clear up another point. Some of the trainmen believed that the coasting recorder should be connected so that it would not stop when the brakes were applied. Consequently, the tests were arranged to prove two things: (1) That per cent coasting does give a direct indication of power economy. (2) That per cent coasting-plus-braking does not give a direct indication of power economy.

In other words, two trips, one efficient and one inefficient, were laid out as indicated in the speed-time graphs, Fig. 1 on page 52. The results of the tests are shown in Table I on page 53.

COMPREHENSIVE TEST PROGRAM LAID OUT

It will be noted that in both these tests the increase in coasting percentage is very nearly equal to the per cent decrease in power, whereas, the increase in coasting-plus-braking bears no relation to the decrease in power.

These tests, together with statistics of power consumption and coasting for the system, disposed of these two mooted questions, and incidentally established some confidence in the practicality of speed-time curves and office calculations, as the results of the tests had been accurately forecasted.

COMMITTEE CONVINCED ITSELF AS TO THE VALUE OF COASTING

In this same spirit of "show me," every question raised was investigated, with the result that the members of the committee absolutely convinced themselves and made a unanimous report strongly recommending coasting as a basis of efficiency rating, pointing out remedies for the few really objectionable features in our old method of application.

An abstract of some of the most important points covered by the report may be of general interest. In the first place our statistics of power consumption and of coal used for the past five years, as well as special tests which the committee made, prove conclusively that the power required to run the cars decreases almost directly as the coasting percentage increases. Table II and Fig 2. show that the power consumption in kilowatt-hours per car-mile decreased each year that the coasting increased, and, for the year 1916, when the coasting percentage decreased 6.57 points the power increased 5.90 per cent.

A comparison for three months of 1916 with the same three months of 1915 follows:

	Per Cent. Decrease in Coasting	Per Cent. Increase in Power
October	11.23	13.2
November	10.59	14.4
December	10.55	11.1

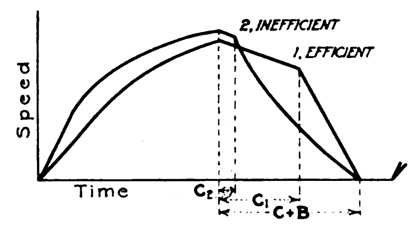


FIG. 1

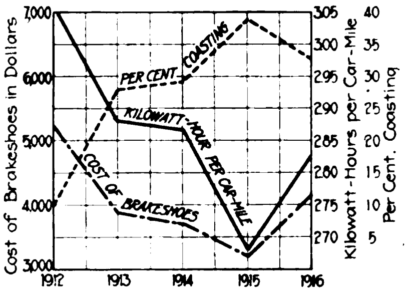


FIG. 2

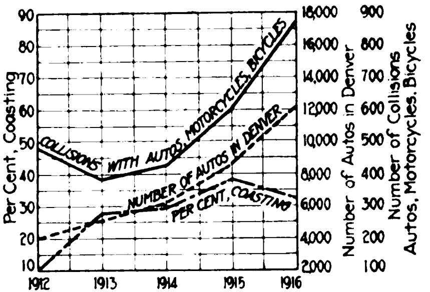


FIG. 3

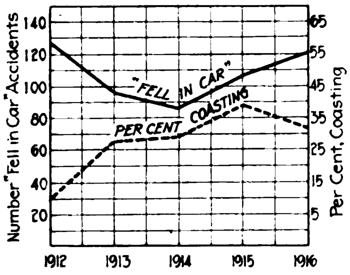


FIG. 4

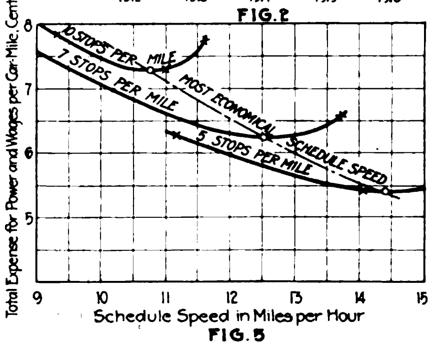


FIG. 5

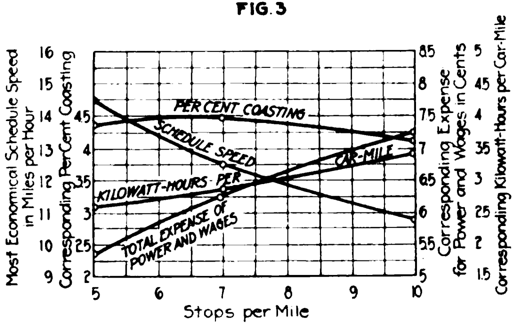


FIG. 6

Fig. 1—Coasting-plus-braking is not a correct measure of power economy.
Fig. 2—Power consumption and cost of brakeshoes decrease as coasting increases.
Fig. 3—Relative number of collisions decreases as coasting increases.
Fig. 4—Accidents in the car bear relation to the per cent coasting.
Fig. 5—Graphical determination of most economical schedule speed.
Fig. 6—Graphs of best coasting with variation in schedule speed, power and cost.

GRAPHS SHOWING HOW INCREASED COASTING AFFECTS OPERATING RESULTS

There was an impression among some of the trainmen, that in order to obtain a high coasting record it is necessary to operate the car roughly. While it is true that rapid acceleration and braking, if not done carefully and skillfully, undoubtedly result in rough handling of the car, this is not necessary. Indeed, it was found that "high coasters," as a rule, operate their cars smoothly. The committee emphasized also that the conductor has it in his power greatly to increase the coasting percentage with resultant reduction in power consumption, or greatly to increase the average speed, by giving the starting signal promptly and the stop signal as early as possible.

Since high coasting means low power consumption, and since a very considerable part of the expense of maintenance of electric equipment of cars is due to the heating of the motors, it is logical to expect that an increase in coasting means a decrease in car maintenance. As a matter of fact, as shown by Table III, the cost of maintenance of equipment during the past six years was the lowest the year that coasting was the highest.

HOW ENERGY IS SAVED IN CAR OPERATION

The committee also recommended that in approaching special work or curves the car be operated in the same general way as when approaching stops, that is, by coasting as far as practicable, then braking rapidly but releasing the brakes just before reaching the curve or special work. The coasting that saves power is coasting to stops and necessary slow-downs. Coasting down to low speed when slow-downs are unnecessary wastes time and is only possible where schedules are too slow or loads unusually light.

It appears reasonable, furthermore, that coasting should decrease collisions, as with high coasting the maximum speed will be less and power will usually be off at street intersections or wherever there is a possibility of a collision. Accident statistics on the Denver Tramway for the past five years, as shown in Table IV and Fig. 3 indicate that the relative number of collisions decreases as coasting increases. The statistics show that in general the number of persons falling in cars has decreased as the coasting increased. See Table V and Fig. 4.

The committee felt that full value of the coasting clocks can be obtained only by publishing the records of percentages, by divisions, lines and individuals, recommending that, in publishing the individual records, some system be devised to make allowance for the inequality of the various runs, as regards possible coasting. It also emphasized the importance of careful attention to brakes, controllers and air valves.

BOGIES ESTABLISHED BY THE MEN THEMSELVES

Finally the committee recommended that two motormen from each division be elected by the trainmen, from a number designated by the division superintendents, to establish coasting "bogies" or standards for each run, the candidates to have the following qualifications: (1) Creditable accident record; (2) ability to maintain his schedule; (3) ability to operate efficiently and to make a good coasting record; (4) personality necessary to accomplish results in instructing others. Further it was recommended that, after the bogies have been established, one of the eight men be appointed to continue the work of modifying the bogies to meet changing conditions and to act as coasting instructor.

In accordance with the committee's recommendations meetings were held which all trainmen were expected to attend, and these men were allowed time for this attendance. At these meetings the committee members explained in clear and convincing talks the results of their investigations. The effect was immediate; the coasting percentage being increased two points the following week. "Bogie setters" were elected as recommended by the committee, and these men have established bogies for each kind of run on every line.

A coasting instructor was also appointed for each division. These instructors are virtually captains of the division teams, among which teams there is keen rivalry. Coasting averages of the four divisions are shown graphically every day on a big chart at division headquarters.

We also put into effect a very complete follow-up system, through which effort is concentrated on the "low" men. Personal instruction is supplemented by special letters to the trainmen explaining the "why" and the "how" of coasting and encouraging them to greater effort. Concurrently with this work, and through the co-operation of the University of Colorado, two senior students calculated the most economical speed, per cent coasting, etc., for one of the standard motor cars, with and without trailer, on various grades and for various numbers of stops per mile.

The method of calculation was practically that described by C. C. Chappelle in the ELECTRIC RAILWAY JOURNAL of Jan. 15, 1916, and consisted in determining for what speed the cost of platform labor plus power is a minimum, under the various conditions, and then calculating the per cent coasting, etc., corresponding to

TABLE I—TEST RESULTS SHOWING RELATION BETWEEN PER CENT COASTING AND POWER SAVING

	Inefficient Operation	Efficient Operation	Inefficient Operation	Efficient Operation
Running time, minutes	52 75	54 00	54 80	55 00
Coasting time, minutes	3.05	11.80	3.00	12.20
Coasting and braking time, minutes	18 30	22.30	21.75	21 80
Total number of stops	60.00	60.00	60 00	60 00
Tota lduration of stops, minutes	5 37	5 45	5 93	5 25
Total kilowatt-hours	32.70	26 6	29.70	25.50
Stops per mile	6.10	6 10	6.10	6 10
Average duration of stop, seconds	5.40	5.50	5.90	5.30
Average speed, miles per hour	11 20	10 90	10.80	10 75
Per cent. coasting	5.80	21.80	5.50	22 20
Per cent. coasting and braking	34.70	41.30	39.60	39.60
Increase in per cent coasting	.....	16.00	.....	16.70
Increase in per cent. coasting and braking	......	6 60	.....	.....
Per cent saving in power	.....	18.90	.....	14.50

TABLE II—EFFECT OF COASTING ON POWER CONSUMPTION AND BRAKESHOE COST

Year	Car-Miles	Kilowatt-Hours	Average Weight of Car, Tons	Kw.-hr. per Car-Mile Actual	Kw.-hr. per Car-Mile For 16 72 Ton Car	Coasting, Per Cent	Cost of Brakeshoes
1912	12,247,087	37,450,220	16 72	3 06	3 06	10 00	$5,255
1913	12,231,533	35,126,800	16 70	2.87	2 88	28 00	3,880
1914	12,112,135	34,863,037	16 79	2.88	2.87	29 35	3,720
1915	11,899,536	32,212,000	16 93	2.71	2 68	39 00	3,230
1916	12,196,217	34,946,100	16.93	2.87	2.83	32.93	4,170

TABLE III—MAINTENANCE OF EQUIPMENT, ACCOUNTS NOS. 30, 32 AND 33

Year	Cost per Car Mile, Cents	Per Cent. Coasting
1911	*1.09	about 10 00
1912	*1.03	about 10.00
1913	1.10	28 00
1914	1 13	29 35
1915	0.84	39 00
1916	0.88	32.93

*Maintenance costs low in 1911 and 1912 on account of new cars bought in 1909 and 1910, and parts of old trucks used for repairs the following two years.

TABLES IVa AND IVb—EFFECT OF COASTING ON ACCIDENTS
(Collisions with Automobiles, Motorcycles, Bicycles)

Year	Coasting, Per Cent	No. of Collis. Autos, Bicy., Motorcycles	No. Autos in Denver
1912	10 00	467	4,000
1913	28 00	390	4,968
1914	29 35	436	6,120
1915	39 00	596	8,575
1916	32.93	877	12,200

1916	Coasting, Per Cent	Collisions Autos, Bicy. Motorcycles
January	36 10	61
February	37.33	38
March	37 28	48
April	36 42	65
May	35 18	55
June	33 75	53
July	32 02	72
August	31 31	97
September	30 14	91
October	29 92	73
November	29 36	107
December	26 35	117

TABLES Va AND Vb—EFFECT OF COASTING ON ACCIDENTS
("*Fell in Car*")

Year	Coasting Per Cent.	No. Fell in Car
1912	10 00	126
1913	28.00	94
1914	29 35	87
1915	39 00	108
1916	32.93	119

1916	Coasting, Per Cent	No. Fell in Car
January	36.10	10
February	37.33	13
March	37.28	8
April	36 42	10
May	35 18	12
June	33.75	18
July	32 02	11
August	31.31	7
September	30 14	11
October	29 92	8
November	29.36	10
December	26.35	11

TABLE VI—DATA FROM SPEED-TIME CURVE
Single Car (23 Tons) Level Track—10 Stops per Mile—3-Sec. Stops

Kw.-Hr. per Stop	Kw.-Hr. per Mile	Duration of Run, Min.	Schedule Speed, M.P.H.	Wages per Mile at 30 Cents per Hour	Cost Kw.-Hr. per Mile @ ½ Cent	Total Expense	Per Cent Coasting
0.263	2.63	38 8	9.3	6 47	1.35	7.82	62 5
0.37	3.7	32.7	5 45	5.65	1 85	7.30	32.8
0.52	5.2	31.	11.6	5 17	2.6	7.77	....
			Most Economical				
0.34	3.4	33.4	10.75	5 58	1.7	7.28	41.2

this speed. Table VI and Figs. 5 and 6, illustrate the method. Referring to Fig. 6, it will be noted that for runs of widely different length, and for which the most economical schedule speeds and power consumption vary through wide limits, the most economical coasting percentage varies but little.

The work along these lines has been well worth while. In the first place, by giving the trainmen an opportunity to convince themselves that coasting is a correct basis for efficiency rating, we secured their hearty co-operation. The result is that we are now getting a satisfactory percentage of coasting and excellent economy considering the large number of new motormen the war has obliged us to take on; and we are getting this with enthusiasm. In the second place we have convinced ourselves that while the maintenance of bogies and the theoretical calculation of the most economical speed and per cent coasting are desirable, they are by no means essential to the satisfactory operation of the coasting recorder system. The reason for this is that there is very little danger even with the present high cost of fuel, that the actual schedule speed will be too high for maximum economy, especially when we give due consideration to the intangible value of high speed. With the schedule speed set as high as can be made with safety and reliability, there is necessarily a margin of time. This margin can be wasted by inefficient operation or it can be taken up in coasting, thus giving the maximum economy. It is remarkable how uniform this margin will run on any schedule that is reasonably "tight." A "good coaster" will average 35 per cent on a run that is so fast that green men have difficulty in making the time.

The coasting recorder simply tells the motorman and the manager how this margin, which is a necessary factor in electric railway operation, is being used. How it is used makes a difference of from 10 per cent to 20 per cent in the coal bill.

Something for the Hun to Think About

THE organization of five new regiments and nineteen battalions of railway engineers, to be used in addition to the regiments already working in France, is being completed by the staff of the Director General of Military Railways, Samuel M. Felton. The work has been done in conjunction with the Engineer Corps. When the new forces are put on duty there will be 50,000 Americans engaged in railroad construction and operation in France. A total of $160,000,000 has been spent on railway materials alone, this sum not including supplies for the Engineer Corps proper.

Early in 1917 the Chief of Engineers decided to organize a railway operating regiment. This regiment formed the nucleus of the present railway organization. While it was being formed the United States entered the war. One of the first requests transmitted to this government by the French mission was for assistance in strengthening the French railway systems to meet the increasing war train. This request was made in April, 1917, and early in May Mr. Felton was called to Washington to organize nine railway regiments.

The $160,000,000 used for railway supplies has gone for such items as 1727 engines, 22,630 freight cars, and 359,000 tons of steel rails.

Do Not Neglect the Return Circuit

H. T. Bell at Pacific Railway Club Meeting Said That More Attention Should Be Paid to the Track Return in the Interest of Economy

AT THE "Electric Railway Night" meeting of the Pacific Railway Club held on June 13 Herbert T. Bell, electrical engineer San Francisco-Oakland Terminal Railways, put in a powerful plea for more careful design and maintenance of the return circuit, pointing out that it is illogical to concentrate attention on the overhead altogether and neglect the return circuit.

Mr. Bell devoted his paper largely to a discussion of types of bonds and methods of installing and maintaining them. Among other good things he said that no bond can have an appreciable life on a mechanically poor rail joint. The details are to be settled as a compromise of conflicting requirements. For example, on comparatively poor joints, the conductor joining the terminals should be long and flexible. From an electrical standpoint, as well as an economic one, the conductor should be as short as possible. With respect to corrosion, the conductor should be a circular solid piece of a non-corrosive metal (which is not flexible but presents the least area to corrosion). In its electrical characteristics the metal should have a low coefficient of resistance, while from the economic standpoint it should be inexpensive.

Mr. Bell mentioned some general precautions and practices in connection with plug terminal bonds. In installing these only accurately ground drills should be used, and these should be entered at right angles to the rail web and should produce a smooth finish in the hole. Where rails are furnished with the bond holes punched or drilled, these holes should be small enough so that they can be reamed, thus exposing entirely clean metal when the hole is of its proper size. The bonds must not be installed in other than freshly drilled or reamed holes, and no oil should be used in drilling because oil is an insulator. A solution of salt and water is a good lubricant for drilling. Tinning, soldering or amalgamating the contact surfaces improves the union and decreases the contact resistance by an average of from 15 to 18 per cent. When terminals are compressed, care should be taken to see that the compressor is applied at the center of the stud and that its axis is at right angles to the web of the rail. Where bonds are applied under rail joint plates, care in installing them may produce big savings either in preventing the losses which follow the use of poor bonds or in saving the expense of removing and replacing paving, spikes, bolts, and angle bars for the purpose of renewing bonds. The resistance of a well-bonded joint should not exceed 0.0001 ohm.

In conclusion, Mr. Bell said: "The grounded side of the distribution system must be designed and maintained with the same care, using the power house as the apex, as is the insulated portion of that same distribution, to gain the most efficient and economical results."

The United States Fuel Administration has inaugurated a plan to reduce waste of coal in power plants by appointing a number of district representatives who will make surveys of the power situation in their respective territories. The aim is to save 20,000,000 tons of coal by eliminating wasteful practices.

Electric Carriers Answer the Call

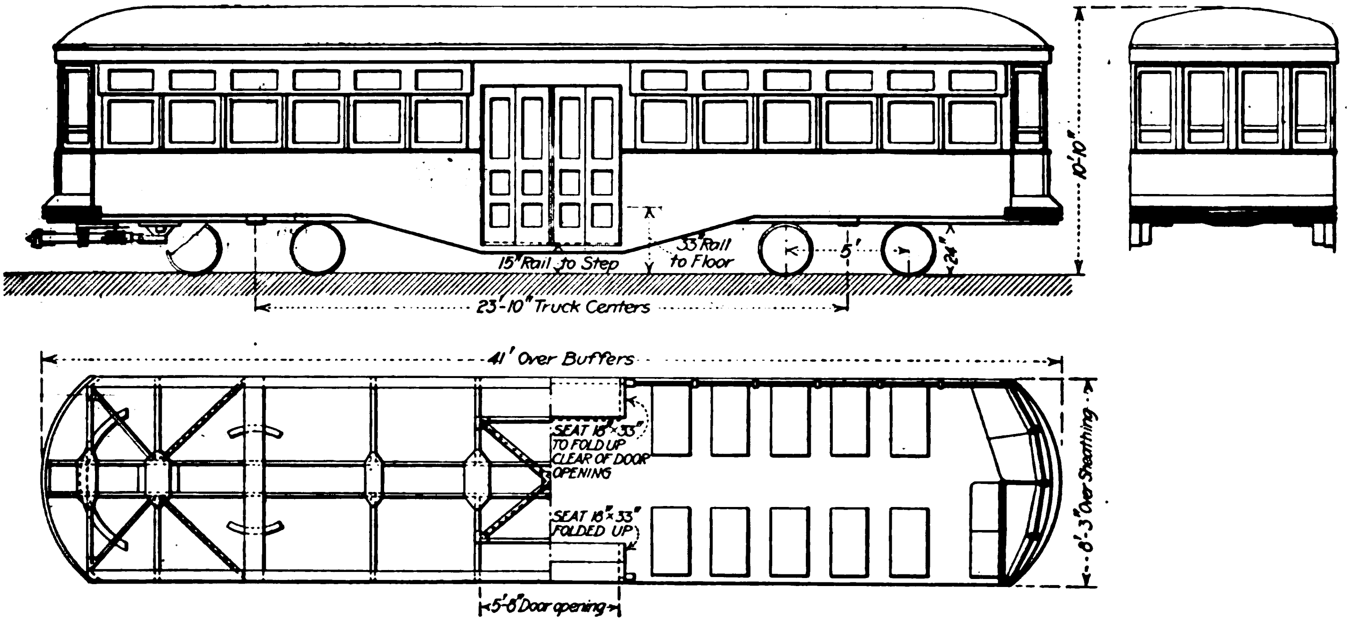
San Francisco Company Loads Ship Workers with Amazing Speed—Charleston Line Is Expending $300,000 to Aid the Government—Houston Railway Is Carrying Aviators and Others

THE ways in which electric railways are serving the nation are many, in spite of the handicaps imposed by limited resources and a decreasing earning power. This journal has in preceding issues [June 1 and June 22] described the war work being carried on in Atlantic Coast and Southern cities, and this week it is adding the following series of articles to show the railway activities in government service at various other points.

Charleston Is Spending $300,000

Sixteen Center-Entrance Multiple-Unit Type Cars Ordered for Navy Yard Service—Double Track Installed, and Automatic Substations Completed

CHARLESTON, S. C., is a city whose population has increased considerably since the opening of the war. The Navy Yard personnel has grown from 1500 to 4500. A cantonment for training sailors from 3500 to 6000 at a time has been erected. Congress has authorized a base hospital and another drydock, while the lumber mills, fertilizer works and other industries are now employing more than 5000 people. In sum, it is estimated that from 25,000 to 30,000 people have been added to Charleston's population.



CHARLESTON CENTER-ENTRANCE CAR; SIDE ELEVATIONS, PLANS AND BOTTOM FRAMING

When the first accessions began a year ago, the company met them by purchasing six second-hand cars. During the last winter it also leased one motor and five trail cars from the Charleston-Isle of Palms Company, but as these had to be returned in May their place was taken by the company's own ten-bench open cars. It was recognized, however, that the use of old cars singly or in pairs, particularly for the heavy service to the Navy Yard, could only be considered as temporary.

During the last two years the company had made an important improvement in track capacity by adding a 60-lb. T-rail second track 1¾ miles long between State Road-Clement's Ferry and the Navy Yard terminal. This made it possible to consider the operation of high-speed trains, the main item covered by the company's appropriation for betterments.

This appropriation, amounting to $300,000, includes the following:

Sixteen double-truck center-entrance cars with multiple-unit control to be run to the Navy Yard in trains of as many as four cars.

Ten one-man safety cars for city service.

Seven-track twenty-one-car storage shed (180 ft. x 70 ft.) of slow-burning wood to be constructed adjacent to the present carhouse. This will also contain the carpentry shop, the paint shop, the storeroom, the dressing room for shopmen and the master mechanic's office.

An automatic substation located 1½ miles from the Navy Yard. It has a General Electric 500-kw. 60-cycle, 900-r.p.m. rotary converter, outdoor transformers, Condit time-limit relay, Bristol graphic recorder and Weston ammeter. This substation was opened on May 11.

At present cars are run past the two gateways of the Navy Yard, and passengers pay their fares after boarding. About 4000 to 5000 people are handled in one hour, the biggest single load being the release of 700 white women at 6.35 p.m. and 700 men at 6.45 p.m. The employees begin to leave work at 4.15 p.m., and stop at 7.10 p.m. Separate cars are furnished for all white women except stragglers; also for white and for colored men as far as practicable. The cars are loaded heavily, and the passengers take all kinds of chances in their hurry to get away. The women on their cars are not much better than the men, although they do not climb to the roofs or stand on the bumpers.

If the company can secure permission to use some government ground at the main or upper gate for a prepayment area, loading conditions and fare collection will be greatly improved. Then the addition of the train service with air-operated car doors will produce absolutely safe boarding, riding and alighting conditions.

Train operation with one prepayment area for all Navy Yard passengers will also relieve the company's acute shortage of platform personnel. At this time twenty-five to thirty office and shop employees are used to help out in the morning, and half that number in the evening. This is especially hard on the car maintenance department, because the men do not return until 8.30 or 9 a. m. This loss of time is of genuine concern in these days.

That there is more patriotism than profit in this service may be judged from the fact that for 5 cents one may ride the 7 miles from the Navy Yard to the Battery (the downtown tip of Charleston) during the peak hours, 6 a.m. to 8.30 a.m. and 4 p.m. to 6.30 p.m. The normal 5 cent ride is between North Charleston and the Navy Yard, 2 miles. The inadequate 5-cent fare to the Navy Yard is a relic of the days when special inducements had to be offered to the government to induce it to continue such a yard in Charleston!

HOW CHARLESTON WILL GET MODERN TRAIN SERVICE

In addition to equipping six of its present steel vestibuled cars with Westinghouse HLD control for train operation, the company expects to receive after Aug. 1 six center-entrance motor cars and ten trailers, now being built by the Cincinnati Car Company. These are to be operated for Navy Yard and other heavy services in groups of as many as four cars. Progress in the art of car building and equipment manufacture is indicated by the fact that these fifty-three passenger cars will weigh but 35,000 lb., although they will carry four motors, multiple-unit control and draft rigging. The best car in use in Charleston to-day, seating only forty-one passengers, weighs 36,000 lb., although it has only two motors and type K control. The new cars will weigh 660 lb. per passenger; the preceding cars purchased weigh 878 lb. per passenger.

Center-entrance operation with pneumatic door engines and interlocking control was favored to secure maximum seating capacity and to prevent reckless jumping from cars—even by women. The steps are also completely inclosed. The distance from the pavement to the first step is 15 in., and above this step are two 9-in. risers. No ramps are used, and the elimination of these is expected to make floor maintenance easier.

All of these new cars will be 41 ft. over all, 37 ft. over the body corner posts, 8 ft. 3 in. wide over the sheathing, 10 ft. 10 in. high from rail to top of roof. The seats will be 35 in. wide; aisle, 23 in. wide; the distance between truck centers, 23 ft. 10 in.; the truck wheelbase, 5 ft.; the wheel diameter, 24 in. The radius on the inner rail of the shortest curve on which these cars will run is 35 ft.

The underframe is of angle side-sills, channel center-sills, channel diagonals, buffer bands reinforced with Rico anti-climbers, body bolsters of trussed girder type with 1-in. x 9 in. top and bottom plates and gray iron fillers. The body framing has all side posts formed of T-bars extending from side sill to side sill. The door framing for the center-entrance is formed of steel angles in one continuous piece from sill and over the door opening. The sides below the window sills are of No 12 gage sheet steel in one width from side sill to window sill, being pressed on the top to form the belt rail and window sill. The letterboard is also of No. 12 gage sheet steel. The vestibules are sheathed on the outside below the windows with No. 16 sheet steel in three sections, so made that they can be removed without disturbing vestibules or posts. The posts are ash. No doors are used, the motorman being able to do any necessary switching by leaning out of the vestibule.

The arch roof is covered with poplar board and painted canvas. The interior finish is mahogany. The wainscoating from window sill to seat angle is $\frac{3}{16}$-in. Agasote with a $\frac{3}{4}$-in. air space between the Agasote and the steel side sheathing. The finish below the seat angles is formed of pressed sheet iron to avoid a dirt pocket at the floor.

The equipment schedule for the new cars covers the following:

Curtains—Pantasote with Curtain Supply Company's ring fixtures and Rex all-metal rollers.
Destination signs—Keystone.
Seats—Hale & Kilburn, No. 300 A.
Motorman's portable folding seat—Keystone.
Door engines—National Pneumatic to control four-leaf folding doors arranged to swing outward. Doors on motorman's right-hand side may also be operated by him.
Registers—International, R5.
Buzzers—Faraday, Keystone.
Gongs—Dedenda.
Sanders—O-B sand traps and National Type C sander valves.
Headlights—Crouse-Hinds SDP 12.
Ventilators — Automatic type ARDM, eight on each side of roof.
Couplers—Tomlinson Type A, Form 8.
Air Brakes — Westinghouse AMM, complete on motor cars; in part on trailers.
Governor synchronizer system—Westinghouse.
Signal system — Westinghouse No. 8-T, electro-pneumatic.
Motors—Westinghouse No. 514.
Control—Westinghouse HLD.
Trolley bases — Ohio Brass Form 1.
Lighting—One circuit of 94-watt Mazdas for body, and one circuit of 23-watt Mazdas for other purposes. Light wiring run in Duraduct with Flex shadeholders at all outlets for lights. Alba reflectors used on center lights.
Trolley retrievers — O-B No. 11973.
Trucks—Brill No. 77 Cincinnati.
Journal Boxes—Symington.
Motormen's mirrors—Drew.

FIRST SAFETY CARS ALSO DUE IN AUGUST

The company has also ordered from the same carbuilder ten Birney-type double-end one-man cars equipped with the combination of the Safety Car Devices Company. The first five, expected in August, are to go on the Broad Street crosstown line, and the second five on the King Street line, which serves the heart of the city. These cars, therefore, are relied upon to do real work. As they weigh but 13,000 lb. compared with 27,000 lb. for present cars of the same capacity (thirty-two passengers), Fuel Administrator Garfield may well be thankful.

Perhaps the chief variation of this car from the Stone & Webster Birney type is that for the same over-all length of 27 ft. $9\frac{1}{2}$ in. the platforms are 3 in. shorter because wider corner posts are used to get increased stiffness. The wheel housing has been eliminated by raising the body 1½ in. The vestibule doors are hinged to the body corner post instead of the vestibule post, thereby preventing the exit of passengers until the door is fully open and the step down.

The car underframe is of steel angles, the body framing being like that of the center-entrance cars above described. The roof is of wood, and the ceiling of $\frac{3}{16}$-in. Nevasplit headlining. The principal equipment of the new safety cars may be summarized as follows:

Curtains—Pantasote.
Ventilators—Utility (eight).
Trucks—Cincinnati.
Hand brakes—Pittsburgh drop handle.
Heaters—Six Consolidated cross-seat type, with thermostatic control and Duraduct fittings.
Push-buttons — Faraday, Keystone.
Signs—Keystone.
Gongs—Dedenda.
Trolley catcher—Ideal.
Air brakes—Westinghouse.
Operating devices—Safety Car Devices Company, including National Pneumatic door engines.
Motors—Two Westinghouse 506 A-2, with sleeve bearings.
Control—K 10.
Headlights—Golden Glow.

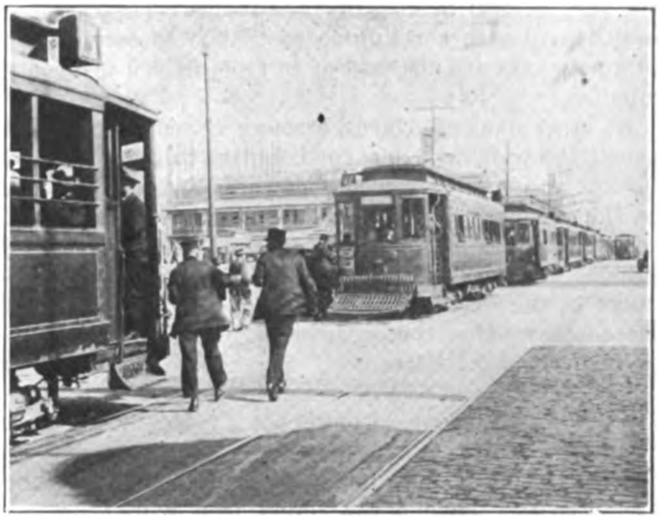
It may be added that there will be only two five-light circuits, the body-lighting circuit consisting of 56-watt units and the other of 23-watt units.

Moving 8300 Shipbuilders in Fifteen Minutes

United Railroads of San Francisco, Through Ample Car Storage and Front-End Collection, Make Quick Work of Heavy Rush Traffic

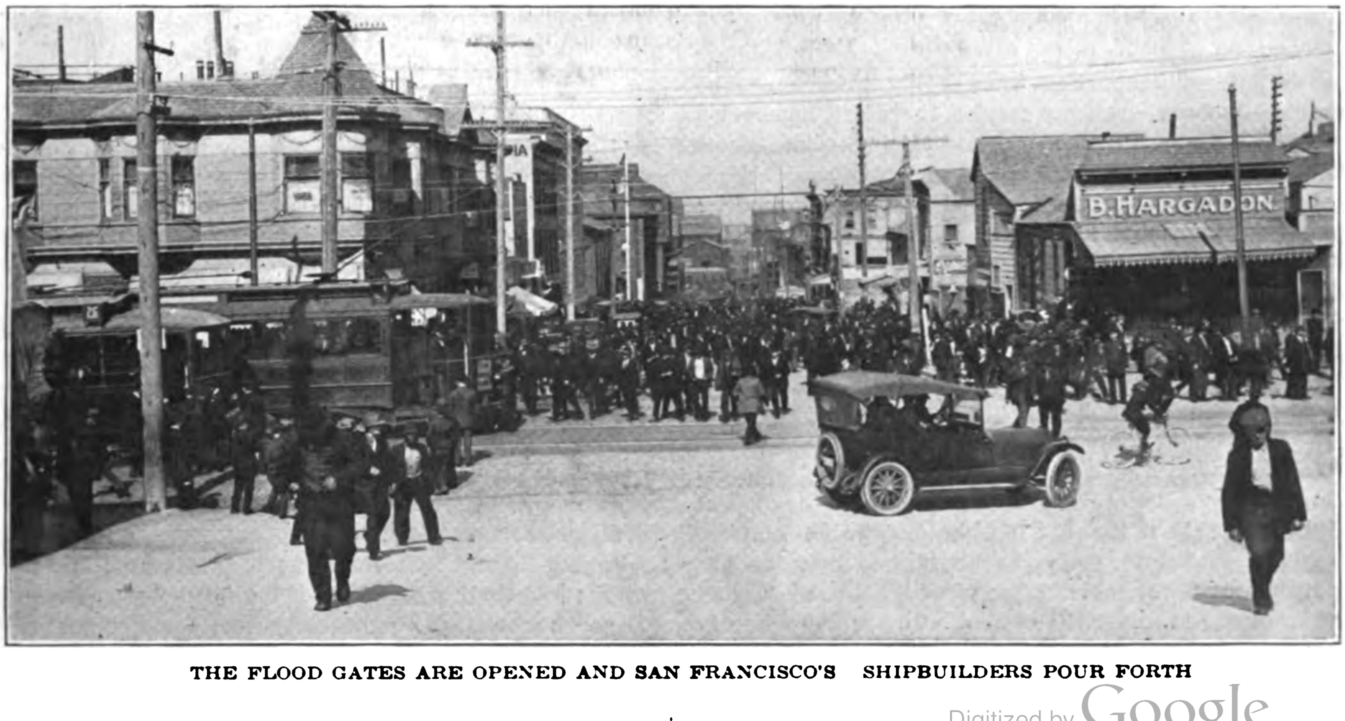
THE famous Union Iron Works of San Francisco represents the greatest war industry of that city. The works has been accessible for years by means of the old lines of the United Railroads, but with the recent increase of shipbuilders to 8300 or more it was deemed desirable to get the men to and from their homes by shorter, non-transfer routes.

Therefore the railway of its own volition arranged to pay for the construction of a 1-mile line on Army Street to connect with the existing lines over Twentieth Street about ½ mile from the main gates of the Union Iron Works. At this writing only one track has been completed, but the cars are fed to the loading district in such a way that this track can be devoted exclusively to handling all rush traffic bound in one direction. The empties are sent back by routes which are more roundabout.


FRONT-END FARE COLLECTORS OF THE UNITED RAILROADS DASHING TO THE NEXT CARS FOR SHIPBUILDERS

The works are located on the bay in South San Francisco, and most of the men live in Daly City, the Mission District and other southwestern sections. Through the Army Street line the great mass of riders enjoy direct service and a saving in time of twenty minutes each way.

Shortly before the main closing time, 4.40 p.m., about seventy-five cars are in line on both tracks at Twentieth Street and moving toward Third Street, which, curiously enough, is at right angles to Twentieth Street. At this intersection from twelve to fifteen front-end fare collectors are spread along to assist in speeding up the loading. As these men are experienced conductors (who have already completed their daily platform stint), they



THE FLOOD GATES ARE OPENED AND SAN FRANCISCO'S SHIPBUILDERS POUR FORTH are very helpful in directing the traffic. The cars are loaded with such amazing speed that from seventy-five to ninety cars are disposed of in from fifteen to twenty minutes.

As at so many shipyards, a rough element is included among the workers. Some of them try to jump through the car windows, and plenty of them endeavor to ride on the fenders, simply to escape paying a 5-cent fare. Often, too, the platforms are packed, with scarcely a standee inside. This is particularly true on warm evenings in the case of the California-type car in which there is a closed section with bulkheads, doors and longitudinal seats in the center. In short, the service is ample, but it is not used by the passengers to full advantage. Jitney competition is not a factor in the case, as the jitney fare is 10 cents.

Negotiations are now under way with the Emergency Fleet Corporation and the Union Iron Works for the construction of a sheltered prepayment area. This would enable the railway to handle the service more efficiently and would be a boon to the workmen in bad weather. The subject of staggering the hours at this plant is also under consideration.

The Union Iron Works is building another plant at Hunter's Point, several miles south and 3½ miles from existing electric railway routes. Without financial aid, however, the United Railroads could hardly undertake to build such a line for only 4000 to 5000 men traveling one round trip a day. The matter of providing electric railway service for the workers at this new plant is now under negotiation.

Carrying the Boys at Houston

6900-Ft. Extension to Camp Logan—Siding Station at Ellington Field—Aviation Traffic $10,000 Monthly

IN ORDER to give service to Camp Logan the Houston (Tex.) Electric Company last year extended its West End line by 6900 ft. of single track and built a prepayment area with ordinary ticket boxes. This work cost about $60,000 and for a most uncertain traffic. In the first place, the number of soldiers has varied from 35,000 to 4000; in the second place, many soldiers prefer automobile parties when going to town. The increase in electric railway service, therefore, has varied in accordance with the fluctuations in traffic to be handled by the company.

A somewhat better traffic proposition is afforded by the aviation ground known as Ellington Field. This is located within 17 miles of Houston and about a mile from the Galveston-Houston interurban line. To serve this field the company built a siding and station at a cost of about $17,000.

The aviators, particularly the cadets, have money to spend and are good riders. Many of the men go to Galveston for the week end. Bad weather increases travel, as then the aviators are idle. The monthly increase in gross earnings for passenger traffic at Ellington Field is about $10,000, in addition to from $1,200 to $1,500 for supplying light and power. The additional railway service is provided by increasing the length of trains without change in the usual hourly headway.

While there is some shipbuilding going on along the Houston Channel at Harrisburg, 5 miles from Houston, it has no direct influence on electric railway travel. There are two plants—the Universal Shipbuilding Company and the Midland Bridge Company—building 3500-ton vessels for the Emergency Fleet Corporation. The Universal has a contract for twelve ships and the Midland one for six, totaling $4,400,000. There are probably less than 3000 employees, and these travel by steam train or automobile. Travel by boat is also possible, but it is too slow.

A Graceful Gift

GEORGE H. CLIFFORD, vice-president and local manager Northern Texas Traction Company, is one of Fort Worth's most public-spirited citizens. As one pictorial proof note the beautiful 75-ft. Western red-cedar pole which his company donated to fly Fort Worth's honor flag for going over the top with the Third Liberty Loan.

The pole has been erected in front of the Texas & Pacific Railway passenger station, so that both the native and the stranger are not left in doubt as to where Fort Worth stands. Looking at this handsome pole, one may say with truth that it was a graceful gift in a double sense.

An earlier similar gift proposed by Mr. Clifford was a 70-ft. pole which now floats the flag of staff headquarters at Camp Bowie, located not 3 miles from the center of Fort Worth.

Houston War Gardens Win Prizes

TO ENCOURAGE the cultivation of war gardens the Houston (Tex.) Electric Company in February sent a letter to its men asking them to signify by the end of March whether they would care to compete for war garden prizes consisting of one award at $25, three at $15 and ten at $5. Ninety-two of the company's employees entered the competition.

Inspection of the gardens, which began on May 10, required almost four days of the judges' time. The principal points considered were the character of the soil, the care shown in handling the garden, and the ability to diversify and rotate the crops. The winner of the first prize secured particularly good results with beans and potatoes. Of the latter he raised nearly twenty bushels.

Besides taking part in the official competition, the men showed their interest by bringing down specimens of their farm craft to the clubrooms for comparisons of size and quality.

What Is a Fair Return in War Time?

Increase in Rate of Return Is Not Justifiable Because of Decline in Purchasing Power of Money, But Commissions Should Preserve Old Fair Returns—Rate on New Investment Must Be Based on Market Conditions—The Different Rates Can Be Easily Handled

BY JOHN BAUER
Princeton University

OPERATING costs of public utilities have increased tremendously during the war, so that extensive revision of rates has become necessary. In many cases where before the war the margin of earnings above a fair return was narrow, increases have already been granted by the public service commissions. Many other companies are only beginning now to feel the keen pressure of mounting costs and to seek relief. Commissions all over the country will be flooded this year with petitions for higher rates, and extensive advances will have to be allowed.

In every case for increased rates, the question of a fair return on investment will have to be considered. What, during the war, is a fair return? What special adjustments, if any, should be made because of the war? This question has been answered in two extreme ways: (1) That inadequate returns on investment, especially to stockholders, should not be made the occasion for rate advances; and (2) that the return should be increased in proportion to the change in general prices, to compensate the security holders for loss in purchasing power of money received as interest or dividends.

Ideally, public utility investments should be regarded in the nature of loans to the public, and as such should have a fixed return whatever the change in operating conditions. Unfortunately, however, their status has not become clearly defined, so that even before the present emergency both the basis and the rate of return were uncertain quantities, subject to reasonable decision in each case. This indefinite situation continues, and each case will have to be treated under the broad rule of reasonableness.

QUESTION OF A FAIR RETURN IS DIFFICULT

But what is a reasonable return? This question was a baffling one before the war and is particularly so now. Neither of the foregoing views seems satisfactory. A return cannot fairly be shut off even on stock investment; nor can it well be adjusted to the shifting purchasing power of money.

The first view would be short-sighted indeed, especially if we continued to call on private capital for new investment. Many improvements must be made during the war, in many instances because of the war. Then how can the funds be obtained if a sufficient return is not allowed for the purpose? This, of course, is in addition to the general point that in any event past investment for public service should be treated justly. While the consumers should be protected, the security holders are also bearing the increased cost of living, war taxes, etc., and should receive due consideration from the public service commissions.

The second view, however, that the return should be adjusted to the changing purchasing power of money, seems altogether unreasonable. Just why should the adjustment be made? It is true, of course, that the rising prices have reduced the real income of the security holders, even if the same returns in terms of dollars are obtained. But the bondholders in all industries have fixed money incomes and have had the same shrinkage in real income as the public utility bondholders—yet there has been no thought of changing the general interest contract. Suppose that the suggested adjustment were made; would the bondholders of the public utilities share in the benefit? If not, then why should the stockholders be treated differently? It is true that they bear more risk than the bondholders; but they are nevertheless protected in their income, besides being shielded from the competition of other companies or individuals. Since any change in the rate would go only to the benefit of the stockholders, would it be reasonable to make any adjustments?

STANDARDS OF FAIRNESS TO BE FOLLOWED

Is it not the sensible view that the investors shall be treated according to the same general standards as before the war, receiving a fair return on the fair value of the property, with the standards of fairness practically unchanged? They would then get the same money return but would sacrifice considerable real income because of the decline in the purchasing power of money. They would thus incur a sufficiently high burden due to the war. No other penalty should reasonably be imposed, but no ground for relief can be urged. The following special points, however, should receive consideration:

1. The general basis of valuation should not be changed from the standards before the war. The unit prices used in an appraisal certainly should not reflect the present abnormal conditions. While new investment will have to be made at present high prices, that can be specially provided for by adding the actual new cost to the rate base.

2. On new investment, the rate of return allowed must be based on market conditions. If additions must be made, and if new capital will cost 8 per cent or more, the rate must be paid and the consumers must bear the cost. But this high rate should not be applied to old investment, made when interest rates were lower and the requirements of the investors were less.

3. A distinction should be made between companies that have been making excessive returns in recent years and those that have been operating on a narrow margin or have not been making a fair return. In the latter cases adjustment in rates to meet increasing costs should be promptly made. But in cases where there have been surplus earnings, there is less reason why immediate rate increases should be allowed, even if a full return on investment is not being earned. The companies are entitled only to a fair average return from year to year. The failure to make a full return in one year does not justify immediate increases in rates. If, say, during the last five years a company has made more than 8 per cent on the investment, there would be good reason for postponing any rate increases even if considerably less than a fair return is earned under present conditions. There would be a sufficient margin in the past earnings to justify a wait for developments during the uncertain present circumstances.

4. When rate increases are allowed because of emergency, the facts should be clearly set forth, and due caution should be given that when conditions again permit, a reduction in rates will be ordered. Commissions ought to keep unusually close track of operating and financial conditions; they should be ready to permit increases in rates promptly if they are needed, but they should be equally prepared to order reductions when they are again fairly justified.

DIFFERENT RATES ON OLD AND NEW INVESTMENTS WILL DO NO HARM

The second point made above raises the question as to whether or not it is injurious to have different rates of return for old and new investments. Would the credit of the company suffer from the rate of return on the old investment not being increased to meet the higher rate now prevailing for new capital? One of the chief factors in the size of the rate of return is the certainty of the return. The greater the risk, the higher the rate of return; the lower the risk, the less the rate of return. Certainty means that the contemplated return will actually be paid. If the entire prior investment obtains the return that was contemplated or fairly expected as the successive security issues were made, all the contracts, actual or implied, will have been kept, and the company's credit to that extent is good. With a new issue of securities the chief consideration is that the promised or reasonably implied interest will be paid. If there is practical certainty that it will be paid, the company can get capital funds at rates representing good credit, even though the rate of return on past or existing investment is much less than must be paid for the new capital.

Another pertinent question is this—is it practicable for a utility to have different rates of return on its old and new investments? If the property has been previously appraised for rate purposes, so that the past investment entitled to a return is established, the payment of a higher rate of return on the new investment can be easily managed. If bonds are issued, they will have to be sold at a discount, and the amortization of the discount during the life of the bonds should be included in the return. The bondholders will get the high return which they now expect, if they receive, say, 5 per cent on the par value of the bonds purchased at a discount, and the company will be able to meet its obligations if it receives in its return the 5 per cent interest and the amortization of the discount. In other words, these requirements for the new investment are simply added to the return required on the previously existing investment.

The matter is more difficult to handle if funds are raised through the issuance of capital stock, because this cannot be sold below par unless special legal provisions have been made. But the bulk of recent public utility investments has been made through bonds, and this is probably the most satisfactory method of financing semi-public securities and should be used under the circumstances here discussed. The actually necessary interest burden for new capital would then be placed upon the public, and a fair return according to former conditions would be paid on the previous investment.

If the past investment has not been determined and the fair return is uncertain, then the problem of maintaining credit is a more difficult one, unless the proposed issues can be given preferential rights over existing securities and their return be practically guaranteed. If the new issues simply take equal place with their kind of previously existing capitalization, it is possible that the contemplated return may not be obtained. Then, before the company can increase its rates to maintain its return on investment, a valuation must be made to determine a fair return; otherwise, only such rate increases can be allowed as are obviously necessary to prevent insolvency.

Each case of uncertain past investment, however, must be handled according to its own facts. In most instances, perhaps, although the total investment may be indefinite, the bonds outstanding are clearly well under the fair value of the property, so that the new bonds may be issued with practical assurance of interest payment. In such cases, fixed charges can be maintained through rate increases without a valuation of the property. But there are many cases where the bonds outstanding do not represent fair investment, or at least where there is uncertainty. Then the only way good credit can be established is to determine first the existing investment so that the necessary return can be ascertained. After that the interest on new securities can be easily managed.

RATE INCREASES MUST BE BASED ON FACTS

But all this leads to a question slightly touched upon before the proper valuation procedure in war time. No difficulty arises in this connection if the company has been under fairly active commission control. In such a case the investment has probably been definitely fixed as of some past date, so that the problem of determining a fair return is merely to add the property installed since the appraisal and subtract the withdrawals. This work and a statistical analysis of the financial facts with a moderately competent force would not require more than two or three weeks for the establishment of fair rates.

Expedition is difficult, however, if the company's property has not been previously appraised, and unfortunately, the country over, such companies probably predominate. Every public service property, subject to rate control, should have been appraised some time during the last ten or fifteen years and the investment entitled to a return definitely fixed. Then rate control would have been practically an automatic matter, subject merely to accounting supervision. Yet no systematic policy has been carried out, and the utilities are in a state of indefiniteness for which they have a large share of responsibility. When now they ask for increases, therefore, they should not expect the commissions to proceed without facts. Even with maximum expedition, facts must be considered.

There are, of course, cases where advances can properly be allowed without direct reference to valuation. If a company is not making operating expenses, then ordinarily relief may be safely granted to the extent of the deficiency. Usually, also, if a company is not making interest, rentals and other fixed charges, and is in danger of insolvency, rate advances should be allowed. But even in these cases there must be some regard for valuation. For example, the returns that have been made in recent years must be examined, which involves valuation. The question arises whether large charges have been and are being made for amortization and other reserves, which might be safely discontinued for a time or whose funds might be used to meet fixed charges; but the reasonableness of such adjustments would depend upon the returns earned and therefore involves valuation. Moreover, fixed charges have no necessary validity for rate purposes. They may represent interest on overcapitalization in bonds issued in heedless consolidations, or rent payments on contracts that can find no support in a rational public policy; these questions involve valuation.

It seems, therefore, that an unappraised property must be content with such adjustments as are obviously necessary, or go through a formal rate procedure to determine the investment and the reasonable return. If it tries to maintain its pre-war income, it seeks to assume the reasonableness of that income, and the commission simply cannot accept such assumption without a fairly definite basis or judgment, which means valuation. Of course, the obviously necessary increases may be allowed, and the more equitable determination may be deferred until the essential facts have been ascertained.

The extent of the delay in securing a formal valuation and its expenses will depend largely upon the attitude of the companies. If they are willing to adopt a reasonable basis of valuation and use short-cut methods of appraisal, they will obtain substantial justice at moderate expenditure of time and money. If, however, they fight for the highest possible valuation, insist on reproduction cost at war prices, dispute the rational treatment of depreciation, claim unjustifiable overhead charges and absurd going value, and make inventories with pinpoint minuteness, they will naturally roll up huge expenses and cause intolerable delay in time—all to no clear advantage to themselves.

Much talk is going on about emergency increases for the period of the war. There should be no mistake about this matter. If rate increases are necessary now because of high costs, they will continue to be so for the same reason. Not only will there be no decrease in costs during the war, but there will probably be further increases, and high costs will remain indefinitely after the war. If this view is correct, there is all the more reason, except for real emergency cases to avoid insolvency, why the fundamental factors controlling a rate proceeding should be adequately regarded even at the present critical time.

In general, therefore, the only satisfactory way out of the difficulty is for the commissions to grant emergency relief where clearly necessary, and then proceed with quick appraisals of the properties, following a reasonable general basis of valuation and using rational short cuts in the inventories and the computations. Without obstructionist tactics and with both the commissions and the companies eager to have the work completed, the work of valuing the utilities can be greatly expedited.

British Relief Recommended

Committee of House of Commons Favors Temporary Modification of Statutory Limitations on Rates

The select committee, recently appointed by the House of Commons, to consider the temporary modification of statutory requirements with regard to British tramway fares has issued a report recommending such relief. Previous reference to this committee was made in the issue of the ELECTRIC RAILWAY JOURNAL for June 1, page 1057.

Evidence tendered by the Tramways & Light Railways Association and the Municipal Tramways Association showed that all tramway and light railway undertakings are injuriously affected by increased working expenses due to the war, wages having risen from 60 to 100 per cent and cost of materials from 100 to 200 per cent. In addition, the increased cost of fuel, and, consequently, of power, coupled with restrictions imposed on supply, should be taken into consideration.

According to the committee's report, the larger revenue earned by many tramways does not compensate for the constantly advancing costs of operation, although in most of the large towns, where the tramway systems are generally owned by the municipalities, there is still a margin, since the fares charged are in most cases lower than the statutory maximum. Some possibility of relief, the committee feels, should be afforded to those undertakings which cannot increase their revenue. Although in the case of municipalities deficits can be made good out of the rates, the passenger should not be carried at a loss.

The committee therefore recommends that the Board of Trade should be empowered by general legislation to permit the temporary modification of statutory rate requirements in the case of undertakings whose financial circumstances are proved to the satisfaction of the board to have been injuriously affected by causes arising out of the war, the word "temporary" covering a period limited to the duration of the war and two years after its termination.

Because of narrow streets and increased danger from automobiles sweeping conductors off of running boards, the Portland (Ore.) Railway, Light & Power Company has cut an aisle through fifty-seven open cars to be used only to facilitate safer fare collection by the company.

Seven-Cent Minimum Fare Allowed

Middlesex & Boston Unit Increase Intended for Quick Relief—Commission Suggests Change Later to Encourage Short-Haul Rider

AN INCREASE in fare to 7 cents has just been allowed to one of the pioneer 6-cent electric railway lines in the country, namely to the Middlesex & Boston Street Railway, Newtonville, Mass., by the Massachusetts Public Service Commission. In sanctioning the 7-cent minimum rate the commission says it is far from convinced that the tariff plan is superior to the zone method adhered to by many of the other large companies of the State. The board feels that the institution of a higher minimum rate may discourage short-haul travel, but it will give the company a chance to show what the flat increase may effect in additional revenue.

The commission believes that the company should be permitted:

1. To make the unit fare 7 cents on all lines where it is now 6 cents, which will give the company a substantial increase in rate where the traffic is heaviest.
2. To abolish the present tickets, sold at the rate of twenty for $1.20 on most of the lines where the cash fare is 7 cents.
3. To charge 1 cent additional in transferring from a line with a 7-cent fare to one with an 8-cent fare.
4. To continue the present 8-cent rate on the unprofitable lines where it is now charged.

The Middlesex & Boston Street Railway differs from nearly all the other larger companies as to the best method of raising fares. The general view in Massachusetts seems to be that it is desirable to try to hold short-haul business by keeping the minimum fare relatively low. The Middlesex & Boston company strongly adheres to the principal of a progressive marking-up of fare units, regardless of the effect on short-haul traffic. In commenting upon this situation the commission says in part:

"In the Bay State rate case, it was held that the company must satisfy the commission that there is at least a reasonable prospect that the change in fares desired will result in an increase in revenue. There is great practical difficulty, however, in applying this rule. Where a need for additional revenue has been demonstrated, the commission would not be justified in refusing to allow a company to adopt a certain method of securing this revenue merely because of a difference of opinion in regard to the probable results. There must be evidence sufficiently clear to convince reasonable men that the method ought in both the company's and the public's interest to be set aside.

"Up to the present time, unfortunately, the evidence in regard to the effect of increases in fares is not entirely clear. While the experience of practically all the companies which have raised rates has been disappointing, general conditions have been so abnormal that it is difficult to draw positive conclusions. In several cases companies have gained very little apparent benefit from the increase, but in every such instance they have been strong in the belief that results would have been worse if the increase had not been made. The falling off in traffic has been ascribed only in part to the higher fares, and such factors as increased use of automobiles, weather conditions, the departure of young men for war service and the thrift campaign are also held responsible. In the present instance these other factors have, without doubt, played a large part in the poor showing of the last eight months, and this is especially true of the unusually severe winter weather in January, February and March. The Boston & Worcester Street Railway, which operates in part through the same territory and has a mileage zone system with a minimum fare of 6 cents, has made no better showing than the Middlesex & Boston Street Railway.

"The commission is inclined to the opinion that the proposed fares do not represent a well-considered plan for the raising of additional revenue. At the same time, the commission is satisfied that there is at least a reasonable prospect that this schedule, taken as a whole, will result in some increase in revenue and it cannot, therefore, be disallowed in its entirety.

"We are not satisfied that the 1-cent transfer charge ought in all cases to be permitted. In transferring from a line with a lower to one with a higher fare such a charge is reasonable, but where the lines are of similar character and the rate is the same there seems no adequate justification for requiring a passenger to submit to the inconvenience of changing cars and pay an extra charge as well. In cities which have a clearly marked traffic center, it may be a fair assumption that most passengers who transfer at this point secure in this way a ride longer than the average, but no evidence was offered that this is the case with the transfer passengers of the Middlesex & Boston Street Railway.

"The demands of labor have made the situation critical and the company needs quick relief. It would not be wise or fair, under present conditions, to delay this relief until the study of traffic conditions could be made which would be necessary to determine whether or not it is possible to devise a system of fares better adapted than the one now proposed to hold the short-haul rider and encourage the movement of traffic."

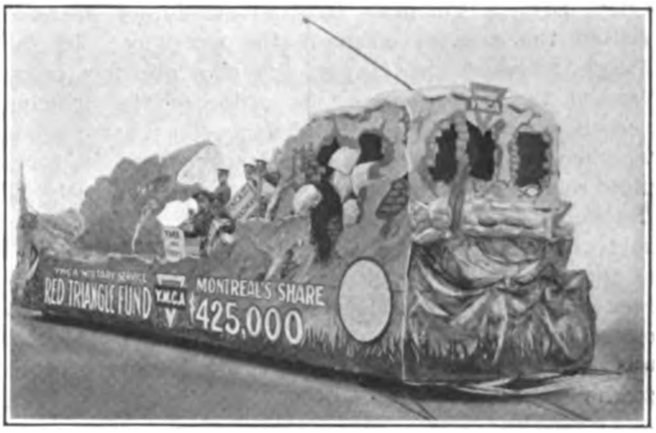
Class Compartments May Be Abolished in Manila

THE cars of the Manila Electric Railroad & Light Corporation are still divided into first-class and second-class sections with different rates of fare, but there may be only one class if suggestions made by C. N. Duffy, vice-president of the company, at a recent hearing before the Public Utility Commission are carried out. The division between first and second class is made now only by a rope barrier stretched across the car, so that on a double-end car the seats which are first class on the outbound trip are second class on the inbound trip and vice versa.

The statement by Mr. Duffy was made during a hearing before the commission on the subject of the desirability of an order limiting the number of passengers on the cars. Mr. Duffy argued against such an order and suggested in its place the abolition of the class-division mentioned, a change in the fare so that the rate will be 8 centavos with 1 centavo extra for a transfer, with the fare for children at 5 centavos, including the right to transfer, and that the present practice of selling tickets be abolished.

TO SAVE THE WRECKS OF HUMANITY
TO FILL THE HANDS HELD OUT TO US
"COME O
2nd

RED CROSS FLOAT AT DALLAS



Y. M. C. A. FLOAT IN MONTREAL

Car Floats Help Bonds and Red Cross Campaigns

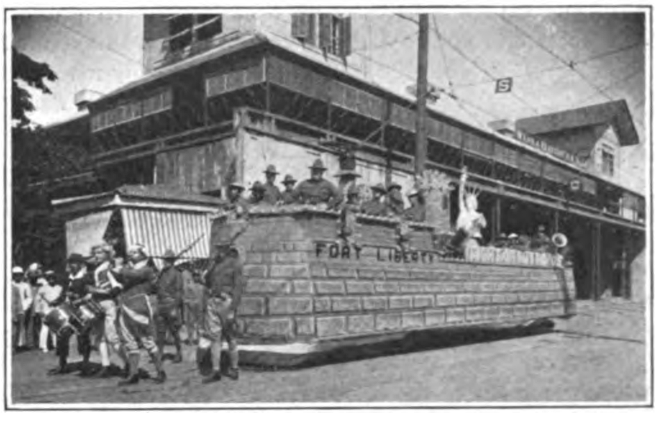
Flat Cars Converted Into Patriotic Floats Symbolizing Present-Day War Need Lent Effective Aid in Recent Campaigns

THE ordinary flat car on an electric railway furnished the ideal basis for a parade float. As compared with the float drawn by horses it is far superior, being limited in neither size nor speed. It can be used, of course, only on streets with tracks, but this is not a hampering condition in most cases, because the principal streets usually have tracks.

During the recent Liberty Loan and Red Cross campaigns several electric railway companies operated floats of this character and views of a few of them are published as supplementary to those which have appeared in prior issues.

The first view shows a work car of the Dallas Railway used as one of the features of the Red Cross drive in Dallas on May 18 and carrying suitable sayings and decorations. It was escorted by Red Cross nurses and Uncle Sam's own soldiers, and was followed by a car carrying the Camp Dick cadet band of forty-two pieces. These cars paraded all Saturday afternoon and night and made a great hit. The car was furnished through the efforts of H. B. Fisher, assistant to the manager.

The second illustration represents "Fort Liberty," built by the Manila Electric Railroad & Light Corporation and used during the last Liberty Loan campaign in that city. The foundation was one of the company's double-truck flat cars equipped with motors and it was built up to represent a masonry fort, equipped with cannon and machine guns. The fort was outlined in incandescent lamps and carried a representation of the Statue of Liberty and the words "Fight or Buy Bonds." A third view illustrates a float used during the Y. M. C. A. campaign for funds in Montreal. The flat car in this case was one having an operating cab at one end, and this cab was utilized to form a representation of a Y. M. C. A. hut, while the "trenches" were constructed of sand bags. Altogether the float was very realistic, and as it carried a bugle band it attracted great attention.



FLOAT TO REPRESENT MASONRY FORT, USED DURING LAST LIBERTY LOAN CAMPAIGN IN MANILA

The Mahoning & Shenango Railway was another company to build an electric railway float for the last Red Cross Campaign.

Public Good-Will Is an Asset

EVENTS of the last year, according to a recent statement issued by H. L. Doherty & Company, New York, N. Y., have proved to managers of public utility corporations the great value of public good-will. An analysis of the rate situation existing throughout the United States shows that in almost every instance where there has been concerted opposition by the public to a proposed advance, the utility has not enjoyed good relations with the public served.

In communities where the utility has taken the attitude that it is much more of a necessity to the public than the public is to it, great difficulty has been encountered in securing any adequate revisions of rate schedules. On the other hand, where a utility has recognized that the relations between it and its public are reciprocal, the utility has had fairly smooth progress in securing adjustments to meet the increased cost of operation.

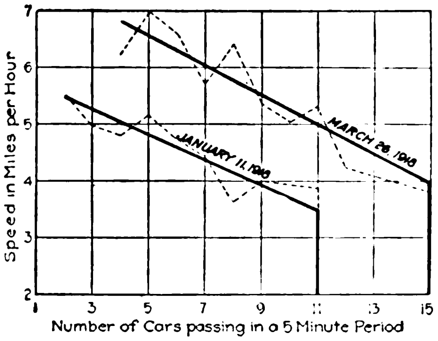
Wherever utility managers have been vitally interested and personal factors in the growth and the prosperity of the communities served, they have encountered no great amount of opposition in advancing rates to a living level. The public generally now realizes that rates for utility service must be advanced and, where adequate service has been furnished and proper consideration given to the needs of the community, the public is not adverse to giving a proper rate. Recently, it is related, a delegation from a city in which a

Cities Service Company lighting subsidiary operates, visited the general office of the company. In this delegation were the Mayor, the city attorney, members of the City Council, the editor of the principal newspaper and other public officials. They came to ask whether the Cities Service organization could not formulate some plan by which it could take over operation of the electric railway system in that city. The Mayor said that the lighting company did not ask enough of the city, and other city officials said that they stood ready to grant any proper demands. In so far as the electric railway was concerned, the first consideration was Cities Service operation, with all other matters coming second.

Loading Platforms and Front-End Collectors in Washington

Report Recently Issued by Mr. Beeler Describes the Results from Improvements Introduced Earlier in Year

THE eighth section of Mr. Beeler's report on Washington traffic conditions dated May 23 has recently been made public. It is quite brief and, in general, summarizes the results secured through the adoption of some of the previous recommendations, principally those on reduction of stops, double berthing, loading platforms and front-end fare collection and recommends the extension of these practices at certain points. The accompanying diagram shows clearly the effect on speed and track capacity of the methods adopted for relief on the Fifteenth Street throat, where the capacity of track was increased from 132 cars to 180 cars per hour between the two dates given on the chart. Mr. Beeler thinks further improvement possible as the trainmen become more used to the new methods and use the double berths more effectively and as the movements of the cars are better co-ordinated with the signals of the traffic police and the front-end collectors.



SPEED AND TRACK CAPACITY AT FIFTEENTH STREET THROAT BEFORE AND AFTER CHANGES WERE MADE

MORE LOADING PLATFORMS NEEDED

The report recommends more loading platforms, notably on Pennsylvania Avenue, and says that those installed have proved a distinct help in insuring the safety and comfort of passengers as well as of speeding up the movement of cars by permitting easier and more rapid ingress and egress. They not only concentrate those desiring to board in an absolutely safe zone right at the point where the car will stop, but they are also a great aid to the front-end collector, who is enabled to devote his entire time to car patrons, as he can operate in safety.

Experience in Washington has demonstrated the advisibility of placing platforms opposite each other wherever practicable. A form of concentrated safety zone is thus established. The inspector or front-end collector on one platform has an opportunity to observe conditions existing on the other. The cross travel between platforms and curbs is concentrated so that automobile drivers have less difficulty in watching pedestrian movement, as the two platforms are passed simultaneously instead of singly. Street cars are also passing each other slowly. As passengers pass to and from either side of the street, a clear view of both roadways is a great advantage.

Although protected by red lights after dark, several times since the platforms have been installed careless automobile drivers have tried to run over them. To enhance their visibility and improve their appearance generally, the report says that the risers should be kept well painted, either a light gray or a buff. The dimensions of those now in use are 6 ft. wide, 96 ft. long and 9 in. high.

Mr. Beeler recommends loading platforms at all car stops where the number of passengers handled is such that standing time at stops can be reduced materially and where the platforms as a safety measure are desirable. He also recommends double berthing at all stopping places on paved streets in the District of Columbia except where the second car will block an intersecting street. This does not mean that the second berth will be in constant use, as when the cars are properly spaced there will be no occasion for stopping in the second berth, but during the rush hours and at times of unusual conditions, the service can be materially speeded up if this plan is adopted.

FRONT-END COLLECTION

The advantages of front-end collection are mentioned as being (1) decrease in loading time because passengers get on the cars simultaneously, and (2) more even loading of the cars. The front-end collector is of distinct advantage to patrons because he can sell tickets and make change before the cars arrive, as well as collect fares. The report points out that one front-end collector can often cover two points where the rush periods of the two do not coincide.

Texas Employees Form Mutual Aid Society

Employees of the Galveston (Tex.) Electric Company have organized a mutual benefit association the object of which is to extend financial aid to members who may become ill or meet with financial reverses through any cause. The organization has 166 members and has been granted a charter by the Secretary of State at Austin.

All funds of the association will be obtained through the payment of dues of $1 a month by each member and the company has agreed to pay $1 a month for each member. This gives the association an income of $332 each month. Under the plan of extending aid, any member who becomes ill or suffers an accident will be paid $2 a day after the fifth day for a period of 120 days and $1 a day thereafter for a period of 60 days, making $300 as the maximum benefit. In case of death the beneficiary will receive $1,000.

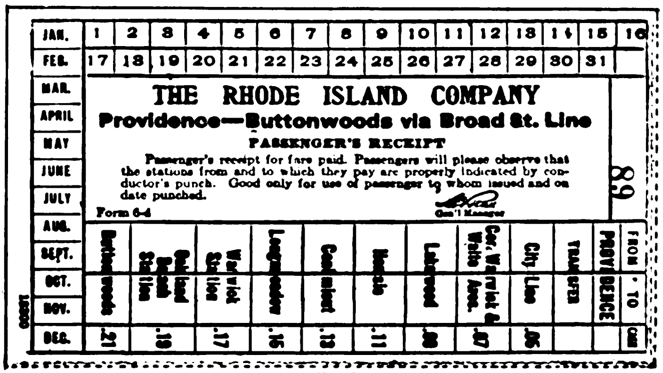
Getting the Zone System Started at Providence

Initial Difficulties in Fare Collection Have Been Overcome, and Zone System Is Now In Full and Satisfactory Operation on the Rhode Island Company Property

THE zone system of fare collection has been in operation on the property of the Rhode Island Company since the first week of May. The decision to use this system was reached after long discussion in the Legislature, and there was up to the last a very strong sentiment in favor of a flat increase in fare from 5 cents to 6 cents. While early in the controversy the company would have been glad to have this flat increase as a temporary expedient, toward the end of the discussion it strongly advocated the zone system as a more general solution of its difficulties, the time when a flat increase of 20 per cent in fare would have been effective having gone by. The company realized that there would be difficulties to face in the matter of fare collection, but it was thought that these had better be faced at the start and overcome once for all rather than temporizing with the simpler but less comprehensive expedient. The story of the development of the present plan has been traced from week to week in the columns of the ELECTRIC RAILWAY JOURNAL and need not be repeated here. The purpose of the present article is to state briefly what has occurred since the zone plan went into effect on May 5. There are two aspects of the fare collection situation in Rhode Island, namely, the urban and the interurban. In the cities the Rhode Island Company has used and will continue to use the Rooke register, while between cities a ticket system is employed. The registers originally contained two counters, one for nickels and one for dimes. The manufacturers have now rearranged the registers to indicate nickels, 2-cent metal tickets or tokens, and dimes. Fortunately it was possible to do this with very little difficulty. The registers, are used for collecting 5, 7 and 9-cent fares. The construction is such that the nickels register on their own counters only, the metal tickets register on their own and the 5-cent counters, while the dimes register on their own counters only.

The metal tickets are not sold to the passengers but are handed to them in the 2-cent zones and immediately deposited in the register. It has not been found expedient so far to sell the tickets in quantities, and it is doubtful if this will be done later. On boarding the car the passenger deposits a nickel in the register, and the conductor goes through the car in each 2-cent zone collecting a fare from each passenger who has boarded the car in another zone. At first a twelve-sided ticket was used, with the idea of making it distinguishable from a coin by sense of touch. This form proved unsatisfactory in the register, however, on account of the inequality in diameter. The present form of metal ticket, full size, is shown in an accompanying illustration.

On the face of the metal ticket is this legend: "Two-Cent Zone Fare Tickets, the R. I. Co.," and on the reverse is "Good Only for Continuous Ride After Five-Cent Fare Has Been Paid."



JAN.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FEB.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

THE RHODE ISLAND COMPANY

Providence—Buttonwoods via Broad St. Line

PASSENGER'S RECEIPT

Passenger's receipt for fare paid. Passengers will please observe that the stations from and to which they pay are properly indicated by conductor's punch. Good only for use of passenger to whom issued and on date punched.

Form 6-4

Gen'l Manager

89

FROM · TO

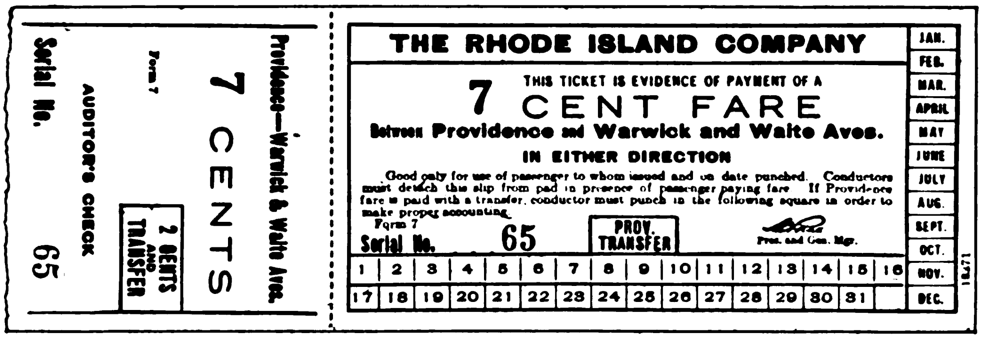
PROVIDENCE

TRANSFER

City Line

.21 .19 .17 .15 .13 .11

FIG. 1



Providence—Warwick & Waite Aves.

7 CENTS

Form 7

2 CENTS AND TRANSFER

AUDITOR'S CHECK

Serial No. 65

THE RHODE ISLAND COMPANY

7 THIS TICKET IS EVIDENCE OF PAYMENT OF A CENT FARE

Between Providence and Warwick and Waite Aves.

IN EITHER DIRECTION

Good only for use of passenger to whom issued and on date punched. Conductors must detach this slip from pad in presence of passenger paying fare. If Providence fare is paid with a transfer, conductor must punch in the following square in order to make proper accounting.

Form 7

Serial No. 65

PROV. TRANSFER

Pres. and Gen. Mgr.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

FIG. 2

Fig. 1—Passengers' part of duplex ticket first used in collecting zone fares by the Rhode Island Company. Fig. 2—Form of ticket now used on Rhode Island Company's interurban lines, replacing that shown in Fig. 1.

PAST AND PRESENT ZONE-FARE TICKETS, RHODE ISLAND COMPANY

PAPER TICKETS USED ON THE INTERURBANS

When the zone system was first inaugurated a duplex form of ticket was used on the interurban lines, as shown in Fig. 2. The conductor punched the fare paid and the passenger retained one part of the ticket as a receipt, the other being the auditor's check. It was found almost immediately that this form of ticket was unsuitable for the local conditions for two reasons. In the first place, its use required too much of the conductor's time in punching and in detaching the passenger's sections. In addition, at the end of the run a half hour or more of the conductor's time was consumed in balancing his accounts so as to turn in the proper amount of cash.

Accordingly the duplex ticket was abandoned, except for passengers riding between intermediate points only, and a new ticket of the form shown in Fig. 2 was adopted. In this form a distinctive color is used for each zone and the amount of the fare is printed plainly on the face of the ticket and on the stub. The tickets and stubs are serially numbered. All that the conductor has to do is to punch the dates on a number of tickets in advance, and when a passenger tenders a transfer as part payment of fare the conductor punches a hole in a space provided for this purpose. At the end of the run he simply has to subtract the serial numbers of the stubs at the beginning and end of the run, multiply this by the rate of fare and subtract 5 cents for each transfer, to give him his total. The maximum number of pads required on any one route is eight and the conductors readily handle this number. The amount of time now required for accounting purposes by the conductors is negligible.

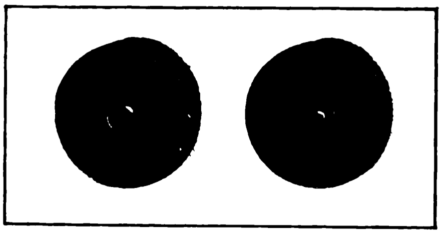
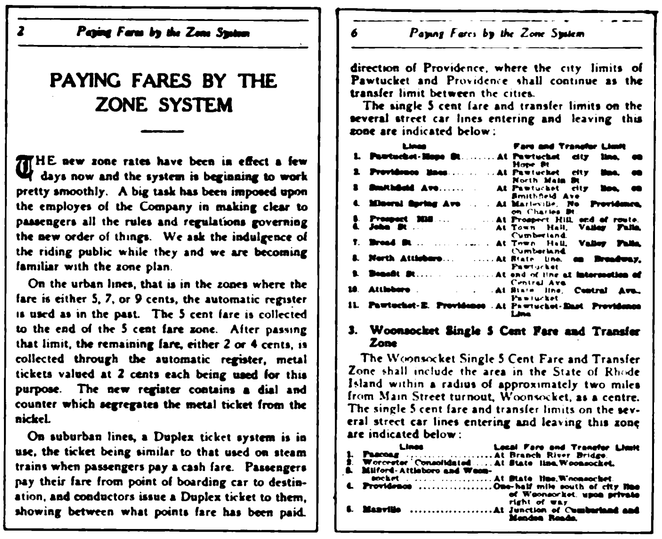


FIG. 3—METAL TOKEN USED IN TWO-CENT FARE ZONE



2 *Paying Fares by the Zone System*

PAYING FARES BY THE ZONE SYSTEM

THE new zone rates have been in effect a few days now and the system is beginning to work pretty smoothly. A big task has been imposed upon the employes of the Company in making clear to passengers all the rules and regulations governing the new order of things. We ask the indulgence of the riding public while they and we are becoming familiar with the zone plan.

On the urban lines, that is in the zones where the fare is either 5, 7, or 9 cents, the automatic register is used as in the past. The 5 cent fare is collected to the end of the 5 cent fare zone. After passing that limit, the remaining fare, either 2 or 4 cents, is collected through the automatic register, metal tickets valued at 2 cents each being used for this purpose. The new register contains a dial and counter which segregates the metal ticket from the nickel.

On suburban lines, a Duplex ticket system is in use, the ticket being similar to that used on steam trains when passengers pay a cash fare. Passengers pay their fare from point of boarding car to destination, and conductors issue a Duplex ticket to them, showing between what points fare has been paid.

6 *Paying Fares by the Zone System*

direction of Providence, where the city limits of Pawtucket and Providence shall continue as the transfer limit between the cities.

The single 5 cent fare and transfer limits on the several street car lines entering and leaving this zone are indicated below:

Lines	Fare and Transfer Limit
1. Pawtucket-Hope St.	At Pawtucket city line, on Hope St
2. Providence lines	At Pawtucket city line, on North Main St
3. Smithfield Ave.......	At Pawtucket city line, on Smithfield Ave
4. Mineral Spring Ave	At Marieville, No Providence, on Charles St
5. Prospect Hill	At Prospect Hill, end of route.
6. John St	At Town Hall, Valley Falls, Cumberland.
7. Broad St	At Town Hall, Valley Falls, Cumberland
8. North Attleboro........	At State line, on Broadway, Pawtucket
9. Benefit St........	At end of line at intersection of Central Ave
10. Attleboro	At State line, Central Ave., Pawtucket
11. Pawtucket-E. Providence	At Pawtucket-East Providence Line

3. Woonsocket Single 5 Cent Fare and Transfer Zone

The Woonsocket Single 5 Cent Fare and Transfer Zone shall include the area in the State of Rhode Island within a radius of approximately two miles from Main Street turnout, Woonsocket, as a centre. The single 5 cent fare and transfer limits on the several street car lines entering and leaving this zone are indicated below:

Lines	Local Fare and Transfer Limit
1. Pascoag	At Branch River Bridge.
2. Worcester Consolidated	At State line, Woonsocket.
3. Milford-Attleboro and Woonsocket	At State line, Woonsocket.
4. Providence	One-half mile south of city line of Woonsocket, upon private right of way
5. Manville	At Junction of Cumberland and Mendon Roads.

FIG. 4—SAMPLE PAGES FROM BOOKLET ENTITLED "PAYING FARES BY THE ZONE SYSTEM," ISSUED BY THE RHODE ISLAND COMPANY

In deciding upon the methods of fare collection the company has had in mind that these must be such as to be easily understood by the employees and the public, there must be a minimum of clerical labor, particularly for the conductors, and the system must not lend itself to intentional or unintentional mistakes. The plan now in use seems to meet the requirements in these particulars, but may be improved still, as more experience is had with the system.

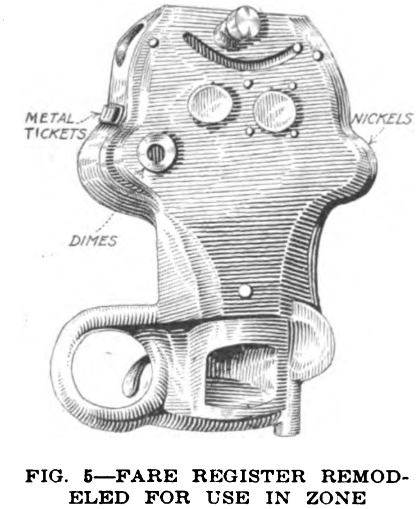


FIG. 5—FARE REGISTER REMODELED FOR USE IN ZONE FARE COLLECTION

An element of very great importance in an innovation of this kind is the attitude of the public, and the intelligence with which the public co-operates with the company management in putting the new scheme in operation. In this case there had been so much agitation in regard to an increase in fares for the Rhode Island Company that the public was on the *qui vive* and was very curious to see how the company was going to handle the rather difficult situation. The whole matter was explained in advance by means of newspaper advertising, but it was not found necessary to continue this very long. A booklet was prepared, however, with the title "Paying Fares by the Zone System for distribution through the "take one" boxes in the cars. Sample pages from the booklet are reproduced in Fig. 4. The booklet contains diagrams similar to those reproduced on page 572 of the issue of the ELECTRIC RAILWAY JOURNAL for March 23, 1918.

Zone Postal Law Condemned

Charles E. Hughes Calls It "Unjust to Publisher and Unjust to Public"

ALTHOUGH Congress has yet declined to change the provisions of the second-class postal law requiring zone rates for periodicals, the publishers still believe they can prove the destructive and iniquitous nature of the law. The position of this paper remains, as it has been, utterly opposed to the plan. Following is a letter recently received by the Publishers' Advisory Board from Hon. Charles E. Hughes, who was the head of the Hughes Postal Commission which made the latest investigation of the Postal Department of the country.

In answer to your letter, I beg to say:

I prefer not to accept a retainer to appear before legislative committees upon matters of general policy, as in such matters, if I have anything to say, I desire to speak only as a citizen.

I have no hesitation in saying that I regard the zone system of postal rates for newspapers and periodicals, coming under the definition of second-class mail matter, as ill advised. The Commission on Second-Class Mail Matter (appointed in 1911), of which I was a member, considered this question and reported unanimously against the zone system. We said in that report:

> The policy of zone rates was pursued in the earlier history of our post office and has been given up in favor of a uniform rate in view of the larger interest of the nation as a whole. It would seem to the commission to be entirely impracticable to attempt to establish a system of zone rates for second-class matter. * * *
>
> Progress in the post office, with respect both to economy in administration and to public convenience, leads away from a variety of differential charges to uniform rates and broad classifications.

In my judgment the zone system for second-class mail matter is unjust to the publisher and unjust to the public. It not only imposes upon the publisher the additional rates upon a sectional basis, but it makes necessary the added expense for the necessary zone classifications at a time when every economy in production and distribution is most important. It introduces a complicated postal system to the inconvenience of the publisher and public when there should be a constant effort towards greater simplicity. There is no more reason for a zone system of rates for newspapers and magazines than for letters.

Newspapers and magazines are admitted to the second-class postal rates on the well-established policy of encouraging the dissemination of intelligence, but a zone system is a barrier to this dissemination. If it is important that newspapers and magazines should be circulated, it is equally important that there should not be sectional divisions to impede their general circulation through the entire country.

We are proud at this moment of our united purpose, but if we are to continue as a people to cherish united purposes and to maintain our essential unity as a nation, we must foster the influences that promote unity. The greatest of these influences, perhaps, is the spread of intelligence diffused by newspapers and periodical literature. Abuses in connection with second-class mail matter will not be cured by a zone system of rates. That will hurt the good no less than the bad, and perhaps some of the best sort of periodical literature will be hit the hardest.

We do not wish to promote sectionalism, and "one country" means that in our correspondence and in the diffusion of necessary intelligence we should have a uniform postal rate for the entire country. The widest and freest interchange is the soundest public policy.

I hope that Congress will repeal the provision for the zone system which is decidedly a looking-backward and walking-backward measure.

Readers of this paper can aid in the repeal of this law by writing to the Congressmen and Senators from their State urging prompt action.

Never Spend a Penny

How Northern Ohio Traction Employees Have Put the Copper Coin to Work for Uncle Sam

BY E. BURT FENTON
Publicity Agent Northern Ohio Traction & Light Company, Akron, Ohio

LAST autumn, after war taxes became attached to almost everything, a vast number of copper pennies began changing hands. On many things—railway fares, tobacco, moving picture tickets and the like—the tax came in "odd" amounts. Even the Sunday newspapers jumped to 7 and 8 cents. The masculine pocket began to fill up with copper coins, and it became an effort to get rid of them.

Along in January, when the Thrift Stamp and its big brother, the War Savings Stamp, were not so well known as they are now, the writer had occasion to wait several hours at a junction railway station. In the effort to "kill" time, he followed the usual routine. He weighed himself on two or three different penny-in-the-slot scales, dropped into a cigar store and bought some tobacco he didn't need at the moment, and looked about for whatever other penny-spending diversion the small town might offer.

A War-Savings Stamp sign attracted attention and started a train of thought. Uncle Sam was appealing for small amounts of money—a quarter at a time. He was offering a fairly attractive inducement to his nephews and nieces for the use of their small change. Why not lend him the pennies we had been throwing away? They wouldn't amount to much, to be sure, but every billboard was fairly shrieking that "every little helps."

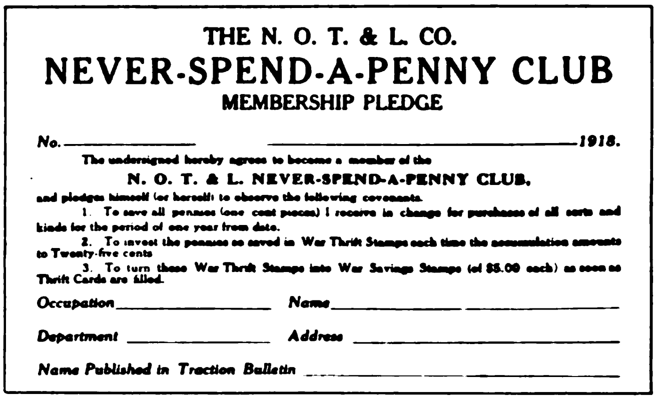
Right there the writer organized himself into a never-spend-a-penny club with a membership of one. And he got the surprise of his life. Within thirty-six hours there were enough pennies for one Thrift Stamp. Another twenty-four, another stamp. Thirty-six more, still another. In an incredibly short time a card was filled. Then another. As this is written, there are four of them, with a starter on the fifth.

Each day fifteen to twenty pennies are dropped into the special pocket reserved for the change from ordinary small expenditures. Instead of being wasted, as of old, they are put to work for what they are worth to Uncle Sam. They do not represent a single sacrifice. They are the financial "slack" of the ordinary man, taken up and made useful—to Uncle Sam? Partly. But to a greater extent to the owner.

Naturally, when we saw how the never-spend-a-penny scheme was going, we talked to our friends about it. They caught the "bug" and began doing likewise. All were surprised to find out in this manner how much money they had been throwing away without being aware of it. Every day at luncheon there was a general "counting up," and some competition developed to see who could buy the most Thrift Stamps in a given time.

In April it occurred to the "penny-pinchers," as they called themselves, that it would be a good thing to spread the idea through the entire N. O. T. & L. organization. Permission was readily obtained, and the Never-Spend-a-Penny Club was authorized. Pledge cards, such as shown in the accompanying illustration, were distributed among the 2500 employees of the various departments. There were no dues, no initiation fees, no officers and no red tape. The employee who wanted to be identified with the movement simply signed his pledge and received his certificate—and then proceeded to save his pennies. At present more than 1000 officers and employees have signed pledge cards, and nearly all are growing enthusiastic as they see how rapidly they accumulate stamps.

It is not intended that the never-spend-a-penny movement shall do away with other war-savings work. In fact, the majority of the officers, department heads and employees are regularly investing each week from 50 cents up in "real" money in Thrift Stamps, and practically all are owners of Liberty Bonds. In many instances they are literally "giving till it hurts"—but nobody counts the penny savings as a "hurt." It is more like finding money and is so regarded. Nor is anyone pluming himself on the patriotism involved in these particular savings. As a shop foreman expressed it:



THE N. O. T. & L. CO.
NEVER-SPEND-A-PENNY CLUB
MEMBERSHIP PLEDGE

No. ________ ____________*1918.*

The undersigned hereby agrees to become a member of the

N. O. T. & L. NEVER-SPEND-A-PENNY CLUB,

and pledges himself (or herself) to observe the following covenants.

1. To save all pennies (one cent pieces) I receive in change for purchases of all sorts and kinds for the period of one year from date.

2. To invest the pennies so saved in War Thrift Stamps each time the accumulation amounts to Twenty-five cents

3. To turn these War Thrift Stamps into War Savings Stamps (of $5.00 each) as soon as Thrift Cards are filled.

Occupation ________ *Name* ________

Department ________ *Address* ________

Name Published in Traction Bulletin ________

MEMBER'S CARD OF NEVER-SPEND-A-PENNY CLUB

"I guess I'm patriotic, all right, but I don't see how I can throw bouquets at myself and wrap up in a flag when I get 99 per cent of the good of the system and Uncle Sam the other one. When I want to show my patriotism, I'll buy some more Liberty Bonds I can't afford and cut out a few meals to pay for them."

It is too early to give an accurate estimate of the aggregate of the never-spend-a-penny savings of the organization, but "Old Figgers" of the accounting department, using a conservative guess as a basis, says it will amount to between $1,500 and $2,000 per month for the present membership. And there are several back townships yet to be heard from.

LETTER TO THE EDITORS

Decrease in the Efficiency of Common Labor

FIRST NATIONAL BANK BUILDING
CINCINNATI, OHIO, July 1, 1918.

To the Editors:

In the constantly rising cost of construction, the contractor is always in touch with the market price of material and the wages of labor, but there is another hidden factor which must now be taken into account, and that is the efficiency of the available labor. This I have attempted to analyze into usable form.

In my occupation I am concerned primarily with the cost of the new construction of a public utility company operating gas properties, and of course, an addition to the gas distribution system means trenching or excavation by the utilization of common labor with pick and shovel. It seems logical that any condition of the quality of labor which is experienced in our trenching work would be reflected in any contracting which involves excavation, deep or shallow (and probably other lines), but I confine my conclusions to excavation.

During 1917 I noticed that the men doing the digging seemed somewhat older than formerly. I asked the foreman about it and he replied that the labor was not so good as he had previously had, but they were the best men he could get. Now, it is manifestly impossible for any public utility, or contractor, with whom I have any acquaintance, to pay such wages as are offered in munition plants or other industries making big profits. They therefore suffer in the competition and must content themselves with what they can get.

Construction which is not essential to the prosecution of the war has been reduced to a minimum, but considerable municipal and private work involving excavation must be done nevertheless, and it is for contractors contemplating figuring on this work that these deductions are intended.

Let us consider the general condition of the labor market since 1910, and compare it with figures from my experience. From 1910 to 1914 inclusive, times were not especially thriving and there was plenty of good labor. In 1915 war work for the Allies started and labor became in demand. Profits and the volume of business mounted, needing more men, and wages rose. With the rise in wages, however, the munitions manufacturers were still able to attract efficient labor for their money. The increasing cost of living forced men to seek better paying work. This continued throughout 1916, until in 1917 with our entrance into the war came the draft. The drain was then even more intense.

We, as most other public utilities, tried to meet the labor competition by increasing wages some 20 per cent, or more, during that period.

Let us see what we were getting for our money. In making this analysis, I have gone over all of the trenching work we have done since 1910. Knowing the character of the ground in every case, I selected all of the work done in ground of similar nature. Some jobs which presented peculiar conditions I rejected. The remainder I divided into four periods, as follows: 1910 to 1914, 1915, 1916, 1917.

There were plenty of examples of each period to make the average representative. The work in every case consisted of digging a trench 18 in. wide by 24 in. deep for various lengths between 200 and 400 ft., *i. e.*, long enough practically to eliminate the factor of time lost in getting started on small jobs.

The time required to do this trenching was taken from the records. The number of cubic feet of earth that a man can excavate in an hour can properly be considered a measure of his efficiency.

Following is a table of the years, the corresponding number of cubic feet of earth excavated per man per hour, the efficiency in per cent and the time required to remove 5.2 cu.ft. of earth in per cent, as compared to the operation in 1910-1914:

Year	Cubic Feet per Hour	Efficiency, Per Cent.	Hours to Remove 5.2 Cubic Feet
1910-1914	5.2	100	1.00
1915	5.0	96.1	1.04
1916	4.6	88.4	1.13
1917	4.0	76.9	1.30

Now if the efficiency of the labor diminishes at the same rate in 1918 as it did in 1917, we shall have for 1918 an efficiency of 65.4 per cent requiring 1.44 hours to remove 5.2 cu.ft., or what was formerly done in one hour. The increased time required to do a certain piece of work over last year is 11 per cent calculated (1.44 ÷ 1.3 = 1.11).

While we have not done sufficient trenching in 1918 for me to calculate the percentage, from what I have seen of the labor on the work so far this year I would say it bids fair to follow the theoretical probabilities outlined above. The fact is, the men are not so strong and, although willing, they simply cannot keep up the former pace.

In conclusion, I would urge any contractor or company contemplating excavating or similar work this year to study carefully the hours consumed in excavating a unit of material in 1917, then after looking over the labor market, allow a certain amount of additional time to accomplish the same character of work this year. For our own local conditions I would add not less than 15 per cent. In any other locality it may be more or it may be less, but from the common history of the last four years and what our own figures show, I feel safe in affirming there is not a locality in the country where the average efficiency of common labor has not diminished at least 8 per cent, and in some cases as much as 25 per cent.

This is a factor though that requires careful individual study for each locality, but time used in the study will probably be well spent. A. G. DRURY.

Shipbuilding at Tampa

At Tampa, Fla., there is one yard for wooden ships and another for steel. The wooden yard employs 800 men, while the steel yard expects to attain 2500. No extra construction, except a ½-mile extension was required of the Tampa Electric Company. Extra cars are run morning and evening in accordance with the requirements. Owing to the recent addition of safety cars, fifteen on hand and eight due in a few weeks, there is no shortage of rolling stock.

Balancing Relays in Parallel Feeders by Cross-Connected Reverse-Power Relays

WHILE, in general, transmission and distribution systems can readily be sectionalized by the standard application of overload and reverse-power relays, there are often conditions under which these methods do not suffice. Some of these can be handled readily by a balanced system of relays, two methods of which, the pilot-wire system and the split-conductor system, have been in use for some time. A later method of balancing relays on parallel feeders is the cross-connection of reverse-power relays.

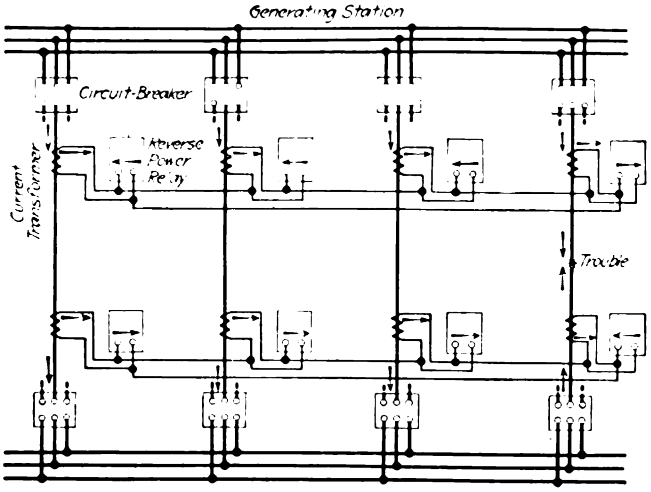


FIG. 1—DIAGRAM OF CROSS-CONNECTED RELAY SYSTEM. ARROWS SHOW DIRECTION OF POWER WITH SHORT-CIRCUIT ON RIGHT FEEDER

The schematic diagram in Fig. 1 shows the connections of Westinghouse type CR cross-connected reverse-power relays applied to a system consisting of a generating station and a substation connected by four parallel feeders. To simplify it, the diagram shows one phase only of each of the feeders. A complete diagram of connections for a pair of three-phase feeders (except that the tripping circuit is omitted) is shown in Fig. 2.

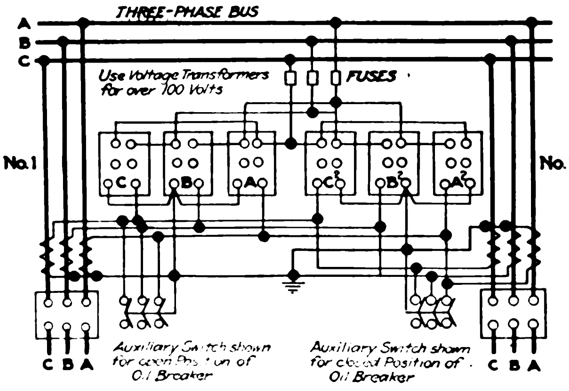

THREE-PHASE BUS
A
B
C
Use Voltage Transformers for over 100 Volts
FUSES
No.1
No.2
C
B
A
C
B
A
Auxiliary Switch shown for open Position of Oil Breaker
Auxiliary Switch shown for closed Position of Oil Breaker
C B A
C B A

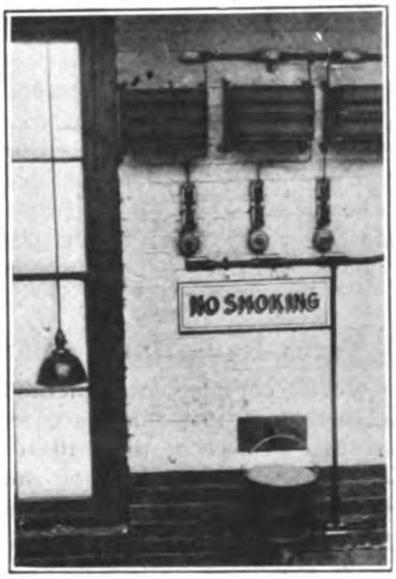
FIG. 2—DIAGRAM OF CROSS-CONNECTED RELAY SYSTEM FOR THREE-PHASE CIRCUIT COMPLETE EXCEPT FOR TRIP CIRCUIT

Under normal conditions, the load in each of the cables will be the same and, since the relays have a higher impedance than the current transformers, the current from the latter will circulate through all of them in series without any flowing through the relays. If the trouble occurs at any point outside the section protected by these cross-connected relays the current through the cables will still be balanced and, consequently, there is no force tending to operate the relays. On the other hand, if trouble occurs on a cable within the section, the current through the defective cable will be higher than that in the others, and the excess current from its current transformers must, therefore, pass through the relays. While, under this unbalanced condition current will flow through all the relays, the current is in the proper direction to cause the relay to act only in the relays at each end of the defective cables (see direction of arrows in diagram).

Pallet switches connected in the transformer secondary circuit are shown in Fig. 2. These are also connected mechanically to the operating mechanism of the breaker so that when the the breaker opens the current transformers on the feeder controlled will be short-circuited. By this method a cable can be cut out of service without interfering with the electrical balance in the current-transformer circuit.

Convenient Wiring for Battery Charging

AT THE Carew Street carhouse of the Springfield (Mass.) Street Railway, storage batteries used in company automobile ignition service are conveniently charged from the 600-volt trolley supply as shown in the accompanying illustration. A positive lead is tapped from the trolley in the carhouse through a 25-amp. inclosed fuse not shown and carried in conduit to a set of three resistors mounted on the wall. From each rheostat a tap is run through a 6-amp. fuse and snap switch to a horizontal bus carried in conduit and leading to the battery terminals. The return from the battery is brought back through the conduit fitting as shown and carried to ground through the curved duct indicated at the right-hand side of the illustration. Closing each switch permits 4 amp. to flow through the battery, so that a range of from 4 to 12 amp. is obtained at a low pressure of about 6 volts, usually required by a few cells in series.



AUTOMOBILE IGNITION BATTERIES CHARGED FROM TROLLEY

This method for charging the companies automobile ignition batteries was adopted as the material required for its construction was available from stock and the small amount of charging to be done would not warrant the expense necessary to purchase a motor-generator set, which would cost approximately $150. Any saving that would be obtained from the use of such a set instead of the above method would not pay for the additional maintenance, interest and depreciation.

Electric Tractors for Freight Hauling Helps Solve Shortage-of-Labor Problem

A SYSTEM of handling freight on the piers by means of electric tractors and trains of trucks has recently been inaurated by the Pennsylvania Railroad, which operate piers Nos. 4, 5, 27, 28, 29, 77 and 78 in the North River, New York City.

AN ELECTRIC TRACTOR HAULING TWO FREIGHT TRUCKS

This novel method of handling freight has proved very satisfactory and has released several hundred men for other forms of work. Hand trucks were formerly used in transferring this freight to and from the cars.

As the manual labor required in the operation of these tractors is not severe, female employees have been handling them. The girls work eight hours per day and receive the regular compensation formerly paid to men. This is another instance of where labor-saving equipment releases labor, not only through the more efficient handling of the freight to be loaded into and unloaded from the cars, but also by reducing the severity of the work so that women can be made use of. The same scheme might apply in electric railway freight stations.

Track Rails Hardened While in Service

EXTENSIVE renewal of the rails used by electric operating companies is now considered out of the question in view of the great difficulty experienced at the present time due to the shortage of rails and of labor necessary for their installation. With a view of prolonging the life of the track a treatment of rails has recently been devised by C. P. Sandberg which consists of hardening or tempering the head of the surfaces of the rails by heating them and subsequently quenching or cooling them quickly. The process now being applied by the Sandberg Sorbitic Steel Company, Ltd., London, has been tested experimentally on the Leeds Tramways and is now having its first application under regular working conditions on the Corydon Tramways in England.

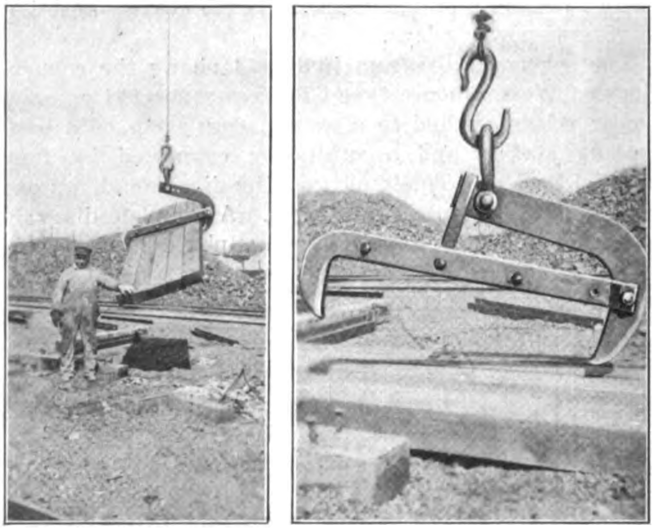
The process consists in causing a flame to travel slowly along the surface of the rail under treatment, this heating being followed by the application of a water jet for quenching or cooling. The work being carried out at Croydon is effected by an oxy-acetylene flame, but other methods of heating may be used if desirable. The apparatus necessary for heating the rails and supplying the water is mounted upon a truck which is arranged to be operated along the track at a certain definite speed by means of a geared hand wheel.

From photo-micrographs which were taken of the Croydon rails it was found that the hardening was carried out on the rails to a depth of about ¼ in., diminishing to zero on the outside edge of the rail. If this heat treatment can produce a hard head it is sure to result in a considerable increase in the life of the rails and the wear will be greatly retarded.

Further details of the application of this treatment are given in recent issues of *Engineering*, London, and *Electrical Review*, London.

Saving Man Power on the Tie Pile

THE tie lifting device shown in the accompanying illustrations has been developed at the Harvard yard of the Cleveland (Ohio) Railway, and is designed to carry six ties with the broad side longitudinal. It can be used in loading ties from the storage pile to the work train, or vice versa. One arm is made of twin pieces ¾ in. x 6 in., bolted together, 1¼-in. apart, and the second arm is 1¼ in. x 8 in., pivoting in the other arm on a 1½-in. bolt, as indicated in the figures. The arms are made adjustable for width of jaw to accommodate special sizes of ties, and in like manner the point of application of the lifting hook is adjustable to suit the center of gravity of the load. The greatest jaw width is 50 in. and the depth of carrying space is 10 in. A loop made of ½-in. x 2-in. material is provided to hook the two arms together in a favorable carrying position when no load is being transported. One of the accompanying illustrations shows the device lifting five ties of the special size 8 in. x 9 in. x 9 ft.


TIES LIFTED BY DEVICE WHICH REPLACES EIGHT MEN, AND DETAILS OF TIE LIFTING DEVICE SHOWING ADJUSTABLE ARM

At Cleveland the tie-lifting device is used in conjunction with a 15-ton Ohio electrically-operated crane. It is stated that ties can be loaded or unloaded at the rate of six ties per minute for the standard size tie, with one man to operate the crane and one man to place the device in position. The cost of using the equipment on a large loading job is estimated at 40 cents per hundred ties as against $1.20 per hundred for hand loading with a crew of ten men. The tie lifter is said to replace the services of eight men.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

No Peace by Understanding

Mayor of Seattle in Scathing Attack on Puget Sound Company Declares for a Rule or Ruin Policy

Mayor Ole Hanson of Seattle, Wash., in a recent communication to the City Council asks that the Puget Sound Traction, Light & Power Company be required immediately to pay its indebtedness to the city, and to observe its franchise obligations. Mayor Hanson characterizes the present railway service in Seattle as unbearable. In the communication he makes an attack on A. W. Leonard, president of the company, and reiterates his charges that the company is attempting to block the development of hydroelectric power by the city of Seattle.

COMPANY ENTERS DENIAL

Mr. Leonard denies any attempt on the part of the company to block any plan of the city to develop its hydroelectric project. In answering Mayor Hanson's statement that advertisements in the New York *Times* in connection with a recent offering of notes of the company indicated large net earnings, and that the railway in Seattle was not in need of relief, Mr. Leonard said:

"The fact is, the earnings of the Puget Sound Traction, Light & Power Company and subsidiary companies are exactly as stated in the advertisements. This has no bearing on the fact that the railway in Seattle is in a serious financial condition, and that money required for increasing facilities in this branch of the business cannot be secured until net earnings have been improved by an increase of fares, by the reduction of operating expenses or the elimination of franchise burden. Neither can sufficient wages in addition to those now paid be offered to trainmen from the earnings of the railway itself to obtain employees in competition with shipyard wages."

MAYOR JUMPS TO THE ATTACK

In his communication to the Council Mayor Hanson said in part:

"While admitting that his company is earning more money than ever before in its history and while he runs large advertisements throughout the nation bragging about his successful profiteering in the city of Seattle, Mr. Leonard comes to the city officials and asks them for relief. After his company has refused to pay its honest obligations; after it has refused to pay its taxes; after it has refused to give the citizens service; after it has refused to sell 4-cent tickets; after it has refused to pave its rights-of-way; after it keeps an average of sixty-five cars during the rush-hour periods in its carhouses at all times, all of which are needed to take care of overloads; after it has gone to every court available and been soundly and deservedly thrashed by our excellent legal department, it pleads for mercy. It seems to me that there can be no peace between the city of Seattle and the Puget Sound Traction, Light & Power Company. I, therefore, recommend to the Council that all mediation measures be abandoned; that we ask once more that the company pay its taxes and keep its obligations."

New Cincinnati Ordinance

Sub-committee Appointed to Draft Complete Revision of Electric Railway Franchise

A sub-committee of five members has been named by the Council and Citizens' Advisory Committee on Street Railroads at Cincinnati, Ohio, to draft a complete revision of the street railway franchise. It consists of Director of Street Railroads W. C. Culkins, City Solicitor Saul Zielonka or his first assistant, Dennis Ryan, Councilman Cliff E. Martin, and James A. Wilson and C. H. M. Atkins, members of the Citizens' Advisory Committee, appointed by the Mayor.

FORMER DRAFT AS A BASIS

A tentative draft was made some time ago and this will serve as a foundation for the sub-committee to complete a new revision. It covers everything not affected by the fare question. The idea of appointing a sub-committee originated in the belief that a smaller number of men can work more effectively than the full committees.

Before the draft can be finished, an understanding on the fare question must be secured and to this end all the data possible will be collected for the consideration of the sub-committee. The three plans so far considered are the flat rate, the zone system and the service-at-cost plan. It is said the committee favors the last.

OPEN HEARINGS LATER

When the draft is submitted to the full committee a series of open hearings will be held, at which voters and others may express their opinions freely. Sections will be taken up one at a time and agreements will be reached with the Cincinnati Traction Company, if possible, as the franchise discussion proceeds.

Gross Earnings Tax Upheld

Supreme Court of State of Washington Upholds Franchise Provision Requiring This Tax

In a recent decision, the State Supreme Court at Olympia, Wash., upheld the decision of Judge J. T. Ronald ordering the Puget Sound Traction, Light & Power Company to pay to the city of Seattle the sum of $64,387, representing the 2 per cent gross earnings tax provided in the franchise.

The decision was signed by six Supreme Court judges. The court holds that the franchise provision for this tax is not in conflict with the constitution of the United States or contrary to the State public service commission law. It also rules that the Public Service Commission has no authority over franchise provisions.

The evidence showed the city made a demand for payment of the 2 per cent for the year 1916. The company made a counter proposal. This the city rejected. The company declared that it had been damaged to the extent of $70,000 by the city ordinance of 1915, later held void by the Federal Court, requiring the sale of tickets on street cars. The city refused to pay this sum to the company after the ordinance had been declared void. This refusal and the attempt of the city to collect the 2 per cent tax, the company declared, impaired the franchise contract. This was denied by the Supreme Court on the ground that the city is not liable for damages in such cases.

ANOTHER CASE DECIDED

Another decision in favor of the city of Seattle against the Puget Sound Traction, Light & Power Company was recently handed down when Judge Mitchell Gilliam held that the city is entitled to its peremptory writ of mandate in the "second paving case." The paving case was instituted by the city in February, 1917, to compel the company to pave between its tracks on First Avenue South, from Stacy Street to Horton Street. The order for mandamus was held over until after the company's appeal for relief from franchise obligations had been passed on by the Public Service Commission.

Recently the Supreme Court ruled in a Tacoma case that the Public Service Commission has no jurisdiction in such an appeal and cannot grant relief from franchise obligations. On May 23 the commission dismissed the appeal of the company, and on June 14 the city, renewed its efforts to obtain a writ of peremptory mandate. A similar case is pending in the Supreme Court.

Labor for War Industries

Only Those Employing More Than 100 Must Obtain Unskilled Workers from Government

The Department of Labor announced on July 8 that only manufacturers engaged on war contracts and employing more than 100 workers will be required to obtain their unskilled labor through the United States Employment Service of the Department of Labor by the ruling which goes into effect on Aug. 1. So much uncertainty as to the scope of the new labor recuiting policy has been shown in inquiries received by the Department of Labor from employers not engaged in war work that the department announced on July 8 the exceptions under which private recruiting of labor may still be carried on. The announcement follows:

NON-WAR INDUSTRIES AFFECTED INDIRECTLY

"Non-war industries are affected only indirectly. But they are one and all affected indirectly, from the fact that the war industries of the nation are now of paramount importance, demanding sacrifice and co-operation from all employers not engaged in war work in order that they may function with maximum efficiency.

"Non-war industries, therefore, must not offer superior inducements, prevent the transfer of workers urgently needed for war production, or in any way attempt to compete with the government for labor.

"The following five classes of labor need not at the present time be recruited through the United States Employment Service, although, of course, the machinery of the Employment Service is available to all employers needing these classes:

"1. Labor which is not directly or indirectly solicited.

"2. Labor for railroads, (except in so far as the Director General of Railroads has already or may in the future require that recruiting shall be exclusively through the United States Employment Service.)

"3. Farm labor—to be recruited in accordance with existing arrangement with the Department of Agriculture.

"4. Labor for non-war work.

"5. Labor for establishments the maximum force of which (including the additional number recruited) does not exceed 100 employees."

COMMUNITY LABOR BOARD ESTABLISHED

The establishment of community labor boards to have general jurisdiction over the recruiting and the distribution of labor, in co-operation with the United States Employment Service is announced.

These boards will localize in each industrial region the enforcement of the policies of the United States Employment Service. In the mobilization of the army of producers, they will apply the federal policies as the draft boards put into operation the selective conscription act. In order that the boards may represent adequately their communities employees and employers will each select representatives.

Community labor boards consisting of one representative of employers and one representative of employees with a third representative of the United States Employment Service are being established wherever the industrial situation justifies it.

The members of the boards will be appointed by the state directors of the United States Public Service Reserve. Chambers of Commerce and manufacturers' associations will be asked to nominate industrial management representatives; state and city federations of labor will nominate the labor members, while the third member who will be the presiding officer must in every case be a representative of the United States Employment Service.

The community labor boards will assist in mobilizing the labor of their respective communities, but especially they will decide upon the relative needs of local establishments seeking labor, and where the supply is less than the demand they will prorate the existing reserve.

Short Strike on Norfolk & Bristol

A strike for increased wages took place on the Norfolk & Bristol Street Railway, Foxboro, Mass., from June 20 to 22. In April the company advanced the wages of its employees 2 cents an hour, establishing a scale of 23 to 32 cents depending upon length of service. Recently the employees demanded a sliding scale of 35 to 40 cents an hour. The company offered an advance of 6 cents an hour. The men refused this increase and called a strike. The company made no attempt to operate cars during the period of cessation of work. The men returned to work on June 22. The present scale of wages ranges from 32 to 37 cents an hour, representing an advance of 29.6 per cent over the payroll of last winter. Twenty-eight uniformed men are employed by the company.

Ordered to Take Men Back

The State Board of Arbitration, of Minnesota has directed the Twin City Rapid Transit Company, Minneapolis, to reinstate desirable men within thirty days. The men referred to were "locked out" last November for failing to comply with the order that prohibited them from wearing union buttons while on duty. The arbitration order reads:

"Men desiring re-employment to file applications with the company within twenty days.

"As vacancies occur, the company shall re-employ desirable men and in cases of dispute same to be submitted to the State Board of Arbitration for adjustment, and all desirable men who seek re-employment shall be re-employed, within such reasonable time as the State Board of Arbitration shall determine, at least 100 within thirty days, and the balance at the rate of 100 a month as vacancies occur, and no other trainmen to be employed by the company until the list of desirable men has been exhausted.

"Rate of pay to be based on experience to the extent that men seeking re-employment who have had at least one year's experience with the company will be started at the rate of pay applying to their length of service, with a maximum wage obtaining during the third year of service."

Representative of the trainmen at a preliminary hearing before the board said 975 men were "locked out" by the company last October and asked reinstatement for about 600 who still desired to return. A representative of the railway estimated, however, that not more than 700 men left the employ of the company at that time.

Help Scarce in Kansas City

The problem of labor is being tackled constantly by the Kansas City (Mo.) Railways in new ways. Recently, the company secured the co-operation of the enlisting officers of the Army, Navy, and Marine Corps. Notices were posted in each recruiting station, as follows:

"Positions for Rejected Men. Rejected men may secure employment in agreeable outdoor work as conductor and motormen by making personal application to the superintendent of employment. Kansas City Railways."

British Columbia Men Strike

All the employees who come under the agreement between the British Columbia Electric Railway, Ltd., Vancouver, B. C., and the street and electric railway employees union went on strike on the morning of July 2. The electrical workers also quit, thereby suspending operation on two of the interurban lines, the employees of which come under the agreement with the Brotherhood of Railway Trainmen.

Not a wheel was turned on the system in Vancouver or at Victoria on July 3. The power plants are continuing to provide current for the light and power circuits, but no current is being furnished for the railways.

The railwaymen went out without waiting for the report of the conciliation board. This was expected to be rendered in a day or two. The agreement of the men lapsed on June 30 and they continued to work on July 1, Dominion Day, which is a holiday. The electrical workers, some time ago, refused an offer of arbitration and the government chose an arbitrator for them. This board began its sessions on July 2.

In the meantime, jitneys, which were ruled off at the end of June, are continuing to operate, but have raised their fares to 10 cents.

Labor Hearings in New York

As this issue of the ELECTRIC RAILWAY JOURNAL went to press on July 12, hearings were being held at the Federal Building, New York, before the War Labor Board in regard to the labor problems up for settlement on the railway lines of the Public Service Corporation of New Jersey, Newark, and in the cities of Rochester, Buffalo and Schenectady. The indication was that the hearings would be adjourned pending the submission of briefs and the holding of the next Washington hearing on July 22. It was announced that the hearing in regard to the Chicago surface and elevated lines would be held in Chicago on July 13.

Recently developed street railway controversies in the cities of Omaha, Neb., Columbus, Ohio, New Orleans, La., and Buffalo, have been referred by the National War Labor Board to the joint chairmen, William H. Taft and Frank P. Walsh, who, as a section of the board, have charge of all of the electric railway disputes before the board, now twenty-eight in number.

In the Omaha matter, the Omaha Street Railway has so far refused to submit to the board's jurisdiction. In advance of further action, the board has decided to direct the officers of the company to appear in Washington to explain their position.

News Notes

Electricians Tie Up Butte System.—The Butte (Mont.) Electric Railway was tied up on June 24 by a strike of the electrical workers, who quit their posts at the substations and shut off power throughout the city. Motormen and conductors are not on strike and have no grievance.

Increases in Wages in Fort Wayne.—Announcement was made on July 1 by the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., that an increase in wages would be granted to its motormen and conductors on the city lines in Lafayette, Logansport, Peru and Wabash. The new rate will be as follows: First six months, 26 cents an hour; second six months, 27 cents an hour; after the first year, 29 cents an hour; and after the second year, 30 cents an hour. Operators on one-man cars will be paid 3 cents an hour additional.

M. O. Negotiations Again Reported.—At the suggestion of Mayor Marx the Street Railway Commission of Detroit, Mich., will probably enter into negotiations with the Detroit United Railway for the purchase of the property of the company. It is said that the commission hopes to obtain an agreement somewhat similar to that voted down by the people several years ago by which the city could have purchased the property at its physical valuation, the worth to have been fixed by a condemnation board, and to have paid for it in yearly installments.

Conference With Boston Men Soon.—Matthew C. Brush, president of the Boston (Mass.) Elevated Railway, and Louis A. Frothingham, chairman of the board of trustees of the company, conferred on July 1 with the representatives of the employees in regard to the demands recently presented by the union for an increase in wages to 60 cents an hour for motormen and conductors, and proportionate increases for other classes of employees. Mr. Brush informed the union representatives that owing to the press of business before the board the members would probably not be able to reply to the demands of the union until July 15.

New Orleans Labor Differences Settled.—Committees representing the union and the New Orleans Railway & Light Company, New Orleans, La., on June 26 amicably settled all points in dispute, with one exception. Although no statement has been made by either side as to the terms of the new wage contract, it is known that each side made concessions. The men asked for an increase in wages from 24½ cents to 45 cents an hour. The company offered 31 cents an hour. It is understood that this point was disposed of by both sides agreeing to accept the finding of the War Labor Board with respect to a living wage.

Has Confidence in Commission.—Governor Edge of New Jersey will not call a special session of the New Jersey Legislature to have enacted legislation which will prevent the Board of Public Utilities Commissioners from modifying the terms of utilities contracts and public utilities now regulated by ordinance, as demanded by George L. Record, who assisted in representing the municipalities of the State in opposition to recent petitions for increases in fares of the electric railways. In reply to Mr. Record's letter the Governor said he believed that the commission could be trusted to safeguard the interests of the public and that he would be "culpable were he yield to hysteria" and convene the Legislature.

Franchise Negotiations in Vancouver.—It has been tentatively agreed by the City Council of Vancouver, B. C., and George Kidd, general manager of the British Columbia Electric Railway, to arrange for a two months' extension of the existing franchise that the company holds. This extension is intended primarily to allow sufficient time for the city and company to enter into negotiations which will have as their object the substitution of a reasonable and workable grant for the present antiquated and obsolete franchise agreement. It has been intimated, but by no means authoritatively stated, that under the coming five-year term the railway might be operated under dual control by a joint commision under a service-at-cost arrangement.

New Working Contract in Portland.—The trainmen of the Portland Railway, Light & Power Company, Portland, Ore., have ratified the proposed new contract with the company, with the exception of the increased wage scale provision. It has been agreed by both sides to submit this matter to the National War Labor Board. Both parties have agreed to abide by the decision of the board. Touching working conditions, the contract differs but little from that formerly in effect, but calls for a marked increase in the wage scale. F. T. Griffith, president of the company, has advised the men that the increase could not be granted under the present 6-cent fare. The present wage scale follows: First year, 38 cents; second year, 40 cents; thereafter, 45 cents; the proposed scale follows: First year, 53 cents; second year, 55 cents; thereafter, 60 cents.

Near-Strike on the Pacific Electric.—At noon on July 2 platform men of the Pacific Electric Railway, Los Angeles, Cal., notified Paul Shoup, president of the company, that unless certain demands were granted they would walk out at 7 p. m. of the same day. Mr. Shoup stated that he could not grant the demands and would not treat with the union as such although he would gladly discuss conditions with the men themselves. At 7 p. m. platform men left their cars at the carhouses or terminals and quit. After night sessions held separately by representatives of the union and the company, with mediators, the men were advised by the union to return to work the next morning. This they did. The company allowed them to take their old positions and by mid-forenoon service was fully restored. The differences were to be discussed further on July 10.

Program of Meeting

Central Electric Railway Association

The program has been announced for the meeting of the Central Electric Railway Association to be held at Cedar Point, Ohio, on July 17-18. The executive committee will meet at 10.30 a. m. on July 17. At 2.30 p. m. that day there will be a meeting of the Central Electric Railway Accountants' Association, with a business session and reports of committees. Following this there will be an address by H. O. Bentley, general attorney of the Western Ohio Railway, Lima, Ohio. The meeting of the association on July 18 will convene at 9.30 a. m., with a business session and reports of committees. Following this Britton I. Budd, president of the Metropolitan West Side Elevated Railway, Chicago, Ill., and a member of the War Board of the American Electric Railway Association, will present a paper, "Field of the Interurbans." H. A. Nicholl, general manager of the Union Traction Company of Indiana, Anderson, Ind., will present a paper, "Electric Railways and Their Labor." Both of these will be discussed by members of the association.

Financial and Corporate

Still Going Up

Comment on Interest Return of Kansas City and Boston Financing Just Announced

Announcements made during the past week of large financial operations show how the borrowing rates, particularly for public utilities, as indicated by the return to the investor, are constantly going up. These announcements concern the Kansas City Railways and the West End Street Railway. The first is a short-term operation, while the second is for a long term. Both bear interest at 7 per cent. In the case of Kansas City the return to the investors is 7.75 per cent. The offering terms to the investors in the case of the West End issue have not been announced. A feature that both issues have in their favor is public control agreements. In one case this is lodged with the city and in the other with the State. In other words, the securities are supported by agreements drawn in accordance with the best thought from the standpoint of the companies and the political subdivisions in which the companies operate.

The Kansas City offering is $7,750,000. It consists of three-year gold notes secured by pledge of the company's first mortgage bonds bearing 6 per cent interest to the extent of more than 30 per cent in excess of the note issue. The first mortgage 5 per cent bonds of the company when offered for subscription about three years ago sold at 98. The New York *Times* commented on this offering as follows:

"What appears to be a record in high yield for an offering of public securities of a reasonably substantial character, at least for recent months, is made by the three-year 7 per cent collateral trust notes of the Kansas City Railway of which Halsey, Stuart & Company, the Continental & Commercial Trust & Savings Bank, and the New England National Bank of Kansas City are offering $7,750,000 at a price to yield upward of 7.75 per cent. The recent refunding offerings of public utilities, such as the Brooklyn Rapid Transit, New Orleans Railway & Light, and others, have been on a straight 7 per cent basis. The Kansas City Railways, moreover, has already won its fight for a 6-cent fare, which the others have not."

An issue of bonds of the West End Street Railway, Boston, to the amount of $1,581,000, was authorized by the Public Service Commission on June 6. The bonds are to be issued for the purpose of refunding an equal amount of three-year bonds issued on Aug. 1, 1915, are to be payable in thirty years from date, and will bear interest at a rate not exceeding 7 per cent. Of this latter provision of its order the commission says:

"Since the interest on these bonds, under the provisions of chapter 159 of the special acts of 1915 (the Elevated public control act) will in effect be guaranteed by the Commonwealth for at least ten years, the commission has been in doubt whether an interest rate of 'not exceeding 7 per centum per annum' ought to be approved, as required in the petition. We have been advised, however, by the public trustees who have been appointed to manage and operate the Boston Elevated Railway (the lessee of the West End Street Railway) under the provisions of the aforesaid special act, that they desire such approval, believing that it might be impossible to market the bonds under present conditions if the maximum interest rate were fixed at a lower point."

Paducah Companies Default Interest

Charles K. Wheeler, chairman of the board of the Paducah Traction Company and the Paducah Light & Power Company, the securities of which are owned by the Paducah Traction & Light Company, Paducah, Ky., has announced that interest due on July 1 on the bonds of the Paducah Street Railway and the Paducah City Railway has not been paid. Committees representing the holders of the bonds on which interest is in default have been organized and they have issued a statement urging the bondholders to turn in their securities to these committees so that concerted action may be taken for the bondholders' interests. The Paducah Street Railway has outstanding $60,500 of first sinking fund 6 per cent bonds and $98,000 of first mortgage 6 per cent bonds, the Peoples Light, Power & Railway Company has outstanding $98,500 of first mortgage 6 per cent bonds, the Paducah City Railway has outstanding $238,000 of consolidated first mortgage 5 per cent bonds, and the Paducah Traction & Light Company has outstanding $599,000 of first mortgage collateral trust 5 per cent bonds. The Paducah Traction & Light Company has outstanding $500,000 of 5 per cent cumulative preferred stock and $1,000,000 of common stock.

Kansas Short Line Sold

The Leavenworth & Topeka Railway, a steam road 46 miles long, has been sold to business men along the line who are required by the court to run the road. The company organized by the purchasers has leased the road to a group which is organizing the Topeka & Eastern Railway, which O. P. Byers, Hutchinson, Kan., will control. The public and, it is said, the owners and operators, expect that the road will ultimately be electrified.

Milwaukee 1917 Returns

During Last Year Operating Increases Absorbed More Than 90 Per Cent of Revenue Gains

The operating revenues of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., for the calendar year 1917 showed a gain of $1,007,040 or 14.47 per cent as compared with the preceding year. The railway department operating revenues increased $340,959 or 7.39 per cent. The generally higher costs of materials and labor and the larger reserves for taxes, however, absorbed 90 per cent of the increase in operating revenues.

As a result the gross income showed an increase of $130,580 or 6.2 per cent. The interest charges rose $171,968 or 22.6 per cent, and the net income decreased $41,388 or 3 per cent. After the payment of $270,000 in preferred dividends as in 1916, and $1,034,250 in common dividends, as compared to $1,058,875 in 1916, the 1917 surplus totaled $1,969, as compared to $18,732 in 1916. Full details are given in the accompanying statement.

The appropriations for maintenance and depreciation of physical property, in percentages of the operating revenues of the various utilities, were as follows: Railway, 18.81 per cent; electric light and power, 13.72 per cent, and heating, 12 per cent. The balance of these appropriations remaining after providing for maintenance is carried to the credit of depreciation reserve. The appropriations were reduced during 1917 to the percentages shown, pending the authorization by the Wisconsin Railroad Commission of adjustments in rates and service standards which would produce a reasonable return upon the fair measure of the utility capital used in the service of the public.

The expenditure during the year for additions, extensions and betterments to the plants and systems, other than the purchase of property of the Commonwealth Power Company and allied companies referred to in the last year's report, amounted to $2,328,404. Of this amount $1,222,493 is chargeable to the railway; $1,079,605 to the electric utility, and $26,305 to the heating utility. The value of property replaced or abandoned and charged to the depreciation reserve during 1917 was $61,048.

REGULATION IS PONDEROUS

In commenting upon some of the problems confronting utilities in these war days, President James D. Mortimer says:

"The city of Milwaukee has shared to a large extent in the increased industrial activity which accompanied the entry of the United States into the war. The large volume of new and profitable business which the various establishments in the city have obtained has made possible the adoption of rates of wages in other industries with which, because of its already serious burdens, the Milwaukee Electric Railway & Light Company has found impossible to compete successfully, though wage increases of greater magnitude than the present rates of fare justify have been granted. The operating organization has held together very well under all the circumstances.

"The regulation of public utilities as at present practiced is too ponderous and slow to give to the utilities and investors the protection originally intended. Near-bankruptcy has to be shown before relief can be obtained. Regulation is a problem of the future, and so far its conclusions have been predicated on what has happened rather than what is almost certain to occur. The experience of the last several years proves fairly conclusively that the regulation of public utilities in private ownership can remain a permanent part of our economic scheme only if it is made automatic and recognizes the desirability of higher rates of return on utility capital with a rising commodity price level."

COMPARATIVE INCOME STATEMENT OF MILWAUKEE ELECTRIC RAILWAY & LIGHT COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Operating revenues—railway	$4,953,356	62.2	$4,612,397	66.2
Operating revenues—light, power and steam heat	3,014,835	37.8	2,348,754	33.8
Total operating revenues	$7,968,192	100.0	$6,961,151	100.0
Railway operating expenses:				
Way and structures	$ 230,748	2.9	$ 209,985	3.0
Equipment	285,601	3.6	200,496	2.9
Traffic, power, transportation	2,095,297	26.3	1,704,279	24.6
General	131,235	1.6	139,251	2.0
Undistributed	288,883	3.6	328,540	4.7
Depreciation (reserve credit)	401,412	5.1	593,091	8.5
Contingencies (reserve credit)	....	...	1,000	0.0
Taxes (reserve credit)	346,959	4.3	289,738	4.1
Total railway operating expenses	$3,780,139	47.4	$3,466,480	49.9
Operating expenses—light, power and steam heat	2,058,598	25.8	1,464,844	21.0
Total operating expenses	$5,838,738	73.3	$4,931,324	70.9
Net operating revenues	$2,129,454	26.7	$2,029,827	29.1
Non-operating revenues	108,127	1.3	77,173	1.1
Gross income	$2,237,581	28.0	$2,107,000	30.2
Interest charges	931,361	11.7	759,393	10.9
Net income	$1,306,200	16.3	$1,347,607	19.3
Dividends on preferred stock	270,000	3.4	270,000	3.8
Dividends on common stock	1,034,250	12.9	1,058,875	15.2
Surplus	$ 1,970	0.0	$ 18,732	0.3

The scope of activities of the Employees' Mutual Benefit Association has been considerably enlarged and during the summer of 1917 the Employees' Mutual Benefit Association Food League was organized to encourage and assist the members of the association to cultivate practically all of the vacant property of the company within the city limits. Under the direction of a committee food supplies are distributed at cost to the members.

Miscellaneous statistical data of the company follow:

	1917	1916
Receipts per mile of track operated	$27,460	$25,594
Revenue passengers carried	115,626,143	107,528,091
Transfer passengers carried	47,232,242	44,655,506
Per cent transfer to revenue passengers	40.85	41.54
Receipts per revenue passenger	$0.0425	$0.0425
Revenue car-hours operated	1,862,456	1,772,573
Receipts per revenue car-hour	$2.66	$2.60
Revenue car-miles operated	16,670,189	15,899,284
Receipts per revenue car-mile	$0.2971	$0.2901

Reports from Six Large Roads

Statistics for 1918 Show Increased Traffic Was More Than Counterbalanced by Increased Expenses

In the March 30 issue of the JOURNAL there appeared some electric railway statistics, being a comparison of the returns for the calendar years 1916 and 1917 of a number of companies throughout the country made by the statistical bureau of the American Electric Railway Association. A total of 8437 miles of line was represented in the data given, and an interesting showing was made of the effect of rising costs of supplies and labor on the net revenues.

A study of the annual reports of a few of the larger properties in the United States brings out some other points of comparison which should have a value to railway men, especially when taken in connection with the more detailed statistics already mentioned. The reports in question are those of six city surface lines and six rapid transit systems, representing a total of about 2300 miles of line. While all these figures have been made public recently it must be kept in mind that only four of the surface line companies and one of the rapid transit roads had their fiscal years ending in December, 1917. The other companies, therefore, did not feel the full effect of twelve months of war conditions. The twelve properties under consideration cannot be identified in this comparison except to say that each represents a gross annual business of $5,000,000 or more.

GROSS EARNINGS INCREASED MORE ON RAPID TRANSIT THAN ON SURFACE

To consider first the gross earnings of the surface companies, it appears there was an increase of 3 per cent over the preceding year, while the operating ratio indicated an increase of 3.8 per cent in expenses, including taxes and depreciation. The rapid transit lines showed a rise of 8.3 per cent in gross and 1.8 in operating percentage. The fact that only one of the latter companies felt the depressing effects of the full calendar year is brought out strikingly in this more favorable showing.

There was an increase in revenue passengers and total passengers hauled on all the systems referred to. Under this item the difficulty of comparison begins with the absence of figures on free passengers on five properties and the lack of data on transfer passengers on three systems. Whether these companies keep a record of such riders for their own purpose does not appear, but the advisability of making such an estimate must be evident to all operators, because free passengers enter into the cost of service the same as any other class of patrons. It is not likely that any large company has an exact figure on free riders because of the impossibility of counting all persons in uniform or those who present passes which are not recorded on the register. The fact remains, however, that a fairly close estimate is made by those who endeavor to keep such records, and the figures must serve a purpose which makes the effort and cost worth while.

To take the figures as they stand, with due allowance for items which are missing, it is evident that there was an increase of 3.1 per cent in the "total passengers per mile of single track" on surface lines, where the totals ranged from 655,037 to 1,264,694. On rapid transit lines there was a decrease of 7 per cent, the figures ranging from 1,192,064 to 3,261,370. In this connection, as under other items where comparisons are made, it must be kept in mind that three of the systems classed as rapid transit include the statistics of surface lines operated by the same company. No segregation of data has been made in such cases.

SPEED REMAINS PRACTICALLY CONSTANT

Revenue car-miles and revenue car-hours increased in relative proportion on all twelve properties, and as a result the average speed in miles per hour remained practically constant. The student who seeks to get the "average speed" from other properties will find that this item is given on a different basis in different cities, because some operators take the speed as indicated by time-tables, while others arrive at the figure by dividing car-miles by car-hours. Here, too, the person making the comparison must know whether trail car statistics are included in any of the cities referred to and whether the car-hours include all hours paid for, such as lay-over time.

An interesting study of car performance may be made from the figures showing "annual miles operated per car." This is an index of the use of rolling stock. The data at hand show that there was no appreciable change in the average during two years. This average last year on surface lines was 36,375, while on rapid transit lines it was 41,840 miles.

"Car-miles per mile of single track operated" is an item which may be taken as an index to the density of service. The surface companies showed an increase of 1.8 per cent with figures ranging from 87,550 to 117,302. The rapid transit systems showed a slight decrease, their extreme figures being 111,759 and 580,093 in the past year.

NET DECREASE PER CAR-MILE AND PER CAR-HOUR

There comes next the story of decreasing net and the struggle against rising costs as told in the items "transportation revenue per car-mile and car-hour" and "expenses per car-mile and car-hour." These in brief follow:

STATISTICS PER CAR-MILE FOR SIX LARGE ROADS

Per Car-Mile	Surface Lines	Rapid Transit
Transportation revenue	2.1 per cent increase	6.1 per cent increase
Average for 1917	28.4 cents	27.6 cents
Expenses	14 per cent increase	9.7 per cent increase
Average for 1917	21.4 cents	16.9 cents
Per Car-Hour		
Transportation revenue	No change	No change
Average for 1917	$2.56	$3.38
Expenses	4.4 per cent increase	12 per cent increase
Average for 1917	$1.87	$2.13

Massachusetts Line to Be Scrapped

The Warren & Spencer Street Railway, Spencer, Mass., is to be torn up and sold for junk by the Swift-McNutt Company, Boston, Mass., which is now wrecking the Ware & Brookfield Street Railway in the same district. John F. Lambert, representing the Warren & Spencer Company at Ware, Mass., stated to the press that wrecking work would start at the West Warren end of the road at once. The property consists of 22 miles of track, 10 cars, a power plant and carhouse at Brookfield. The road connects with the Worcester Consolidated Street Railway at Spencer.

Financial News Notes

Georgia Road Suspends.—Operation has been discontinued by the Clarkesville (Ga.) Railroad.

Florida Road Suspends.—Service has been suspended on the line of the San Jose Traction Company.

Part of Line Suspends.—Operation has been discontinued by the Oak Bluffs (Mass.) Street Railway on its line between Oak Bluffs and Tisbury.

Indiana Road Being Dismantled.—The Cincinnati, Bluffton & Chicago Railroad, Huntington, Ind., which was sold at receiver's sale in September, 1917, is being dismantled.

Foreclosure Sale July 25.—July 25 has been set as the date for the sale of the property of the Central Crosstown Railroad, New York, N. Y., under foreclosure. The New York Railways, which is now operating the road, is expected to be the purchaser. Foreclosure proceedings against the Central Crosstown Railroad were instituted because of a default of principal and interest under the company's first consolidated mortgage.

Action on Dividend Put Over.—Henry A. Blair, chairman of the board of the Chicago (Ill.) Railways, says: "The board at its meeting on July 2 did not pass the dividend on Series 1, and the matter may be brought up later. Under present conditions and pending the decision of the War Labor Board at Washington, it was thought best to defer the matter to a future meeting. The company has earned and will pay all its interest obligations due on Aug. 1 as usual."

Car Trust Formed.—The Car Trust Equipment Company, Indianapolis, Ind., has been formed with a capital of $225,000 by officers of the Indianapolis Traction & Terminal Company to build thirty cars to be used in Terre Haute, Ind., by the Terre Haute Traction & Light Company, controlled by the Terre Haute, Indianapolis & Eastern Traction Company. The incorporators of the company are: Robert I. Todd, president of the Terre Haute, Indianapolis & Eastern Traction Company; John J. Appel, vice-president; and Joseph A. McGowan, secretary-treasurer of that company.

Protective Committee for New Orleans.—A bondholders' protective committee has been formed to look after the interests of all holders of bonds of the New Orleans, Railway & Light Company, New Orleans, La., and its subsidiary companies. The step was taken because the company failed in the payment of the semi-annual installment of interest due on July 1 on its general mortgage 4½ per cent gold bonds and also in the payment in the installment of interest due on that date on the bonds of certain of its subsidiary companies and in view of the uncertain conditions now surrounding the property. The committee, of which R. S. Hecht is chairman, invites the co-operation of all holders of bonds of the companies. Bernard McClosky and Walter B. Spencer are counsel for the committee.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenue	Operating Expense	Operating Income	Fixed Charges	Net Income
1m., May, '18	$17,225	$10,572	$66,653	$475	$6,178
1m., May, '17	14,885	12,938	1,947	431	1,516

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period	Operating Revenue	Operating Expense	Operating Income	Fixed Charges	Net Income
1m., Apr., '18	$156,937	*$138,884	$18,053	$35,892	$17,839
1m., Apr., '17	163,746	*116,957	46,789	35,642	11,147
4m., Apr., '18	596,346	*549,043	47,303	143,291	95,988
4m., Apr., '17	633,263	*469,522	163,741	143,088	20,653

CHATTANOOGA RAILWAY & LIGHT COMPANY,
CHATTANOOGA, TENN.

Period	Operating Revenue	Operating Expense	Operating Income	Fixed Charges	Net Income
1m., May, '18	$147,808	*$115,601	$32,207	$31,317	$890
1m., May, '17	117,840	*78,387	39,453	30,048	9,405
12m., May, '18	1,531,816	*1,315,437	216,379	365,586	†149,207
12m., May, '17	1,282,020	*897,275	384,745	357,387	27,358

COLUMBUS RAILWAY, POWER & LIGHT COMPANY,
COLUMBUS, OHIO

Period	Operating Revenue	Operating Expense	Operating Income	Fixed Charges	Net Income
1m., May, '18	$350,814	*$242,017	$108,797	$55,789	$53,008
1m., May, '17	316,274	*223,357	92,917	47,109	45,808
12m., May, '18	4,192,179	*3,106,703	1,085,476	607,278	478,198
12m., May, '17	3,715,866	*2,398,038	1,317,828	527,138	790,690

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY,
GRAND RAPIDS, MICH.

Period	Operating Revenue	Operating Expense	Operating Income	Fixed Charges	Net Income
1m., May, '18	$1,709,860	*$1,125,780	$584,080	$502,430	$81,650
1m., May, '17	1,512,014	*931,921	580,093	437,257	142,836
12m., May, '18	20,509,341	*13,520,164	6,989,177	5,569,903	1,419,274
12m., May, '17	17,919,035	*10,366,987	7,552,048	5,103,594	2,448,454

GRAND RAPIDS (MICH.) RAILWAY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$105,683	*$81,621	$24,062	$19,287	$4,775
1m., May, '17	107,618	*77,355	30,263	18,174	12,089
12m., May, '18	1,287,722	*934,539	353,183	226,526	126,657
12m., May, '17	1,306,964	*865,665	441,299	205,206	236,093

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY,
LEWISTON, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$73,099	*$61,002	$12,097	$18,445	†$6,348
1m., May, '17	71,822	*56,988	14,834	15,636	†802
12m., May, '18	875,096	*732,724	142,372	197,576	†55,204
12m., May, '17	842,493	*612,659	229,834	185,102	44,732

NASHVILLE RAILWAY & LIGHT COMPANY,
NASHVILLE, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$232,266	*$149,160	$83,106	$40,514	$42,592
1m., May, '17	198,301	*$136,260	62,041	40,539	21,502
12m., May, '18	2,522,800	*1,617,542	905,258	489,350	415,908
12m., May, '17	2,427,202	*1,526,588	900,614	499,167	401,447

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
12m., May, '18	$6,683,265	$4,288,918	$2,394,347	$1,033,759	$1,360,588
12m., May, '17	5,782,875	3,279,012	2,503,863	941,835	1,562,028

PORTLAND RAILWAY, LIGHT & POWER COMPANY,
PORTLAND, ORE.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$620,294	*††$369,387	$250,907	$187,684	$62,223
1m., May, '17	474,433	*265,308	209,125	177,102	32,023
12m., May, '18	6,676,191	*††4,065,109	2,611,082	2,144,652	466,430
12m., May, '17	5,647,205	*3,057,131	2,590,074	2,178,108	411,966

* Includes taxes. † Deficit. †† For the month $18,611, and for twelve months, $271,459 included for depreciation.

Traffic and Transportation

B. R. T. Wants Seven Cents

Application to Board of Estimate Shows Company Would Also Charge Two Cents for Transfers

A petition from the New York Consolidated Railroad requesting permission to charge a 7-cent fare on the new Brooklyn Rapid Transit Company subways was filed with the Board of Estimate on July 10. The communication pointed out that parts of the new lines have already been operated with financial success, but prospective deficits are mentioned, as follows:

"There seems to be no reasonable doubt that, upon the completion of the railroads which your petitioner is to operate, the combined system will be earning its full preferentials and yielding revenue to apply on the city's interest and sinking fund.

"From the time that initial operation begins any deficits in meeting these city charges can no longer be added to the cost of construction, as at present, but must be raised by taxation.

WANTS BURDEN SHIFTED

"In view of the city's present financial condition and the burdens on taxpayers entailed by the war, the question is submitted for consideration of your honorable board whether temporarily at least it would not be to the city's interest to shift the burden of this interest cost from the taxpayers to the fare payers by increasing the rate of fare chargeable under the contract. An addition of 2 cents to the fare would probably make the revenue sufficient to meet the city's interest immediately after full operation begins. We would not urge this except as a temporary measure justified by the unforeseen delays in completing rapid transit lines, the effect of the war conditions upon net revenue and the undesirability of increasing the burdens of taxation at the present time.

"Moreover, such a measure would place a large part of the cost of rapid transit upon the hundreds of thousands of persons making up the transient population of our city, who pay no local taxes or rent and who get their transportation at less than cost. In case this suggestion should meet with your approval, we should be pleased to take up with you and the Public Service Commission for the First District the preparation of a supplementary amendatory contract."

SURFACE LINES ALSO INCLUDED

There was a second petition from the surface lines allied with the Brooklyn Rapid Transit System asking that a 7-cent fare be permitted on these routes as well. This communication pointed out that the companies might be forced to go back to the zone system of fares, said to be authorized by the franchises, unless the aid now sought is realized. Under the zone plan, it was noted, fares would be doubled and in some instances advanced even beyond that point. In this connection the company said:

"Instead of applying the rates which we are advised we have the right to charge, we prefer to solicit your approval to the following arrangement, to continue during the war and thereafter (not less than one year) until it shall be terminated by the action of your board or by the Public Service Commission for the First District, to wit:

"1. A unit charge of not exceeding 7 cents for one continuous ride upon any line of each petitioner company except to and from Flushing, North Beach and Coney Island, where the present fare [10 cents] will prevail.

"2. Each passenger paying a cash fare of 7 cents to be entitled for an additional 2 cents to a transfer ticket to any intersecting line, either of the company issuing such ticket or of any of the other undersigned companies. Such transfer to be subject to reasonable rules as to use. No transfer to be required to be issued on a transfer.

"Shall we go back to the zone system, as we are authorized to do by our franchises, relieving it of such of its extreme hardships as might be possible? We prefer not to unless there is no other way open. This would mean wholesale increases of fares."

Boston Fare Increase Coming

Within a few days an official announcement of their plan of action is expected from the trustees of the Boston (Mass.) Elevated Railway. In a preliminary statement issued on July 9 in their behalf it is pointed out that the estimated increase in the cost of operation, making no allowance for higher cost of materials, greater income taxes, better standard of maintenance, or for increase in wages to employees, amounts to more than $4,200,000, while a 1-cent raise in fare would produce only $3,650,000, assuming that as many cash passengers ride in 1918 as in 1917.

In the first five months this year, according to the statement, there has been a deficit, below fixed charges, of $233,719. Among new items of expense is $475,000 rental for the Dorchester tunnel.

After mentioning a "request from the employees for a substantial increase," the statement goes on to show that a raise of 1 cent an hour in pay would add $250,000 to expenses, and it is added that the trustees "will have no option in the immediate future than to make a substantial increase in fares."

Richmond Hearing Begun

Council Committee Begins Higher Fare Sessions—Calls for More Fare Data from the Company

Advocates of the proposed increase to a straight 5-cent fare on the lines of the Virginia Railway & Power Company, Richmond, Va., presented their arguments in favor of the measure at the meeting of the committee on streets of the Council on June 27. Further consideration was deferred until July 8, when it was proposed to hear opponents of the measure.

In addition to the figures already presented, officials of the company were requested to submit the following data:

1. The amount of the gross revenues with the straight 5-cent fare in effect.
2. What per cent the city will receive on the present tax basis, and on a straight 5-cent basis.
3. The amount of gross revenues with the straight 5-cent fare, provided that workmen's tickets be sold at the rate of six for a quarter, the school tickets remaining at 2½ cents, remitting the city tax on school tickets.

E. Randolph Williams, general counsel, presented the case for the company. He stated that he felt it was unnecessary to explain that with the cost of labor and maintenance increasing by leaps and bounds it was absolutely impossible for the company to maintain the efficiency of its service under present conditions. He produced figures to show that in some cases, the cost of material had increased recently from 60 to 400 per cent and that the increase in wages has been even greater.

Atlanta Fare Case Concluded

Arguments on the petition of the Georgia Railway & Power Company, Atlanta, Ga., to increase its rates generally, were concluded before the Railroad Commission of Georgia on June 28. The case was taken under advisement. Attorneys had until July 2 to file reply briefs to the arguments.

Counsel for the so-called people's committee, which is opposing the petition, in concluding his case, made the point that the courts alone can decide as to whether the company can increase its fare from 5 cents to 6 cents, predicating the statement upon a contract alleged to have been made by the company and the city of Atlanta in 1902 by which the company, he claimed, agreed to charge at that time, and in the future, a fare of 5 cents.

Attorney Rosser for the company argued that it is the duty of the Railroad Commission to fix just and reasonable rates to meet present-day conditions as the commission found them; that it had been proved that the company could not do business under present war-time price conditions, under the present rates, and that it was merely a matter of permitting this company to carry on its operations and make its improvements, or to throttle it.

Montreal Fares Increased

Commission Appointed Under Recent Franchise Settlement Does Away With Tickets and Will Charge for Transfers

The Montreal Tramways Commission has announced the fares which will obtain for the next year on the lines of the Montreal (Que.) Tramways. The new rates will come into effect eight days after publication of an advertisement for two days in an English and a French newspaper of the city. This is expected to be between July 15 and Aug. 1.

The new rates apply to the lines both inside and outside the city, but it is to the city fares perhaps that most interest attaches. In the so-called uniform tariff or city territory citizens will pay in the day time 25 cents for five tickets, and 1 cent extra for transfers except from 5 to 8 o'clock in the morning when transfers are free. The fare after midnight will be 15 cents cash. The cash fare from 8 a.m. until midnight will be 6 cents and an additional cent for a transfer. These fares as stated in the announcement of the commission follow:

"In the uniform tariff territory comprising the city of Montreal as it exists at present, as well as the towns of Westmount, Outremont, Verdun, St. Laurent, Mount Royal, also the territories of that portion of St. Laurent parish, and of that portion of the municipality of Cote St. Luc lying to the east of the line of the Montreal Tramways, running from Snowdon Junction to Cartierville, including the land occupied by the said line, the fares shall be:

"(a) From midnight to 5 a.m., 15 cents, cash.

"(b) From 5 a.m. to midnight, 6 cents cash, or five tickets for 25 cents.

"(c) For school children from five years to sixteen years of age, on week days only, and between the hours of 8 a.m. and 6 p.m., seven tickets for 25 cents.

"(d) Transfers shall be issued free to school children specified in clause (c) and to all passengers traveling on cars between the hours of 5 a.m. and 8 a.m., on week days only. At all other times, a transfer shall be issued to any passenger paying his or her regular fare, at a charge of 1 cent."

The Tramways Commission, in establishing the tariffs, was bound to carry out the stipulations of the contract entered into by the city of Montreal and the Montreal Tramways on Jan. 28, 1918 (ELECTRIC RAILWAY JOURNAL of Feb. 9, 1918, page 288,) and ratified by the Quebec Legislature on Feb. 9, 1918. The tariffs according to the act must give full effect to this contract.

The revenue to be derived from such tariffs are to provide tramways service at cost. The Tramways Commission, after a careful study of the expenditure incurred by the tramways in previous years and taking into consideration the increase in labor and material, found it necessary to provide for a total revenue of approximately $10,000,000 for the twelve months ending June 30, 1919. This gross revenue exceeds the revenue of the year ended June 30, 1917, by an amount of $2,500,000, during which period the fares averaged 4.11 cents per revenue passenger.

The increased cost of wages and material, as well as the increased fixed charges due to additional capital required, brought the estimated cost per revenue passenger to approximately 5.5 cents. This increase of about $2,500,000 was made up as follows:

(a) Estimated increase in wages for thirteen months..........	$750,000
(b) Deficit incurred since the putting in force of the contract until June 30, 1918..........	400,000
(c) Estimated increased cost of material and supplies........	1,000,000
(d) Additional fixed charges.....	280,000

The cash fares from Montreal to outside points and return are less than before, but there seems to be no provision for the commutation tickets which made travel for citizens of the outlying suburbs quite cheap to date. On the Lachine line the present cash fares are from 5 to 15 cents in addition to the Montreal local fare. Now the cash fare is from 5 to 10 cents. To the Back River territory the fares have been 5 to 15 cents in addition to the city fare, but now Cartierville and Ahuntsic have only the city fare to pay, and it will be more favorably affected than almost any other part of the island. To Cartierville the additional cash fares now are from 5 to 15 cents. To Notre Dame de Grace a cash fare of 5 cents is now paid, so that no difference takes place there except when the traveler desires to transfer. To Bout de l'Ile the present prices are 5 to 15 cents additional. The 5-cent cash fare to Rosemount disappears, and the residents there are in the same situation as Notre Dame de Grace and the rest of the city. A 5-cent fare is also charged from Queen's Park in Verdun to the end of the line. From last January there has been a 5-cent cash fare from St. Laurent into the city, but this now comes under the uniform tariff. The Pointe aux Trembles rate has been 5 cents in addition to the city fare to now.

A One-Man Car City

On June 30 the Boone Avenue and Lidgewood line of the Washington Water Power Company, Spokane, Wash., was equipped with one-man cars. This is the last line, with the exception of the Hillyard line, which is classed as semi-interurban, to be placed under the one-man system. All lines of the company except the Hillyard henceforth will be covered by the single-end service. The Washington Water Power Company, with the completion of the last forty converted cars started last winter, now has eighty-five single-end cars fully equipped and in service.

Right to Referendum Upheld

In Buffalo Six-Cent Fare Case Appellate Division of Supreme Court Rules in Favor of Voters

The Appellate Division of the Supreme Court at Rochester, N. Y., on July 2, affirmed the decision of Justice Herbert P. Bissell in the Supreme Court of Erie County, Buffalo, N. Y., in which the court held that the voters of Buffalo, N. Y., can hold a referendum to determine whether or not the action of the City Council shall be repealed in reference to suspending the franchise of the International Railway fixing a 5-cent fare and recommending to the Public Service Commission of the Second District that a 6-cent fare be fixed within the city limits.

Presiding Judge Kruse and Judges De Angeles, Hubbs and Lambert held that the Milburn agreement between the city and the railway cannot be amended to permit a 6-cent fare without disposing of "property and rights" of the city, and therefore is a subject referable to the people, who, under the city charter, have the right to hold a referendum on franchise agreements.

Consent of the Appellate Division for an appeal to the Court of Appeals at Albany, N. Y., was obtained by Henry W. Killeen, of Penney, Killeen & Nye, of counsel for the International Railway, and the appeal will be argued in Albany within the next week. The railway maintains that the action of the City Council is merely an emergency measure for the period of the war and was taken so that the traction company's employees could be granted an increase in wages and so that improvements and extensions could be made to the company's city properties, and is therefore not subject to a referendum.

Announcement was made on July 3 by Mr. Killeen on behalf of the railway that when the board of directors of the company holds its next meeting, it will vote to suspend the operation of increased wages to its employees until such time as the company can receive the benefit of an increased rate of fare. In a formal statement, Mr. Killeen declared that the wage increase for platform men amounting to 8 cents an hour calls for a payroll increase of $2,000 a day, which the company cannot afford to pay if the 5-cent fare is continued.

"As soon as the directors of the International suspend the payment of the wage increase recently granted its employees and there is danger of a strike, I will make application to the courts for the appointment of a receiver for the International Railway," said George L. Buck, Mayor of Buffalo, in a letter to E. G. Connette, president of the International Railway.

Fearing a strike of the company's employees because the proposed referendum will probably overwhelmingly oppose a 6-cent fare, Clifton Reeves, government labor mediator, has been sent to Buffalo to investigate the situation and make recommendations to the federal war industries board. Unable to affect an agreement between the City Council and the International Railway, Mr. Reeves on July 9 sent a telegram to the War Industries Board asking if it has the authority or can take over the operation of the railway.

The Appellate Division at Rochester, N. Y., was greatly interested in the points of law advanced by the company because it was the first time in the court's history that a referendum argument has been heard in a franchise case in a city where the commission charter applies. The court wanted to know whether it really was an "intelligent" vote that was cast in such matters. Mr. Killeen on behalf of the International Railway said that the action of the City Council would be repealed by the voters. At this point, Judge De Angeles asked:

"By ridicule or by some other line of publicity or campaign, could not the voters be persuaded to vote other than in an intelligent way and if that occurred, would not a second vote be necessary when the facts were straightened out, to obtain an intelligent vote?"

Court Action in Fare Case

Judge Howard Wiest, in the Ingham County Circuit Court, Lansing, Mich., on July 8 issued a temporary injunction, effective immediately, restraining the Michigan Railway, Kalamazoo, Mich., from charging in excess of 2 cents a mile as a passenger rate on its lines. Steps were immediately taken by the railway officials to apply for a judicial ruling dissolving the enjoining order.

The road had been charging 3 cents a mile under the recent government order raising all railroad fares to that figure. The Michigan Company has nearly 300 miles of trackage and it is built to be operated in the same manner as the steam roads with which it has traffic arrangements in the exchange and transfer of passengers and freight at intersecting points, the only difference being that the Michigan road is electrically equipped. It competes with the steam roads for business along its entire lines. When the railroads were taken over by the government, the Michigan Railway was included. On the return to its original owners of what are known as the "short roads," this company was on the list.

The road in opposing the issuing of the injunction held it was under government control and therefore exempt from provisions of the State law. Attorney-General Groesbeck, appearing for the State, contended this was not the fact, as the Director-General of Railroads McAdoo had severed that connection by turning back the road to its owners and therefore the statute limiting the rate to 2 cents a mile applied. This point, it is believed, doubtless influenced the court's action.

Seven-Cent Fare Denied

New Jersey Commission, However, Will Permit One-Cent Transfer Charge In Decision Rendered July 12

The State Board of Public Utility Commissioners of New Jersey on July 12 denied the application of the Public Service Railway, Newark, for an increase in fare from 5 cents to 7 cents and to charge 2 cents on an original transfer and another cent for a transfer upon a transfer. The board, however, issued an order allowing the company upon certain conditions to charge 1 cent for each original transfer on each fare. The board ruled that in order to make this charge, the company must before July 24 file its acceptance in writing of the following conditions:

1. The company must file with the board monthly, beginning with June last a statement giving the total amount of wages and salaries paid, classified by character of service rendered to the company, and the rates per hour, day or period and indicating any change in classification of employees and the resulting wage rate.
2. The company must also file with the board for each month, beginning with June last, a complete comparative income statement for 1917 and 1918 together with mileage, traffic and miscellaneous statistics.
3. The company must file with the board before Jan. 1, 1919, a plan whereby the present method of charging may be revised by an equitable zoning system over its entire territory, proper consideration being given to all of the elements to more properly relate the cost of service with the length of haul and value of service.

The order of the commission will become effective on Aug. 1.

Transportation News Notes

Hearing on One-Man Cars for Savannah.—The Savannah (Ga.) Electric Company has petitioned the Railroad Commission of Georgia for permission to use one-man cars and to introduce the skip stop. The commission set July 10 for a hearing.

West Penn Plans Skip Stop.—The West Penn Railways, Pittsburgh, Pa., and the affiliated Wheeling (W. Va.) Traction Company are at present making an intensive study of the skip-stop plan of operation. The work is being done at the request of the Fuel Administration in its campaign for fuel saving.

Columbus Fare Request Renewed.—At the last meeting of the City Council of Columbus, Ohio, a second request from the Columbus Railway, Power & Light Company for a straight 5-cent fare for a period of six months was filed without comment. So far the Council has ignored the fare question, despite appeals made to it by business men, business bodies and civic societies.

Women for Small Washington Road.—The North Coast Power Company, Vancouver, Wash., plans to put women operators on its cars, just as soon as they become sufficiently acquainted with operating details. Women have taken over the work of cleaning cars at the carhouses. During the daytime, cars will be run by one operator, but after dusk it is planned to put on two.

Oregon Interurbans After Increased Rates.—Tariffs asking for 25 per cent increase in freight rates have been filed with the Public Service Commission of Oregon by all save six of the steam and electric railways operating in the State. The Public Service Commission retains jurisdiction over the electric lines, it is said, and it will no doubt suspend their tariffs pending hearings.

One-Man Safety Cars Sanctioned.—One-man cars have been allowed the Fort Wayne & Northern Indiana Traction Company by the Public Service Commission of Indiana for use in Logansport, Lafayette and on certain streets in Fort Wayne, provided the cars are equipped with approved air brakes and standard hand brakes and that all steam railroad crossings are guarded by gates or flagmen.

Increase Denied to Suburban Cars in City.—The New York Public Service Commission has denied the Buffalo, Lockport & Rochester Railroad permission to charge a 6-cent fare on that part of its line entirely within the city of Rochester. This decision is based on the recent rule of the Court of Appeals in the so-called Rochester case, denying the commission the right to grant an increase in fares when it is contrary to the provisions made part of the franchise contract accepted by a railroad.

Fare at Springfield May Be Raised.—The City Commissioners of Springfield, Ohio, have expressed their willingness to increase the rate of fare received by the Springfield Railway from six tickets for a quarter to straight 5 cents. C. E. Ashburner, city manager, has suggested that a change be made in the franchise ordinance to this effect. The increase, which will amount to about $27,000 a year, will cover the recent advance in the wages of the motormen and conductors.

Withdrawal of Special Tickets Sanctioned.—An order permitting the East St. Louis & Surburban Railway, East St. Louis, Ill., to increase its charge for chartered cars run between Belleville and French Village from $12.50 to $15 a car per round trip, was entered by the Public Utilities Commission of Illinois on July 5. The company is also permitted to withdraw from sale all party tickets and to increase its commutation book prices from $6 to $7. The order is effective five days from the date of its signature.

Skip Stop Before Minneapolis Council.—The skip-stop plan of operating for the Twin City Rapid Transit Company will be acted upon by the City Council of Minneapolis, Minn., on July 12. Recommendation that the plan be put into effect in Minneapolis simultaneously with St. Paul, about July 15, was made by the Council committee on street railway matters and extensions at a meeting on July 1. The committee report was favored by all members except one. Trial of the plan for ninety days is recommended by the committee report.

Would Fix Seattle Municipal Fares.—An ordinance has been introduced in the City Council of Seattle, Wash., by Councilman Oliver T. Erickson, governing fares on Seattle's municipal railway lines. The new ordinance will make cash fares 5 cents, with transfer privilege. Tickets will be sold on the cars at six for 25 cents, but will carry no transfer privileges. School children, on presenting a certificate signed by their teacher, will pay 3-cent fares, or two may ride for 5 cents. Tickets will be 2½ cents or ten for 25 cents from the conductor. Employees of the municipal railway may ride free on displaying their badges.

Emergency Increase Denied.—The Denver (Col.) Tramway was denied a 3-cent emergency increase in the fare between Denver and Golden when an application affecting the line routed by way of Berkeley was filed on June 28 with the Public Utilities Commission of Colorado. The commission contended that no order could be granted on such short notice, the application providing that the rates become effective within five days after tariffs were presented. The commission has signified its willingness to accept for filing a new tariff which will provide the customary thirty days' notice of intention to increase rates.

Long Island Roads Want Increases.—Applications for increase of fare have been received by the Bureau of Franchises and the Board of Estimate of New York City from the New York & Long Island Traction Company, Hempstead, and the Long Island Electric Railway, Long Island City. The Long Island Electric Railway claims it should have charged 6.88 cents per passenger last year to have cleared its operating expenses and fixed charges, while the New York & Long Island Traction Company alleges it should have charged 6.11 cents per passenger to have made its operating expenses and fixed charges.

Petaluma Line Wants Increase.—The Petaluma & Santa Rosa Railway, Petaluma, Cal., which operates a boat line between San Francisco and Petaluma, and electric lines between Petaluma, Santa Rosa, Sebastopol and Forestville, has asked the Railroad Commission for permission to increase its passenger and freight rates. The company wants all its passenger fares raised 5 cents. If granted by the commission, this will make every fare between all points on its lines 5 cents higher. The proposed new freight rates are a 25 per cent increase over the present schedules, so that the company will have the same rates as the railroads under the order of Director General of Railroads McAdoo.

Inquiry Into Hudson River Fares.—The United States Senate has adopted a resolution authorizing the committee on interstate commerce to ascertain why the Railroad Administration took over the electric lines between New York, Jersey City, and Newark, N. J., operated by the Hudson & Manhattan Railroad. The committee will ask whether any necessity existed for taking over these lines, which, according to Senator Frelinghuysen, author of the resolution providing for the inquiry, are not used in any way for military purposes, either for carrying troops or transporting supplies. The question in which Senator Frelinghuysen is most deeply interested, however, is that of the increased fare.

Morris County Wants Higher Rates.—Notice has been served by the Morris County Traction Company, Morristown, N. J., upon the governing bodies of the twenty municipalities in which the company operates that it intends shortly to appeal to the Board of Public Utility Commissioners for an increase in its rates of fare. A flat 6 cents in each of its twelve zones is to be the object of the petition, as against a 5-cent fare generally and tickets at six for a quarter, which are sold solely within the limits of Summit. Further, the company, which made a 2½-cent fare for school children going to and from school at regular hours one of the conditions of its franchises in many places, wants this fare set at 3 cents everywhere.

Reading Suburban Fares Eight Cents.—Abnormal operating conditions have made it necessary for the Reading Transit & Light Company, Reading, Pa., to increase the fares on its suburban lines of Reading, Lebanon and Norristown to 8 cents. Under the revised schedules filed with the Public Service Commission of Pennsylvania to become effective on Aug. 1, the city of Reading and territory for some distance into the suburbs in all directions is preserved as a 6-cent zone. City and suburban passengers may continue to ride to and fro between Reading and West Reading, Wyomissing and West Lawn; Mount Penn, Carsonia and Stony Creek; Black Bear and Paxon's Crossing; Oakbrook and Shillington; Hyde Park and Rosedale, for a 6-cent fare.

Increase in Milwaukee Suburban Fares.—A fare of 3 cents a mile for interurban service and 2 cents a zone for suburban service went into effect on the lines of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., on July 3, following an order granted by the Railroad Commission of Wisconsin. The former rate on interurban service was approximately 2¼ cents a mile, and the suburban fare was on the basis of thirty tickets for 50 cents; the new fare is thirty tickets for 60 cents, or at the rate of 2 cents per zone. The decision on the suburban fare is temporary, that on the interurban permanent. Mileage books will continue to be acceptable for six months, while zone tickets were accepted until July 11. The zone tickets are now being redeemed at face value.

Spokane Rate Advances Postponed.—Some misunderstanding relative to the proposed flat increase of passenger rates to 3 cents a mile on the suburban lines of the Washington Water Power Company, Spokane, Wash., and the minimum charge of 10 cents for adults, which were to have become effective early in June, resulted in the schedules having to be changed to become effective on July 30. The freight rates were to have been raised 25 per cent on June 25 and these were also put over to July 30. Protests have been filed with the State Public Service Commission against the Spokane & Inland Empire Railroad, which raised rates at the time the rates on steam roads were ordered advanced by the Director General.

Atlantic City Advance Inadequate.—Clarence L. Cole, receiver of the Atlantic City & Shore Railway, Atlantic City, N. J., has served notice upon the Board of Public Utility Commissioners of New Jersey of an intention to increase fares in the Inlet loop, Atlantic City, to Savannah Avenue, Margate zone, from 5 to 6 cents on and after Aug. 6. A similar advance is intended for the Savannah Avenue-Longport zone at the same time. The price of 100-trip family books, Atlantic City to Longport, will be increased from $5.25 to $7. In May the company was permitted by the commission to put into effect fare increases which it was estimated would result in increasing the revenue of the company $20,058. This was referred to in the ELECTRIC RAILWAY JOURNAL of May 25, page 1029.

Favorable Report on Skip Stops.—In line with the wishes of the United States Fuel Administration the committee on local transportation of the City Council of Chicago, Ill., has reported favorably to the City Council an ordinance providing for skip-stop operation of the electric railways in the city of Chicago. The plan, which was recommended to the committee by the city's department of public service, provides that cars shall not be required to make more than eight stops per mile for the purpose of letting off or taking on passengers. A survey, made by Thomas E. Flanigan, acting transportation supervisor, shows that at present there are close to 11,400 stopping places on the surface lines in Chicago and that under the proposed plan of skip-stop operation this number will be 7500, a reduction of 34 per cent. It is reported that skip-stop operation is to be put into effect on all surface lines throughout the city on the date that the proposed ordinance becomes effective.

Legal Notes

FEDERAL COURTS.—*A Franchise Is a Contract.*

Where a resolution of a board of county commissioners granted to a person therein named and his successors the right to construct, maintain and operate an electric railroad along a specified state road, without specifying any limit of time, the grant was not a mere revocable right, but a "contract" not subject to annulment by a resolution of the board of county commissioners declaring it terminated; in view of Const. Art. 1, Sec. 10, prohibiting the impairment of the obligation of contracts. (Northern Ohio Traction & Light Company, et al. *vs.* State of Ohio ex rel., 38 Supreme Court Reporter, 196.)

FEDERAL COURTS. — *Limited Franchise Extended to Perpetuity.*

An ordinance granting "all the right and authority that" the city had "the capacity to grant, to construct, hold and operate a street railroad upon and along" named streets, which provided for termination of the rights conveyed only in event of the failure of the grantees to keep their covenants, must be deemed a perpetual franchise, although a prior ordinance "prescribing the terms and conditions of street passenger railroads within" the city provided that "all contracts made under the provisions of this ordinance shall be for the term and period of twenty-five years," since this prior ordinance did not address itself to the construction or scope of future ordinances.

Where plaintiff street railway company, operating under a perpetual franchise, was authorized by an ordinance "granting the right-of-way over certain streets" to contract with another street railway company, operating under a twenty-five-year franchise having then eight years to run, for the right-of-way held by the latter and to occupy and use the streets specified in the contract of that road with the city "subject to the conditions limitations and restrictions contained in the ordinances regulating" plaintiff's right to streets occupied by it, and, in accordance with the ordinance, plaintiff purchased the other company's lines, it thereby acquired a perpetual franchise therefor, for the language of the ordinance conveyed more than a license to purchase what the vendor had, the title and the operative words importing a grant. (City of Covington *vs.* South Covington & Cincinnati Street Railway, 38 Supreme Court Rep., 376.) (See also note on page 822 of the issue of the ELECTRIC RAILWAY JOURNAL for April 27, 1918.)

CALIFORNIA.—*Liability for Injury Resulting from Collision with Unattended Automobile.*

Where an owner negligently left his automobile unattended on street car tracks and a street car was negligently run into it, catapulting it against one working at the curb of the street, the owner of the automobile was liable for the injuries. (Keiper *vs.* Pacific Gas & Electric Co., 172 Pacific Rep., 180.)

LOUISIANA.—*Cars Need Not Stop Exactly at Station.*

Where a street car stopped 15 or 20 ft. beyond its usual stopping place at a place where the step of the car was 15½ in. or 16 in. above the roadway, so that a passenger might safely alight by extending his foot 7 in. out and stepping down while holding onto the handle-bar, such place was reasonably safe, and the carrier was not liable for injury to passenger while alighting. (Clogher *vs.* New Orleans Railway & Light Co., 78 Southern Rep., 248.)

MISSOURI.—*Consideration for Release—Subsequent Damage.*

A release signed by an injured employee of an electric railway company in consideration of medical services or as a condition of being re-employed is based on a sufficient consideration. Such a release, covering all "actions, causes of actions, suits, controversies, claims and demands whatsoever," bars an action for consequences subsequently arising from the injury of which the employee was not aware at the time he signed it. (Hogard *vs.* Kansas City Railways, 202 Southwestern Rep., 431.)

NEW JERSEY.—*Validity of Ordinance Forbidding the Transportation of Liquor.*

The commission government acts do not justify an ordinance making it unlawful for any common carrier to deliver in the city any alcoholic liquor consigned to a club, lodge or other association. (West Jersey & Seashore Railroad *vs.* City of Millville, 103 Atlantic Rep., 246.)

NEW YORK.—*Dancing Floor at Park Is a Place of Public Accommodation, Resort or Amusement.*

The dancing floor of an amusement park maintained by an electric railway as an auxiliary to and to increase its passenger business is a "place of public accommodation, resort or amusement" within civil rights law, Sec. 40. Hence the exclusion of a colored man from the floor on account of his color was a violation of the law. (Johnson *vs.* Auburn & Syracuse Electric Railroad, 119 Northeastern Rep., 72.)

NEW YORK.—*Regulations to Require Orderly Boarding.*

Where a street car was halted preparatory to taking on passengers, and railway company's inspector ordered the men to stand back so that the women could board first, it was within the power of such inspector to exercise the force necessary to compel compliance with the order. (Garricott *vs.* New York State Railways, 119 Northeastern Reporter, 94.)

OHIO—*"Repave" and "Repair" Defined.*

The word "repave" in reference to a street improvement relates generally to a new pavement. The word "repair" is inherently local and more or less temporary. It is none the less "repair" because new material must be used in order to effect such "repair." (Cleveland Railway *vs.* City of Cleveland, 119 Northeastern Rep., 202.)

PENNSYLVANIA.—*How a Change of Street Railway Rates Must Be Posted.*

Under the public service commission act the posting and publishing of a schedule changing the rates of a street railway company are conditions precedent to the taking effect of the changed rate, and where the schedule of change is not properly posted, the Public Service Commission may restrain the company from putting the changed rate into effect.

The word "post" as used in this connection means the bringing to the notice or attention of the public by affixing to a post or wall, or putting up in some public place; to placard. It is insufficient if copies of the new schedule are sent to the company's agents at its offices and stations, with directions to keep a copy on file with the copy of schedule of fares for street car service on file at such offices, but no copy of the schedule was posted in the rooms to which the public had access. (City of Pittsburgh *vs.* Pittsburgh Railways, 103 Atlantic Rep., 372.)

TEXAS.—*Power to License Jitneys and Interest of Street Railway in the Subject.*

A street railway having a valid franchise to use city streets has such an interest in the use of the city streets that it may sue to restrain the use thereof by jitneys licensed under an alleged invalid ordinance. The Dallas City charter empowers the board of commissioners to regulate charges of franchise holders and to prescribe the service upon fair hearing, so that an ordinance regulating jitneys and authorizing them to be licensed, passed under the initiative and referendum clauses, is invalid. (Lindsley et al. *vs.* Dallas Consolidated Street Railway, 200 Southwestern Rep., 207.)

WEST VIRGINIA.—*Conductor Must Discharge Duty to Alighting Passengers Before Going Forward to Signal at Crossing.*

The fact that the rules of the railway company require conductors before crossing the tracks of a steam railroad to go forward and onto the tracks of the other railroad and look out for approaching cars or locomotives thereon before signaling the motorman to go ahead will not excuse conductors from first discharging their duty to passengers alighting or getting on the car, and his negligent performance of any of the duties so imposed upon him will render the railway company liable to a passenger injured thereby. (Cain *vs.* Kanawha Traction & Electric Co., 95 Southeastern Rep., 88.)

Personal Mention

J. H. McGraw Honored

Proprietor of Electric Railway Journal Completes Thirty-Three Years of Publishing Career

On June 15, 1918, James H. McGraw, president of the McGraw-Hill Company, Inc., completed thirty-three years of service as a publisher. To commemorate this event a committee of the employees arranged for the presentation to Mr. McGraw of a bronze tablet at exercises which were held on June 28 at the offices of the company. The tablet read as follows:

"To James H. McGraw, to commemorate his thirty-three years of service as a publisher; to bear witness to his vision, his ideals and their influence on technical journalism and engineering thought; to testify to their pride in his accomplishment, their faith in his leadership, their admiration, respect and love, this tabliet is erected by the men and women of the McGraw-Hill Company, Inc., June 15, 1918."

The meeting was attended by some 800 employees and after the address of presentation, Mr. McGraw, to whom the proceedings were a surprise, made a short speech of appreciation. The tablet will be erected in the building owned by the company at Tenth Avenue and Thirty-sixth Street, New York.

Woman Welfare Worker

Brooklyn Rapid Transit Company Appoints Miss Bullock to Look After Interests of Conductorettes

Miss Grace Bullock will be placed in charge of welfare work among the women employees of the Brooklyn (N. Y.) Rapid Transit Company, in association with George W. Edwards, welfare administrator of the company. Miss Bullock is a sister of the late Capt. Harry A. Bullock, secretary of the New York Municipal Railway Corporation and head of many committees of the Brooklyn Rapid Transit organization, who was killed recently while serving with the American forces in France.

Short Line Section Manager

Railroad Administration Will Have Such Official to Protect Short Lines Relinquished by Government

An announcement from the Director-General of Railroads on June 29 explains the policy of the administration toward those short-line railroads over which federal control is not considered needful or desirable. It is to keep their status in every reasonable respect as favorable as that which they enjoyed during the three years ended June 30, 1917, and to give them fair divisions of joint rates, and a reasonable car supply, circumstances considered, and to protect them against any undue disturbance of the routing of traffic. To carry out this policy, the Railroad Administration will establish a "Short Line Railroad Section," whose manager will be charged with ascertaining what is necessary to give such reasonable protection to these railroads. This announcement carries the specific indorsement of President Wilson.

Mr. Winsor Elected

Head of Adjustment Department Tacoma Company Made President of Pacific Claim Agents

H. G. Winsor, superintendent of investigation and adjustment of the Tacoma Railway & Power Company and the Puget Sound Electric Railway, Tacoma, Wash., was elected president of the Pacific Claim Agents' Association at the recent meeting of the association in Portland, Ore. He was formerly first vice-president of the association. Mr. Winsor was born in Bridgewater, Mass., in 1868. He was educated in the public schools and afterward took a special course in electrical engineering. Mr. Winsor entered public utility work with the Minneapolis General Electric Company as chief inspector, in which capacity he served from 1907 to 1913. In April, 1913, he resigned from the power company at Minneapolis to accept the position which he now holds with the Stone & Webster companies at Tacoma. Mr. Winsor has been greatly interested in the work of the American Electric Railway Claims Association, and at the convention of that association in October, 1916, he presented a paper "Motor Vehicle Accidents and Traffic Regulation," which attracted considerable attention. In this paper Mr. Winsor presented a table comparing reports from twenty-five cities to show that while the increase in traffic has been phenomenal the electric railways had succeeded in keeping the percentage of increase in collisions between cars and motor vehicles within reasonable bounds.

H. G. WINSOR

W. R. Childress, assistant superintendent of the railway department of the Southern Public Utilities Company, Charlotte, N. C., has taken over the foremanship of the carhouse of the company relinquished by C. J. Addicks.

Harry H. Lloyd, secretary to the president of the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis Traction & Terminal Company, Indianapolis, Ind., has been appointed purchasing agent for these properties, succeeding R. R. Smith.

W. N. Smith, formerly electric railway engineer of Westinghouse Church Kerr & Company, who has been engaged recently on engineering matters on the Pacific Coast, has been appointed consulting electrical engineer of the Winnipeg (Man.) Electric Railway and has moved to Winnipeg.

I. M. Cook, for the last seven years foreman of the Southern Public Utilities Company's carhouse, in Dilworth, N. C., has resigned. Mr. Cook has been with the company for thirteen years. He will become foreman of shops for the Columbia Electric Street Railway, Light & Power Company, Columbia, S. C.

C. J. Addicks, for several years foreman in charge of the carhouse of the Southern Public Utilities Company, Charlotte, N. C., on Broad Street, has resigned, to accept service with the Macon Railway & Light Company, Macon, Ga. For the last five years he has been in charge of the repair work of the company.

C. O'B. Murphy, assistant general manager of the American Public Utilities Company, Grand Rapids, Mich., has been transferred as vice-president and general manager to the Merchants' Public Utilities Company and the Merchants' Heat & Light Company, Indianapolis, which are controlled by the American Public Utilities Company.

Frank G. Jones has been appointed fuel director for the District of Columbia by the United States Fuel Administration. Mr. Jones, who is a New Yorker by birth, was for twenty years partner of C. K. G. Billings in the ownership of the street railway at Memphis, Tenn., and was interested in the street railway business in other cities.

James M. Brown, chief clerk under Col. A. R. Piper of the South Brooklyn Railway, included in the Brooklyn (N.Y.) Rapid Transit System, has been commissioned captain in the quartermaster's corps and has been assigned to a regiment which is being recruited and trained for service in France. Captain Brown has been connected with the Brooklyn Rapid Transit organization for thirteen years.

Joseph F. Roach has been appointed assistant superintendent of interurban lines of the Portland Railway, Light & Power Company, Portland, Ore. Mr. Roach entered the employ of the company in the train service in 1902 and since that time has filled various positions, including inspector, chief dispatcher and train rule examiner.

R. R. Smith, purchasing agent of the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis Traction & Terminal Company, Indianapolis, Ind., has been appointed general manager of the Chicago, South Bend & Northern Indiana Railway, succeedin T. F. Grover, who resigned recently. Mr. Smith will assume his new duties on July 15.

H. E. Funk, engineer of rapid transit lines of the Brooklyn (N. Y.) Rapid Transit Company, has been commissioned as a captain in the Engineers' Reserve Corps and has reported at Camp Lee for service. Mr. Funk entered the employ of the Brooklyn Rapid Transit Company in 1905 as track foreman. He was formerly superintendent of buildings of the company.

Edward J. Peartree, who has been general superintendent of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for the past three years, has been appointed acting general manager of the company to succeed the late Peter E. Hurley. Mr. Peartree went to Trenton from Troy, N. Y., in 1915, taking a position as superintendent of traffic on the Trenton line.

Martin Ackerman, Cincinnati, Ohio, has been appointed manager of the Cincinnati & Dayton Traction Company, which has been placed in the hands of the Warren Bicknell Company, Cleveland, Ohio, as announced previously in the ELECTRIC RAILWAY JOURNAL. Mr. Ackerman has been manager of the Interurban Railway & Terminal Company, Cincinnati. It is said he will make his headquarters at Hamilton.

George Garret, for sixteen years master mechanic and superintendent of rolling stock on the staff of the Winnipeg (Man.) Electric Railway, has resigned his position and will take a well-earned rest before entering similar duties elsewhere. As noted in the ELECTRIC RAILWAY JOURNAL for July 6, Mr. Garret has been succeeded by W. H. McAloney, former superintendent of rolling stock for the Denver (Col.) Tramways.

M. M. Lloyd, master mechanic of the Des Moines (Iowa) City Railway and the Inter Urban Railway, Des Moines, Iowa, has resigned to accept a position as superintendent of equipment with the Saginaw-Bay City Railway at Saginaw, Mich. Mr. Lloyd has been with the Des Moines properties since 1912. Previous to that he was master mechanic of the East St. Louis & Suburban Railway for seven years and with the United Railways, St. Louis, Mo., for twelve years.

A. L. Kenyon has resigned as general manager of the Columbia Railway, Gas & Electric Company, Columbia, S. C., and is now engaged in war work for the government, manufacturing ammonium nitrate with the Air Nitrates Corporation at Toledo, Ohio. Mr. Kenyon supervised the making of many improvements for the Columbia utility during his administration. He also took an active part in the affairs of the city and did much to promote civic betterment. He was a prominent member of the Columbia Rotary Club.

A. C. Moore has resigned as auditor of the Chicago, North Shore & Milwaukee Railroad, Chicago, Ill., to accept a similar position with the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, South Bend, Ind. Mr. Moore's initials were incorrectly given as J. C. Moore in the item which appeared in the ELECTRIC RAILWAY JOURNAL of June 22. Previous to his position with the Chicago, North Shore & Milwaukee Railroad, Mr. Moore had been auditor of the Oklahoma Railway, Oklahoma City, and assistant auditor of the Union Traction Company of Indiana.

T. F. Grover has resigned as vice-president and general manager of the Chicago, South Bend & Northern Indiana Railway and the South Michigan Railway Company, South Bend, Ind. Mr. Grover was formerly general manager of the Terre Haute, Indianapolis & Eastern Traction Company in charge of both the electric lighting and railway business for more than ten years. He has been continuously connected with the public utility business for the last twenty-eight years. During that time he has served as president of the Fond du Lac Street Railway & Light Company, the Fond du Lac Gas Company, and the Fond du Lac & Oshkosh Railway and was vice-president and general manager of the Eastern Wisconsin Railway & Light Company. Mr. Grover expects to enjoy a well-earned vacation for a few months. His plans for the succeeding period have not been definitely determined.

M. Bernard, assistant engineer of special work, way and structures department, Brooklyn (N. Y.) Rapid Transit System, has resigned to enter the engineering department of Ford, Bacon & Davis, New York. Mr. Bernard was graduated from St. Johns College, Brooklyn, in 1904, and engaged the two following years in general construction work, then spent one year with William Wharton, Jr., & Company, Inc. In 1907 he entered the way and structures department of the Brooklyn Rapid Transit Company as a general engineering draftsman. From 1910 to 1913 he served as general assistant to the engineer of elevated lines and the assistant engineer of the surface lines. He was appointed to his present position in 1913. Mr. Bernard has been a frequent contributor on track subjects to the columns of this paper. His series of drawings and tabulations of costs of standard special work layouts, published during the latter part of 1917, attracted especial attention.

Obituary

Alvah Kittredge Todd, secretary of many companies under the management of Stone & Webster, Boston, Mass., died recently. Mr. Todd was graduated from Harvard University in the class of 1901. Shortly afterward he entered the corporation department of Stone & Webster. He was thirty-nine years old.

John Cline, locomotive foreman at the Marine City roundhouse of the Rapid Railway System, controlled by the Detroit (Mich.) United Railway, died on July 2, Mr. Cline entered the employ of the Detroit United in the horse car days prior to 1892 as a blacksmith and had been constantly in the employ of the company until his death.

George A. Steel, who with his brother financed and built several of the early railway lines in Portland, Ore., now included in the system of the Portland Railway, Light & Power Company, is dead. Mr. Steel was born in Stafford, Ohio, on April 22, 1846. He had lived in Portland since 1862. He was a former postmaster of that city and served as treasurer of the State of Oregon.

E. J. Haines, first lieutenant, United States Signal Corps, died of pneumonia recently at Camp Devens, Mass. Mr. Haines was formerly assistant to the superintendent of equipment of the Bay State Street Railway, Boston. He was well known in the New England electric railway field as a young man of unusual talent and before joining the colors he had begun to make a reputation for himself as an expert engineering witness in street railway accident cases. Mr. Haines was also talented musically and had written a number of successful motion-picture scenarios and short stories. He was about twenty-eight years of age. He was held in high esteem on the Bay State Street Railway and by a wide circle of friends and acquaintances outside the railway company.

Jacob L. Greatsinger, president of the Corning & Painted Post Street Railway and the Elmira, Corning & Waverly Railway, Elmira, N. Y., and formerly president of the Brooklyn (N Y.) Rapid Transit Company, died on July 3 in his home in Elmira, N. Y., at the age of sixty-eight years. Mr. Greatsinger succeeded Clinton L. Rossiter as head of the Brooklyn Rapid Transit Company in March, 1901, and was in turn succeeded two years later by Col. E. W. Winter. Mr. Greatsinger was educated at the Elmira Free Academy, and began his railroad life on the Erie Railroad, firing switch engines. Later he served in almost every capacity up to general manager of various railroad properties. At the time of his appointment to Brooklyn Mr Greatsinger was president of the Duluth & Iron Range Railroad.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Recent Incorporation

Independence & Sugar Creek Railway, Independence, Mo.—A charter has been secured by the Independence & Sugar Creek Railway to construct a line from Independence to Sugar Creek. The company has a nominal capital of $2,000. The line will be built and operated by the Kansas City (Mo.) Railways, but will be financed temporarily by property owners along the route. Officers of the Kansas City Railways are officers of the new company. [June 29, '18.]

Franchises

Santa Rosa, Cal.—The Petaluma & Santa Rosa Electric Railway has asked the Board of Supervisors for a new fifty-year franchise for Sonoma County. The old franchise has twenty years to run. Similar applications for franchises have been presented in the cities and towns through which the railroad passes. The Board of Supervisors directed notice of sale of the franchise next month.

East St. Louis, Ill.—The East St. Louis, Columbia & Waterloo Railway has asked the City Council of East St. Louis for a twenty-year franchise. The present ten-year franchise expires on Jan. 1, 1919. The company uses the tracks of the East St. Louis & Suburban Railway.

Springfield, Ill.—The Central Illinois Public Service Company has filed an application with the Public Utilities Commission of Illinois for a certificate of convenience and necessity to construct and operate a 16,000-volt electric transmission line from Milford, Iroquois County, through Iroquois, Kankakee and Vermilion Counties to Hoopeston.

Camden, N. J.—The Board of Commissioners of Camden has passed an ordinance authorizing the Public Service Railway to install new poles and equipment for its line on Adeline Street, from Liberty Street to Cass Street.

Fort William, Ont.—The Mount McKay & Kakabeka Falls Railway has applied to the City Commission of Fort William for permission to operate over the city lines of the Fort William Electric Railway to the vicinity of the market.

Track and Roadway

Decatur, Ala.—A communication from H. L. Merrill, president of the Decatur Booster's Club, states that nothing definite has been done regarding the construction of an electric railway from Decatur to Florence, Sheffield and Tuscumbia, as it would be almost impossible to construct the line owing to the high cost of material and war conditions generally.

Calgary (Alta.) Municipal Railway.—Plans are being considered by the City Council of Calgary for straightening and shortening the Ogden line of the Calgary Municipal Railway.

Municipal Railways of San Francisco, San Francisco, Cal.—The Board of Supervisors recently adopted the plan of City Engineer O'Shaughnessy to operate the municipal cars over the tracks of the United Railroads through the district west of Twin Peaks Tunnel. The arrangement provides joint privileges by the payment to the United Railroads of $100,000, without surrendering any rights. Under the new plan city cars will run over the Ocean Avenue tracks from the junction of Sloat Boulevard and Corbett Road to Harold Avenue. The city agrees also to reconstruct the Taraval Avenue line from Twentieth Avenue to Thirty-third Avenue. City Engineer O'Shaughnessy explained that by joint operation with the United Railroads the city would save at least $150,000 over the plan of building its own tracks.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—Work has been begun by the San Francisco-Oakland Terminal Railways on the construction of a spur track to the site of the Union Construction Company's new shipbuilding plant. The spur will be 900 ft. long and will connect with track on the property of the company. A sidetrack about 1000 ft. long will be constructed alongside of the track on the line running out to the mole. Construction work has also been begun on a line on Chestnut Street to serve employees of the Moore shipbuilding plant.

Colorado Springs & Interurban Railway, Colorado Springs, Col.—An extension will be built by this company from its Broadmoor track to the Myron Stratton Home.

Columbus (Ga.) Railway.—The City Council of Columbus has asked the Columbus Railway to extend its Fifth and Sixth Street line to the Riverdale Cemetery, a distance of about ½ mile.

Chicago, Milwaukee & St. Paul Railroad, Chicago, Ill.—The electrification of the Chicago, Milwaukee & St. Paul Railroad between Othello, Seattle and Tacoma will proceed to completion under the government regime. The Director-General of Railroads has approved an expenditure of $5,346,606 for this purpose during the current year and an additional expenditure of $2,811,035 is contemplated for 1919. It is estimated the project will be completed by July 1, 1919.

***Mount Carroll, Ill.**—It is reported that a company has been organized to construct an electric line between Mount Carroll and Freeport, with a probable extension to Rock Island. R. H. Campbell is interested.

Des Moines (Ia.) City Railway.—Work has been begun by the Des Moines City Railway on the reconstruction of its tracks on West Locust Street from First to Sixth Avenue.

Tri-City Railway, Davenport, Ia.—Work is now under way by the Tri-City Railway on an extension in Bettendorf and it is expected that the line will be completed by next fall.

Winnipeg, (Man.) Electric Railway.—It is reported that this company will install a Y at the western terminus of its Logan Avenue West line on Keewatin Street.

Detroit (Mich.) United Railway.—Operation has been begun on the new line of the Detroit United Railway on Ferry Park and Linwood Avenues to the Joy Road.

Public Service Railway, Newark, N. J.—In connection with the development of the new townsite at Gloucester City by the New York Shipbuilding Corporation, plans are being made by the Public Service Railway for the construction of an extension to the new location.

Brooklyn (N. Y.) Rapid Transit Company.—Operation has been begun by the Brooklyn Rapid Transit Company on the Jamaica Avenue extension from Cedar Avenue, Richmond Hill, to Cliffside Avenue, Jamaica. The extension is double-track, with provision made for a center track to be constructed for the use of express trains at some future time. The line is operated by the New York Consolidated Railway, a subsidiary of the Brooklyn Rapid Transit Company.

Stark Electric Railroad, Alliance, Ohio.—It is reported that the Stark Electric Railroad is considering the extension of its electric railway service in Alliance.

Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.—Plans are being prepared for the construction of a two-arch concrete bridge on Wells Avenue, to be built by the county, city of Wellsville and the Steubenville, East Liverpool & Beaver Valley Traction Company. The cost is estimated at about $30,000.

Nipissing Central Railway, North Cobalt, Ont.—The Dominion Parliament has granted the Nipissing Central Railway an extension of time within which to construct a number of extensions on its branch lines.

Ottawa (Ont.) Electric Railway.—The City Council of Ottawa recently discussed the question of a proposed extension to Ottawa East and to the cemeteries, and a suggestion was made that in the event of the Ottawa Electric Railway refusing to make the extensions the Council enter into an agreement with the Hydro-Electric Power Commission to build them. It was stated that the extensions would probably cost $800,000.

Port Arthur (Ont.) Civic Railway.—The City Council of Port Arthur has decided to reconstruct the line of the Port Arthur Civic Railway on Arthur Street between Court and Cumberland Streets. The 80-lb. rails at present on Hodder Avenue will be removed for placing on Arthur Street, and will be replaced with lighter rails.

Southern Pacific Company, Portland, Ore.—Physical connection between the Southern Pacific Company and the Oregon Electric Railway at Jefferson Street, Portland, is included in orders emanating from the Federal Railroad Administration requiring several connections between the competing roads in Oregon. Other connections between the Oregon Electric Railway and the Southern Pacific Company are ordered at Albany and at Eugene.

Quebec Railway, Light & Power Company, Quebec, Que.—Some small extensions in the city will be made by the Quebec Railway, Light & Power Company. The company is also having a survey made for the construction of a line on the Beauport Road, extending to the city limits.

Regina (Sask.) Municipal Railway.—Plans are under consideration by the City Council for the extension of the Regina Municipal Railway into North Annex.

Philadelphia, Pa.—Jerome Louchheim, president of the Keystone State Construction Company, and Joseph P. McCullen, the company's counsel on July 9 held their first conference with Mayor Smith and the other city officials with regard to annulling three subway contracts. No definite decision was reached and the matter has been referred to Director of City Transit Twining and the company's representative for more data in the expenditures already made by the contractors. The full amount involved in the contracts, as if completed, is about $2,900,000.

Houston, Richmond & Western Traction Company, Houston, Tex.—The contract for the construction of the first section of the proposed line of the Houston, Richmond & Western Traction Company from Houston to Richmond has been awarded to Howard Kenyon, Houston, who has agreed to begin work within three months, accepting bonds of the company in payment. Right-of-way for the company's proposed line has been secured as far as Gonzales and will extend to San Antonio, touching the cities of Sugarland, Richmond, Rosenberg, Beasley, Shiner, Gonzales and New Berlin. Bonuses amounting to $600,000 have been raised in aid of the project by the citizens of the different towns and communities along the route. Ed. Kennedy, Houston, president. [Apr. 13, '18.]

Spokane & Inland Empire Railroad, Spokane, Wash.—A contract has been awarded to Grant Smith & Company, Seattle, for filling in the large trestle near Rosalia on the Spokane & Inland Empire Railroad. About 60,000 yards of material will be required.

Eastern Wisconsin Electric Company, Sheboygan, Wis.—It is reported that this company will construct an extension from Black Creek to Appleton this summer.

Shops and Buildings

Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio.—A new office building will be erected by this company at the corner of Wayne and Phillips Avenues. The structure will be 35 ft. x 65 ft., two stories, and will be divided into a waiting room and offices for the president and general manager.

Power Houses and Substations

British Columbia Electric Railway, Ltd., Vancouver, B. C.—The new Point Grey substation of the British Columbia Electric Railway, Ltd., at King Edward Avenue and the Lulu Island tracks, is nearing completion. The new building is 100 ft. x 60 ft., of reinforced concrete construction and will take the place of a smaller temporary building on the same site. The new station will contain two 1000-kw. rotary converters and one 1500-kw. motor generator. Both air-blast and water-cooled transformers will be used and there will be the usual oil switches, lightning arresters and arc circuits. A new high-tension line between Earl's road substation and the Point Grey substation was recently put in operation, forming a second link with that from Main Street.

Humboldt Transit Company, Eureka, Cal.—Negotiations are under way by which the Western States Gas & Electric Company will furnish electrical energy requirements of the Humboldt Transit Company.

Pacific Electric Railway, Los Angeles, Cal.—The contract for the construction of a substation at Slauson Junction has been awarded by the Pacific Electric Railway to A. Nelson at $3,341.

Shore Line Electric Railway, Norwich, Conn.—A new high-tension transmission line will be built by the Shore Line Electric Railway north from Norwich through the Quinebaug Valley to the Massachusetts line in the town of Thompson.

Maysville Street Railroad & Transfer Company, Maysville, Ky.—The new modern power plant of the Maysville Power Company will begin operation during this month and the old power plant of the Maysville Gas Company will cease operation, being retained for some time as a reserve plant. The Maysville Street Railroad & Transfer Company and the Maysville Gas Company will in the future secure power from the new plant.

St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.—Preparations are now being made by the St. Joseph Railway, Light, Heat & Power Company to guard against possible breakdowns in heating, lighting and railway service the coming winter. New boilers that will develop an additional 1000 hp., are being installed, and the capacity of the old boilers is being extended, by increasing the grate surface. New superheaters will be put in, and other equipment is on hand that will increase the efficiency of the service of the street railway company when placed under the heavy strain of the increased demands of cold weather. In addition to these improvements, numerous economies are being introduced with a view to increasing output and lessening cost.

Alabama Traction, Light & Power Company, New York, N. Y.—A 30,000-hp. unit will be added to its Warrior, Ala., plant by the Alabama Traction, Light & Power Company.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—This company will complete within the next two weeks a short transmission line connecting its 45,000-kw. plant at Lowellville, Ohio, with the property of the Briarville Steel Company located between Youngstown and Gerard. This is a 66,000-volt two-circuit line. Seven-disk Ohio Brass insulators are being installed. The line feeds a 7500-kva. outdoor substation belonging to the steel company and a 9375-kva. substation belonging to the power company. This latter substation will interconnect with the 22,000-volt distribution system of the power company in the vicinity of Youngstown.

Philadelphia (Pa.) Rapid Transit Company.—Work has been begun by the Philadelphia Rapid Transit Company on the construction of a transformer building at Eightieth Street and Eastwick Avenue. The structure will cost about $30,000.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—A new Westinghouse 1000-kw. motor generator set has been installed by this company in its Ballard substation. A new 1000-kw. transformer bank is also being installed at its North Seattle substation which, when completed, will increase the transformer capacity of the station 100 per cent.

West Virginia Traction & Electric Company, Morgantown, W. Va.—This company has recently completed new extensions and improvements in its plant, including the installation of new stoker equipment in the power house and the erection of about 7 miles of new transmission line.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Effect of Copper Advance on the Electrical Market

Wire and Brass Increase—Other Articles May Follow According to Amount of Copper Used

Somewhat as a surprise came the increase in the official price of copper from 23½ cents to 26 cents. Already its effects are being experienced in the electrical line. Wire, always the first material to feel the fluctuations in the price of copper, advanced accordingly. Rubber-covered wire base advanced from 30 to 34 cents, weatherproof to 32 cents. Trolley wire has advanced 2 cents.

Brass has increased as a result of the rise in copper at least 2 cents a pound where quotations are being made. The settlement of labor disturbances, anticipated shortly, is expected to make for steadier prices in brass.

PRICE INCREASE PROPORTIONAL TO AMOUNT OF COPPER USED

Copper and brass enter into the make-up of many electrical commodities. The effect, however, will probably be proportional to the amount of the materials used. Thus where but a small amount is used and the proportion of the expense of this material to the total cost of manufacture is small there is little reason to expect an advance in the price of the finished article, unless this is the culmination of a series of higher costs which on the whole necessitate a wider margin of profit.

A number of items of electrical fittings using both copper and brass in a limited degree have advanced within the past few weeks, and it is rather doubtful if these will go any higher as a result of the government's action. The manufacturers, it is known, are well supplied with 23½-cent copper.

On the other hand, there are a number of articles on which the increased cost of copper and brass will make an appreciably increased cost of production, such as motors, generators, transformers, knife switches, controllers, brass connectors, bushings, nipples, cable connectors and others.

A number of these items have yet to raise their price to take care of the recent advance in freight rates. It would not be surprising, therefore, to see many more advances in price than have been experienced in the past few weeks.

Furthermore, there are no indications that copper may not go higher, even to 30 cents, in another month. The present price of 26 cents, which it is well known is by no means satisfactory to producers, is made only until Aug. 15. Prior to that time two meetings are scheduled between the War Industries Board and the copper producers, and it is no secret that the latter will make a strong effort to get a better price than 26 cents.

Rising Prices in a Fluctuating Market

Advances on Railway Accessories Announced Since July 1—Changes Occurring Frequently

Prices of railway accessories while fairly stable are advancing gradually along the whole line. The market fluctuates weekly, so much so that on certain materials quotations are wholly withdrawn or withheld for date of shipment, when the current price prevails.

The raise in copper has affected every line of which it is a part. Trolley wire was marked up 2 cents a pound on July 3, and it is likely to go higher, according to the largest manufacturers. This figure is for immediate acceptance, else the quotation at shipment will be enforced. Price seems to be the last consideration, delivery being paramount. Copper may go to 28 cents a pound on Aug. 13. Brass is 2 cents a pound higher, effective July 3.

On all pound wire, including rubber covered, weatherproof, magnet and cable an advance of 3 cents a pound was announced on July 5. This is figuring on a 31-cent base, although there is a likelihood of the concern making these new prices going to a 34-cent base shortly. One of the leading companies, adhering to a 37-cent base, advanced its prices on all pound wire 2½ cents a pound. Braid has been marked up from 40 to 100 per cent on the various sizes. This is due to the higher cost of cotton, wax, paint, rubber, tin and labor, factors entering into the production of wire and cable.

Saturday last (July 6) rail bonds were advanced from 7½ to 10 per cent. Deliveries are from thirty to sixty days behind, but this is considered very good in view of current conditions.

Bell, register and trolley cords are now 86 cents a pound against 50 cents a year ago. The price has been steadily going up with each jump in cotton, the latest increase being made a few weeks ago, when a 5-per-cent rise went into effect.

As poles are sold f.o.b. delivered in accordance with the recent advance in freight, prices will be higher in proportion. Cross-arms are from 4 to 5 per cent higher.

Coal Output Maintained at High Averages

Increase of Bituminous Over 1917 Nearly 8 Per Cent—Maximum Production of Anthracite

From the weekly report, compiled by the United States Geological Survey, ending July 6, it is learned that the production of bituminous coal during the week ending June 29 not only exceeded the production of the week of June 22 by 455,000 net tons, or 3.8 per cent, but resulted in the second highest weekly production in history. The output (including lignite and coal made into coke) is estimated at 12,458,000 net tons as against 12,003,000 net tons during the week of June 22 and 11,583,000 net tons during the current week of 1917. The average production per working day is estimated at 2,076,000 net tons, an increase over the preceding week of 75,000 net tons or 3.8 per cent, and over the same week of 1917 of 145,000 net tons or 7.5 per cent. Increased shipments during the week ending June 29 were reported from all districts with the exception of central Pennsylvania and Alabama.

Anthracite shipments increased 471 cars during the week ending June 29, the total movement amounting to 41,641 carloads. The insistent demand for coal has created new and intensive methods of production. There is a possible means of supply found by working abandoned mines; robbing pillars of coal where it is safe; new devices installed in and about the mines for greater mining facility and more electric power used. Every means will be employed to maintain, if possible, a maximum output close to 270,000 tons of anthracite daily.

Mr. Dee Leaves Drouve

Resigns as Officer of Company at Bridgeport to Manufacture Ship Hardware

William V. Dee, secretary and general manager of the G. Drouvé Company, Bridgeport, Conn., maker of the Anti-Pluvius puttyless skylights and other products, has resigned to engage in business for himself and to be more active in helping to carry out and produce materials that will directly help the war program, by manufacturing, designing and selling ship specialties and ship hardware. In addition to an office and factory in Bridgeport, Mr. Dee has established an office in Philadelphia so as to be in close touch with the headquarters of the U. S. Shipping Board, Emergency Fleet Corporation.

Mr. Dee has a wide acquaintance among engineers, architects, contractors, steam railroad men and electric railway operators. While he retires as an officer of the Drouvé Company, Mr. Dee will retain his financial interest in the company. Mr. Dee became connected with Drouvé twelve years ago. Previous to that he was associated with the *Railway Age*, with which he began his career as office boy. From the position of office boy he was soon advanced to a clerkship, then he became a solicitor of subscriptions; from that it was but a step to soliciting advertising. Finally he was made assistant manager of the New York office of the *Railway Age*. It was during his connection with that paper under Hugh M. Wilson that Mr. Dee built up his wide acquaintance among railway operators and the makers of railway equipment, among whom he is everywhere known as "Billy Dee."

Rolling Stock Market During First Half of 1918

Review of Orders Placed Show a Considerable Falling Off With Transportation of War Workers Influential in Bulk of Existing Market

Nothing is a better indication of the low level to which electric railway purchasing has fallen than recent rolling stock orders. Inability to secure funds has reduced traction companies to the state where even the smallest purchases are made with some hesitation. Increases in rates have not always produced the anticipated increase in revenue, while increasing operating costs are leaving less and less for up-keep or new equipment.

At this time each year the ELECTRIC RAILWAY JOURNAL reviews briefly the rolling stock purchases of the first half of the year and makes certain comparisons with the business for preceding years. The figures for 1918 are frankly disappointing. While it was known that rolling stock purchases had not been large, still it was not supposed that they had fallen off to such an extent.

A compilation of the orders reported by the ELECTRIC RAILWAY JOURNAL as having been placed in the first six months of 1918 reveal a total of but 676 cars for the United States and Canada. How these figures compare with former years can be seen from the following table.

	First Six Months.	Full Year.
1915	1,273	2,782
1916	2,224	3,942
1917	1,943	2,455
1918	686	——

Should the conditions of 1916 and 1917 repeat themselves wherein the purchases in the second half of the year were considerably less than in the first half the 1918 total will be very sad indeed. However, it is somewhat reassuring to know that orders for 446 cars for four companies are now expected to be placed most any day. These orders include 300 cars for Boston, 100 for the Hudson Tube lines, twenty for Staten Island shipbuilding transportation and twenty-six for Seattle, Wash.

A segregation of the orders reported in the ELECTRIC RAILWAY JOURNAL for the first half of the current year shows that purchasing has fallen off in every section of the country and especially so in the central part of the country. Furthermore, the reports from Canada indicate that purchasing there has stopped.

The following table shows how the rolling stock orders from different sections of the country and Canada for the first half year of 1918 compare with those for the first half of 1916 and 1917.

	1918	1917	1916
Eastern	534	954	1,257
Middle	84	580	805
Western	27	145	49
Southern	30	150	88
Canada	11	114	25
Total	686	1,943	2,224

These orders, it must be understood, are for new cars ordered from carbuilders only. No purchases of second-hand equipment are here included, although the market for used rolling stock has been very large. In fact, it is well known that many more second-hand cars could have been sold had they been available. Furthermore, these orders do not include rebuilt cars or cars built by the roads themselves. The figures do include a few storage-battery cars and a few snowplows.

It is difficult exactly to tell how many of each particular type of car have been ordered. There has been a demand for the one-man car, but not so great as existed last year.

Inquiries on safety cars are very brisk and in all probability a great many more orders would be placed if supplies were not believed to be limited. There are inquiries now for three cities, whose populations are 40,000, 300,000 and 250,000 respectively.

The only order for subway cars reported during the first half of the year was 100 cars for Brooklyn. In the first half of 1917, however, an order for 517 subway cars was placed. This single order as a matter of fact if deducted from the 1917 figures in the preceding table would bring the eastern orders for this period below the 1918 figures. Besides if subway orders are eliminated entirely the Eastern figures for the first six months of 1917 and 1918 would run 437 and 434 respectively, showing that so far as the East is concerned there has been comparatively little change in orders outside of the subway type.

Outside of the Brooklyn subway order the largest order placed so far in 1918 was for 100 cars for Philadelphia to take care of transportation of shipyard workers. Other notable orders include fifty-one cars for Newark, N. J., fifty for Washington, D. C., two orders for Wheeling, W. Va.,—one for twenty-nine cars and the other for fifty-two—and thirty cars for Buffalo, N. Y.

In looking over the rolling stock purchases, the bulk of the orders, it is noticed, has come as a result of increased transportation equipment needed to transport war workers. That other orders for the same purposes will be placed in the last half of the year there seems reason to believe. Most of the business came from the East, but now that the government intends to place more of its business in the Middle West, that section of the country should, as time goes on, find it more and more necessary to place rolling stock orders.

So long, however, as the financial situation remains in its present condition it is doubtful if electric railways will make any purchases other than those absolutely necessary.

Rolling Stock

Tidewater Southern Railway, Stockton, Cal., contemplates the purchase of an electric locomotive.

Waukegan Electric Light & Railway Company, Waukegan, Ill., is reported as having placed in service two new pay-as-you-enter cars.

Winnipeg (Canada) Electric Railway has ordered ten semi-steel, single-end motor cars from the Ottawa Car Company. They will be a departure from previous Winnipeg cars in many ways, including the use of cross seats and trucks with 26-in. wheels.

Knoxville Railway & Light Company, Knoxville, Tenn., is reported as having received nine new passenger cars of the metropolitan type, with a seating capacity of fifty-two. The cars have been on delivery for a long time, the delay of the car builders being caused by war conditions.

Cleveland (Ohio) Railway has just acquired twenty-five all-steel passenger cars originally built for the Rochester (N. Y.) Electric Railway. The rolling stock is of the Peter Witt front-entrance, center-exit, pay-as-you-pass type. Their cost was $7,800 each, and they weigh 32,000 lb.

Terre Haute (Ind.) Electric Traction Company, which is leased to the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., is reported as contemplating the purchase of thirty pay-as-you-enter cars for its city lines through the Car Trust Equipment Company. The City Council has authorized the company to place the order.

United Traction Company, Albany, N. Y., is rebuilding, remodeling and re-equipping eighteen of its open or summer rolling stock into closed cars. The design was furnished by Ernest Murphy, superintendent of equipment, and the cars are described by railway men as of a very handsome type.

When completed the cars are to be placed in operation on the company's Watervliet line.

Seattle (Wash.) Municipal Street Railway, through the Board of Public Works, Seattle, C. B. Bagley, secretary, will receive bids until July 12 for furnishing f.o.b. car builders' works, six single truck, double-end, safety motor passengers cars, equipped complete with air brake, including safety control features, also two motors with double-end control. The successful bidder will be required to file with the City Comptroller a bond for the full amount of the contract price. Each bidder must accompany his bid by a check for not less than 5 per cent of the total amount bid. Bids will be received on the same date and under the same conditions as above for furnishing twenty standard double-truck, double-end motor passenger cars, trucks arranged for four motors, multiple unit control, also straight-air brake equipment with automatic emergency feature, for use on the same railway. The officials are making every effort to improve the railway service.

New Advertising Literature

Barnes & Irving, Inc., Syracuse, N. Y.: Circular describing the Misener expanding rotary hack saw for cutting circular holes in metal, wood, slate, marble, etc.

Trade Notes

Atlantic Welding Company, New York, has changed its named to Lincoln Rail Welding Company.

J. R. Palmer, who had charge of the line material sales of the Ohio Brass Company, Mansfield, Ohio, for a number of years, is now in Philadelphia, where he will be engaged in naval airplane production work.

Electric Welding Company, Newport News, Va., has been incorporated with a capital stock of $50,000. The officers are: William Schenstrom, president; Charles H. Peoples, secretary, both of Brooklyn, N. Y., and K. B. Johnson of Norfolk, Va., treasurer.

Railway Improvement Company, New York, announces that it has received an order for nine Rico terminal recorders from the Australian General Electric Company, for use on the lines of the Melbourne-Brunswick-Coburg Tramways Trust, Melbourne, Australia.

H. J. Pritchard, treasurer and director of the National Conduit & Cable Company, Inc., New York, N. Y., has been elected first vice-president of the company and placed in charge of operations. He is now virtually acting president, succeeding the late George F. Jackson.

General Electric Company, Schenectady, N. Y., has developed a small light line of portable testing instruments. These consist of ammeters, voltmeters and wattmeters for both alternating and direct current circuits. They are designated as the type P-8 and are applicable to all commercial frequencies and wave forms without appreciable error. The instrument case with a window in the cover over the scale forms the carrying case.

Chicago (Ill.) Pneumatic Tool Company announces the appointment of L. C. Sprague as its special representative in connection with the sale of pneumatic tools to railroads. Mr. Sprague was formerly connected with the railroad department of the H. W. Johns-Manville Company, New York City.

Southern Car Company, High Point, N. C., bankrupt, will be sold at auction on Aug. 8 at 2 p. m. The trustee furnishes the following details of the property to be sold: A modern car plant fully equipped for the manufacturing of street and interurban cars, located in an ideal section for transportation, raw material and labor facilities. There are 15 acres of real estate, and eight buildings of 80,000 sq.ft. of floor space. The company has built cars for the leading railway companies of the country. The entire plant has some $15,000 worth of supplies on hand. The property cost approximately $180,000 seven years ago. For further information and a complete detailed inventory address W. A. Copeland, trustee Southern Car Company, High Point, N. C.

NEW YORK METAL MARKET PRICES

	July 3	July 10
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	28½	30
Lead, cents per lb	8	8 05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.87½	8.87½
Tin, Chinese*, cents per lb	92	92
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	July 3	July 10
Heavy copper, cents per lb	22	23½
Light copper, cents per lb	19½	20
Red brass, cents per lb	19	22
Yellow brass, cents per lb	13	14
Lead, heavy, cents per lb	6½	7
Zinc, cents per lb	5¾	5½
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	July 3	July 10
Rubber-covered wire base, New York, cents per lb	34	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	28½ to 34½	32.10 to 32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	33.42 to 38.35	33.42 to 35
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross tons	$62.50	$62.50
T rail, high (Shanghair), cents per lb	4¼	4¼
Rails, girder (grooved, cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railzoad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35

	July 3	July 10
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80½%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste, cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.60	$1.64
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.60	$1.65
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	75	75

* Government price.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, July 20, 1918 *Number 3*

Straight Runs Plus Trippers May Be Better Than Swings

THOSE who have read Ibsen's "Lady of the Sea" may recall that so long as the lady had no choice but to stay with her husband she was very unhappy; yet when he gave her absolute freedom to choose any corner of the "triangle" she found she loved him best.

A parallel psychological problem appears to have been solved on a number of Southern and Southwestern properties by changing from swing to straight runs plus voluntary trippers. So long as the men were ordered to work on swings, many had a grievance against long hours. No sooner were they told that nine to nine and one-half hour straight runs would be substituted with the choice of working trippers entirely up to them than they asked for the extra hours almost unanimously. In short, while the men want to work the extra hours because they need the money, they feel a lot better because whether they do or don't is entirely their decision. If the practical results are so advantageous to the railways under unheard-of labor shortage conditions, why shouldn't others take this up with their men? Vexatious problems sometimes have a happy way of settling themselves if we only leave the rut of traditional practices.

When Run-Down Accidents Increase

THE value of high-rate acceleration with modern equipment is so great that it would be a pity to forego it through an assumption that too many run-downs will be the inevitable consequence. It must not be forgotten that it takes a motorman some time to adjust himself to the difference in accelerating at say 1 and 2 or even 2½ m.p.h.p.s. The old rate has become an acquired instinct with him and until he has replaced it by a new set of instincts, he is likely to have more accidents. This is especially so where the mistake is made of permitting the same man to work on low-accelerating and high-accelerating equipment.

Nobody would deny that the air brake is a safety device of the first order. For all that, we recall a case where in the first year with air the men had more accidents than with hand brakes, in the second year they equaled the hand brake average, in the third and following years they went below the hand brake. In other words, more than a year was required to inculcate the difference between air and hand braking. Therefore we believe that as motormen become accustomed to faster acceleration they will be just as able to avoid accident as with slower equipment. This will certainly be so on cars of light construction where a smash-up means more to the physical welfare of the motorman than it does back of a "battleship" style of car.

Mr. Mortimer Advocates the Zone System and Discusses Public Ownership

EVERY reader, we believe, will be interested in the interview in this issue with James D. Mortimer, president North American Company, on the present situation. Mr. Mortimer has just returned from a visit to the Pacific Coast so that his views may be considered to be based upon conditions in the Far West as well as in the Central States and the East. Frankly, he is not optimistic. Regulation, he says, has broken down. Railway credit has largely gone. The construction of extensions has ceased. Labor thinks more of the sanctity of the union than of the solvency of the employer. Traffic has fallen off in those properties where a 6-cent fare has been permitted, so that they are but little better off in a financial way now than formerly. On the other hand, an 8 or a 10-cent fare would probably drive off very much more traffic and encourage jitney competition so that the net gain from such a fare increase would be slight or would disappear.

Mr. Mortimer, however, does not stop with his diagnosis of the disease. He tells what may be done, in his opinion, to relieve the patient. The case is desperate but not entirely hopeless. It is this portion of the interview in which we believe our readers will be particularly interested. Fundamentally Mr. Mortimer's remedy is to encourage short-haul and non-rush hour travel as these are the most profitable parts of a railway company's business. This means the zone system with possibly lower fares between the rush-hour peaks. The logic of Mr. Mortimer's argument on this point seems reasonable.

Finally, Mr. Mortimer disposes of the bogey of municipal ownership, at least so far as the electric railway companies are concerned. If the public insists upon taking over the properties, it can have them, though preferably they should be taken over by the State rather than the municipality. Only let the requirements of sound finance and accounting be followed. The companies will have to receive fair compensation, as the courts will protect their equities in the properties. This may prove the best way out of the difficulty in many cases. The security holders would at least get back their investment, and if the State could not make a profit out of the lines it could look upon its loss from operation as a subsidy to provide cheap public transportation. From the point of view of the taxpayer or from that of ultimate economy and efficiency in city transportation this plan may not be a desirable one, but the State is certainly in a more logical position to defray a subsidy than a private company. At all events, these comments of Mr. Mortimer will stimulate thought and, we hope, will also hasten progress toward a more rational treatment of railway properties and a profitable rate of fare.

Big Things Cannot Be Done in a Little Way

THE decision of the Board of Public Utility Commissioners of New Jersey granting the Public Service Railway a revenue increase of $860,000, instead of the desired $3,700,000, is a matter of national importance. This company is one of the three largest systems in the country, its operations covering the entire State. Denial of more nearly adequate relief to a company of such importance will not pass unnoticed, and it is a distinct misfortune to the entire industry.

The decision of the New Jersey commission followed a protracted series of hearings extending over three months. The case of the company was presented in thorough and comprehensive fashion, while the testimony submitted by the municipalities was puerile and was destroyed upon cross-examination. Judged merely from the standpoint of the record, the need of the company for material relief was undeniable. In view of these circumstances, what reason did the commission give for bestowing such niggardly relief?

The answer lies in the commission's notion as to what constitutes proper emergency relief during the period of abnormal conditions caused by the war. Listen to its enunciation: "An emergency for which a carrier is entitled to relief by a temporary emergency rate exists where, by reason of general conditions not affecting the applicant utility alone, the operating revenues are insufficient to operate and maintain its property and to pay rentals and interest on such of its securities a default in the payment of which would jeopardize the solvency of the company."

Acting upon this theory, the commission reduced the measure of relief so as to require the Public Service Railway to pass its dividends. Thus the plain inference of the decision is that a sufficient amount to pay a fair return upon the investment (providing that return is not greater than was paid prior to the beginning of the emergency) will only be allowed when a valuation constitutes a part of the rate proceeding. But why should the commission's belief that the ascertainment of the value of utility property "requires exhaustive investigation and is inconsistent with the granting of emergency relief required by general conditions" give it license to disregard the evidence presented that the property is worth much more than $100,000,000, exclusive of franchise values? The value mentioned was obtained by a very careful appraisement made by Dean Cooley, the money expended on the property since that appraisement was made and other fair adjustments. As Mr. McCarter showed, the desired revenue increase would not give the company a fair return of 8 per cent on more than $81,000,000—certainly less, he said, than the value of the property.

One particularly amazing part of the decision is the assertion that the company will not have to invest additional capital during the period of the war. Every well-managed company in the country, in replacing track, substitutes a structure of greater cost, in which the investment of additional capital is consequently required. The absurdity of the commission's opinion is clear when the evidence concerning the hundreds of war industries in New Jersey is considered. The testimony showed that almost 200,000 workers in such establishments are handled daily. The government is helping to finance some new construction, but this tells only a small part of the story. No company in the country has been required or will be required to make larger investments as a means of assisting in the successful prosecution of the war.

It is noteworthy that some of the newspapers in New Jersey have not been slow to point out the political complexion of the decision. The Governor of New Jersey is a candidate for United States Senator. He has recently appointed two of the present members of the commission. The leading spirit in the opposition was George L. Record, who also aspires to the Senatorship. The Public Service Railway has apparently become a football in a sordid struggle for political preferment. Each side has endeavored to make capital out of the company's necessities. The action of the New Jersey commission is one of the strongest arguments for the assumption of absolute control over utility rates by the federal government. If the state bodies fail they must be ruthlessly swept aside, for such companies as the Public Service Railway are just as much a part of the nation's machinery for making war as are the shipyards which it serves.

The Remote-Control or Push-Button Car

A WRITER in a recent issue of the *Scientific American* allows his mind to wander fancy free on the automobile of the future. He notes how one manual operation after another has been eliminated, such as hand cranking and hand pumping, and ventures to prophesy that some day all of the functions of starting, stopping, steering, lighting, etc., will be performed through the medium of a push-button board.

As we read the article, there arose before our eyes a companion vision. We no longer saw an electric car platform cluttered with a controller, brakes, door and step levers, sander rods, gong pedals, circuit-breaker handles and all the other impedimenta that are accepted necessities of the present-day car. What we saw in their place was a neat little benchboard on which were buttons or keys with names indicating the several devices, and an attractive young lady seated in a comfortable chair playing on these keys as on an organ!

Shall this vision remain a dream when men conceive such possibilities for a vehicle which must carry its own power plant? Is it not far easier to do these things on a railway car which is untroubled by a power plant and which may draw at will directly upon stores of power already converted to electricity? Is it possible that manual cranking and manual pumping of automobiles are being superseded because the automobile is so often driven by the owner himself, and automobile makers outvie one another to cut out the curse of work? Would the automobile have advanced so rapidly in the direction of abolishing hand labor if it had been made for operation by chauffeurs only?

These are pertinent, some may say impertinent, questions, but they direct a finger at a point long overlooked in electric railroading. This point is that power-operated or indirect-control devices are something more than means of making life easier for the operators. Basically, they are intended to increase the mileage output of the car through saving seconds or fractions of seconds.

Some years ago we forecast the combination of power, braking, sanding and door control devices in one mechanism—and it has come to pass. The push-button control of air-operated doors has also arrived. So we feel no undue degree of rashness in prophesying the day when the perfection of remote control so peculiar to electricity will give us a car operated by a "cashier-motoress" and a platform cleared of everything that can hamper the interchange of passengers.

Boiler Firing as an Art, With Firemen as Artisans

WITHIN the memory of most men having considerable experience in power production the boiler fireman's province enjoyed the status of a trade. The fireman was an artisan. "Once a fireman always a fireman" was true in a very great number of instances. The avenues of advancement were less numerous, means of education were much less common, correspondence schools were barely in existence and the technical press was less developed. Aggregations of power production apparatus as we have them to-day in great power plants were non-existent.

The fireman nearly everywhere was an individual, not a mere unit in a group. His social condition was nearly stationary. Many a man of unlettered though strong intelligence swung the shovel and had swung it steadily for years. He had learned to swing it through a sort of apprenticeship to some other older man who had swung it for years himself.

The fireman's skill was comparable certainly to that of a gardener with his tools. Firing was an art and the fireman an artisan. There was distinctly good form in firing. To possess it was to be a fireman and to earn what were, for that time, fair wages. To-day certainly in great power plants the fireman is a laborer. The measure of his work is a quantity unit—tons of coal per hour per boiler, perhaps—not a quality unit. Even with the ever-growing use of automatic stokers the converted fireman hardly emerges from the laborer's status. He has not one or two stoker fires to tend but a whole group or row of them. He earns high wages and works only eight hours, but he comes and goes for all that. Has he the art of firing? He is quite innocent of it. If he had science he would need no art. There are instruments for this and instruments for that—air gages, draft gages, temperature gages, steam-flow gages, even CO_2 gages. But he passes them up.

And the boiler efficiency—is it to be passed up too? Not in these days of efficiency urge. Surely not when the country looks so directly to the power plants to take a large part and a leading part in the coal conservation so greatly needed. Let the chief engineer take the burden then. Let him with patience and knowledge and skill and faith and enthusiasm get out among the laborer firemen and the laborer stoker operators. We cannot sigh for a day that is gone. The day of the mammoth boiler with the engineer to run it has barely yet come among us. Let formal firing rules be eschewed. But let there be personal contact and personal guidance.

Take up the white man's burden,
Ye dare not let it fall.

Power System Inter-Connection As a War-Time Necessity

BROAD-VISIONED engineers and utility managers have been advocating power plant inter-connection for years. To them a power line is just as much of a transportation unit as a railroad, and, as railway inter-connections "proved in" their value long years ago, they have felt optimistic about the possibilities in the energy-carrying field. That state regulatory bodies are beginning to see the light is clearly indicated by the action of the California Commission a couple of years ago in its recommendation of State-wide power system inter-connection.

But why is the problem of such pertinent interest to-day? The answer is that our visible supply of coal for the current year, according to the latest reports of the Fuel Administration, is short some 50,000,000 tons of what it ought to be and that at all costs war supplies must go forward to the fighting front. The economic ideal of a few years ago has become the stern military necessity of the present moment. That the problem is of more than academic interest is evidenced by the recommendation recently made to the federal authorities by government engineers relative to the power systems in several of our important industrial districts. And in these days action follows recommendation with sometimes a disconcerting promptness.

It is beside the point here to discuss at large the advantages of inter-connection. Suffice it to say that in most cases they are great both from the standpoint of fuel saving and from that of continuity of service. The real questions which military necessity is forcing on the industry are those dealing with how to do it and not whether it is worth doing. Thus the problems of labor, material and the technical matters involved in construction and operation are the all-important ones.

The technical problems are rather numerous and on the whole are of interest to the electric railway industry since in inter-connected districts they will receive their energy supply from the common source. Increased generating capacity back of a line increases the duty required of circuit-breaking switches and other overload protective devices and magnifies the destructive effects of short-circuit. Increasing the mileage of connected transmission lines increases their ability to store energy and therefore the violence of line surges. Line troubles are spread out over a wide district by conduction. Connecting lines or cables may be of insufficient current carrying capacity to carry the necessary synchronizing currents. The difficulties of fault location are increased.

We see therefore that inter-connection of lines brings in new problems, both of construction and of operation. Old lines may have to be reinforced both in insulation and current carrying capacity. New circuit-breaking switches may be necessary as well as special provisions for localizing and isolating trouble. Short gaps between existing lines may be required. For new construction made at the demand of the government federal funds will no doubt be available, but the problems of construction and operation will be squarely up to the utilities. Their prompt solution will depend largely on the utilities' knowledge of operating conditions on their lines and upon preparedness in the way of tentative plans of action.

Providing Strength and Attractiveness in Special Overhead Supports

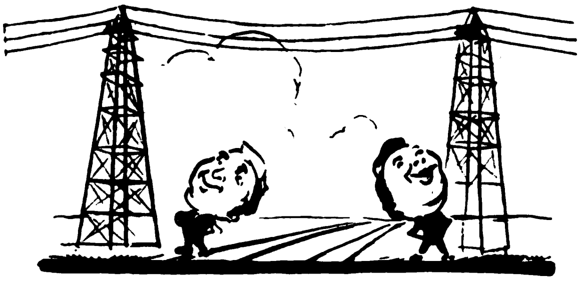
By Charles R. Harte

Construction Engineer The Connecticut Company,
New Haven, Conn.

Overhead Bridges and Other Special Structures Furnish an Opportunity for Ingenuity and Application of Correct Design Principles

THE first electric roads differed from their predecessors the horse railways only in the method of moving the cars, and the service was readily cared for by simple and light overhead construction. As the art advanced, however, and it became necessary to collect heavier and heavier currents at ever-increasing speeds, the overhead had to be correspondingly developed.

The pulls in the direction of the line practically balance at each point of support, or if they do not, because of unequal lengths of adjacent spans, the excess can be cared for by guys ahead or back which do not require any additional space outside the poles. But the tendency to pull the support over toward the track when, as is the case with heavy overhead, the pull is greater than the pole itself alone can resist, is not so easily provided for. To avoid the expense and trouble of special concrete foundations or side guys with their requirement of much additional right-of-way there was developed the bridge support, consisting of a pair of poles or frames, one on each side of the track, with a connecting truss serving the double purpose of providing a carrier for the overhead itself and a strut to balance the inward pulls on the two frames.



That was a tough problem in tower design, but we solved it, all right!

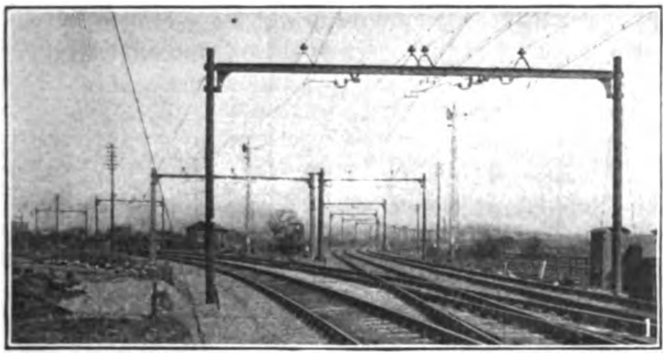
A Bridge Structure with Wood Posts

As in the case of transmission-line towers there has been quite a range of design, from forms so light as to require temporary bracing until the messengers are attached (after which they act as guys), to those which, like the early Westinghouse, are substantially each one an anchor bridge. Abroad, the Siemens-Schuckert electrifications employed A-frames, of channels back to back with diagonal and horizontal lacing of angles, with a pair of channels back to back for the cross strut between. The legs were evidently set in concrete or masonry in most cases, as the only protection against cross swaying of the structure is by a tie rod from the top of each frame to about the quarter point of the strut. The German General Electric Company employed a very similar form. In England, the Midland used two types, one involving a wood pole at each end of paired channels, the other, used at terminals, of structural steel throughout. Both forms have very interesting details. The wood posts, some of which are round while others are square, have notched into them a pair of clamping collars which are close to the top and about 2 ft. apart. The bottom collar has flanges which take between them a gusset plate extending up between the two channels of the strut, while the flanges of the upper collar go outside the webs of the channels, and are fastened to them by rivets extending through flanges, webs and gusset plate. Attachments to the strut are held in place by bolts passing between the channels, which are maintained a uniform distance apart by spacers between. While this treatment, by making it unnecessary to drill holes in the flanges for attachments, preserves the full strength of the section, the narrow space between the channels tends to hold moisture and cause corrosion, and is very difficult to paint or otherwise protect. The steel bridges consist of square posts with angle-iron corners and inside lacing. These carry a built-up truss with straight top chord, diagonal bracing and a lower chord, parallel to the top chord for most of its length but curved down at the ends to meet the post, thus both forming a bracket and relieving the severity of the design. As with the wood-pole form the truss, which is of angles, is double, but in this the angles are much farther apart, and are tied together by diagonal lacing bars on top of the top member and on the bottom of the bottom member.

In this country a design somewhat like the Siemens-Schuckert was early developed by the Archbold-Brady Company. This company's bridges have triangular posts with channels for legs, but the bracing consists of horizontal angles and diagonal tie rods. The ends of the angles are "bulldozed" flat and bent at right angles for riveting to the channel backs, while the diagonals take hold of bolts going through the flattened position of the angle close to the bend. The chief difference is in the strut, which consists of two channels back to back and some 3 ft. apart, braced by vertical angles and diagonal ties, the ends of the lower channel bending up at the last angle and meeting the ends of the top channel at the post, while a pair of angle braces from the bend down at an angle of 45 deg. to the legs of the main post give the desired stiffness and permit a comparatively light connection to the foundation.

The Westinghouse bridges, developed at about the same time as the Midland form, have similar square posts with angle corners, but the lacing is outside, and the truss has parallel top and bottom chords. Incidentally, the connections are much stronger, for where the Midland diagonals are riveted to the flange of the chord angle the Westinghouse form has connection plates.

In an endeavor to secure a design which should be more economical and less severe in appearance the New York, New Haven & Hartford Railroad, on an experimental extension toward New Haven, employed an entirely different type, made up of two posts square in section with diagonal lacing, tapering from butt to end, each having a vertical lower portion with the top bent to a quarter circle. Between the ends was fitted a strut of pipe braced by tie rods passing over a central spider and bolting through end plates. This was of very pleasing appearance, but fabrication proved difficult and costly, the curved sections insisting upon twisting when riveted, and when the work was extended to New Haven the railroad employed a still different form, combining the good points of both the earlier types.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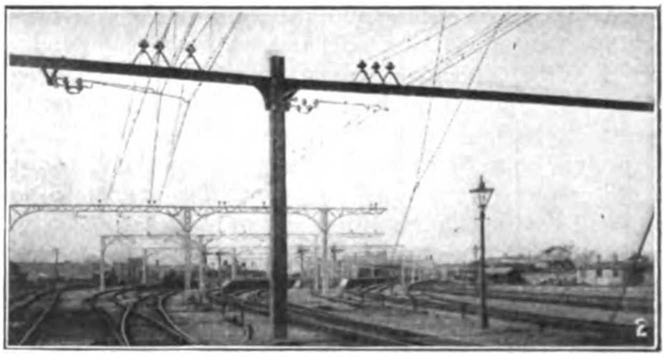
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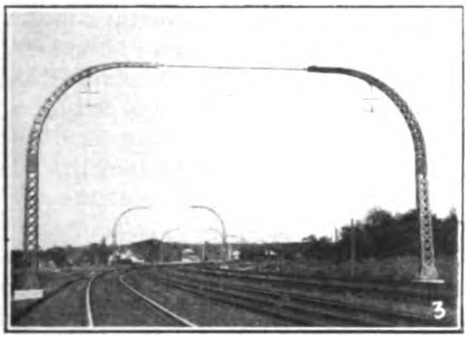
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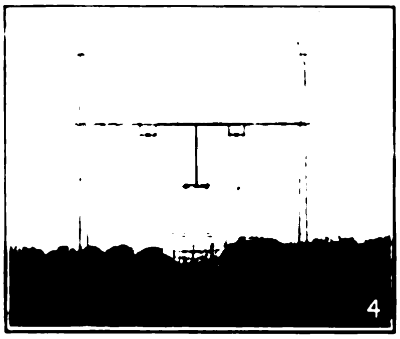
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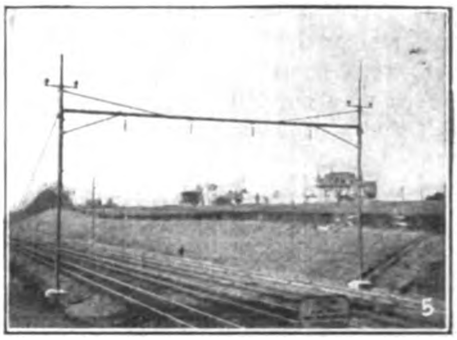
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Fig. 1—Overhead construction on Midland Railway electrification. Wood-pole and channel-iron strut in foreground; structural steel bridge in background.

Fig. 2—Overhead construction on Midland electrification; wood poles with double channel-iron truss.

Fig. 3—Experimental crane type of overhead bridge on New Haven electrification.

Fig. 4—Light bridge type of overhead construction used by General Electric Company of Germany.

Fig. 5—Bridge type of support on Pennsylvania electrification.

OVERHEAD BRIDGE SUPPORTS ARRANGED TO BALANCE INWARD PULLS ON TWO FRAMES

In this the posts are vertical, square in section and double laced, but the taper is from a comparatively small section at the bottom to a considerably larger one at the truss, and then in an extension carrying the crossarms, to a small top. The truss has parallel chords and single diagonals, but the "curse" of the square corners at the connection to the post is removed by a curved bracket which, with the tapered post, gives a decided arch effect. This effect is very pleasing and at the same time, as in the Archbold-Brady type, the resulting stiffness relieves the footings of the duty of meeting heavy bending stresses.

The present day tendency, however, seems to be away from these heavy rigid structures, for the most recent three electrifications, the Norfolk & Western, the Pennsylvania and the New York Connecting Railroad, wherever conditions permit, employ tubular poles heavily side guyed with cross catenary spans between, while where side guys are not practicable the same type of pole is employed with a very light truss.

Particularly abroad, where the smaller equipment makes the scheme more satisfactory, center poles with brackets have been used with some success. In this country, however, the clearance requirements of our large equipment would force the use of such long brackets that the necessary bracing and extra strength on the part of the support plus such shifting of tracks as is necessary to give required clearance between them, would usually much more than balance the saving over a bridge with its two posts. In some places, however, notably at stations and similar points where conditions seriously restrict the possibilities of support location, the center pole with double brackets is much the best treatment.

Where the track is put down in connection with the electrical system, provision for bridges or for guyed poles can often be made in spite of apparently very serious obstacles. But when the track has been installed without regard to electrification the later erection of wires may prove a good deal of a problem. In the case of the New Haven Railroad at Bridgeport, Conn., the tracks are largely on an earth fill between stone retaining walls, the faces of which form the side lines of parallel streets. The narrowness of the viaduct at certain points brings the side of a car on the outside track practically at the street line. Where the viaduct is high enough the trouble has been met by building a reinforced-concrete bracket out from the wall and carrying the bridge footing on it. But there were close points where the viaduct was so low that such a bracket would project into the street clearance. Here "broken-backed" or more properly speaking, broken-legged, towers were used, the lower portion bending in to follow the car clearance line, bringing the foot on the wall. Of course, in such a case the connection at the angle and the inclined portion must be very carefully studied and designed safely to resist the bending stresses which occur. The New York Connecting Railroad has a somewhat similar viaduct, but while this has compelled the use of some bridges the foreknowledge of the electrification enabled suitable provision to be made at the start.

Guyed-Pole, Cross-Catenary Span Construction Is Promising

The question of the contact system and its method of support, particularly if it is overhead, is of much importance in steam road electrification, and while there has been much progress there is still room for improvement. The unpleasant results which might be anticipated if light supports should let down the overhead very naturally deter any extensive ventures in the direction of lightness, and indeed compel very conservative work in all directions. At the same time a little longer service with guyed-pole and cross-catenary span should give information which will to a considerable degree establish reasonable limits for design.

The design of anchor and switching bridges involves nothing new, and as the pulls and loads which they must meet can be determined quite accurately for each case, the only complications are those resulting from cramped location. Frequently the anchoring and switching functions are combined, in which case it is essential so to separate or protect the two junctions that a breakdown of one will not involve the other nor prevent access to the unaffected portions. Provision must be made so that mechanical failure of any of the anchor points will not wreck the switches mechanically nor afford opportunity for an arc to or over them. Further, the misbehavior of one of the switches must not flood the bridge, nor for that matter the tracks below, with hot or blazing oil nor can it be permitted to let loose on the structure currents which may burn it, to create such potential gradients on it as seriously to shock an attendant, to burn off the anchored messengers or to bridge over their insulation.

Switches or Bridges Require Safeguarding to Reduce Hazard

The first requirement can usually be provided by having the anchor attachments on the outside of the structure while the switching apparatus goes between the girders. Suitable drains with collecting shields (and it must not be forgotten that an oil switch in eruption throws out the oil rather vigorously) will prevent damage from oil. Thorough bonding and grounding of the structure and provision of passageways and operating spaces of such width that the operator does not come in contact with more than one point at a time, will take care of the electrical hazard. As a matter of fact, all such apparatus-carrying structures should be considered and treated as stations, both in design and in operation. As between construction and operation, provided the construction has been right, which will insure absolute safety, on one hand, and that which is a long ways from so doing, on the other, there is astonishingly little difference in actual cost in the majority of cases. A minor accident will cost several times as much as the extra cost of construction, while the knowledge on the part of the operators that they are protected will result in work of a quality sufficiently higher to make the extra investment worth while.

The early transmission lines, serving only as direct connections between primary and substations or switching stations, with all apparatus housed, had little occasion for special structures other than those serving to get around some right-of-way complication or to carry the line in a long span across some obstacle preventing the normal type of construction.

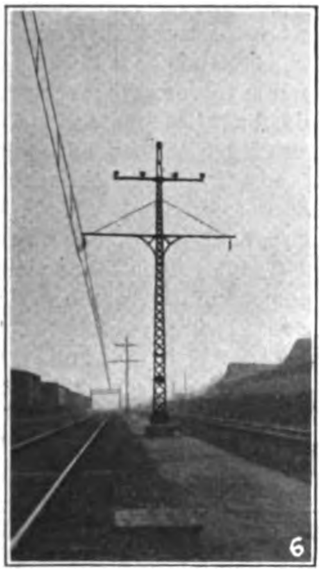
Of the first, an interesting example is the Swiss line along the shore of Lake Lucerne where, with the highway occupying all of the shelf at the edge of the water, the towers are carried on steel beams "cantilevered" out from the retaining wall for the road. Where footings can be had on each side of a road a passageway or bridge may serve. Because of the powerful twisting moment in case of any unbalancing of the pulls by the spans, it is undesirable to have an arrangement not symmetrical with the pole. In one case where the line ran along a road with a heavy cliff at one side, it was proposed to use poles with outrigged arms having struts against the rock. This was never built, however, which was undoubtedly fortunate. Because of its location it was certain to catch anything which came down the cliff, and the expenditure of a little more than double the estimated cost on a line which was longer but in location far better in every way was very much the more economical treatment. Where location on the face of a cliff is unavoidable it may be possible to cut towers down to small and simple frames, but in such cases it must not be forgotten that there reasonable access to these frames must be provided for use in case of trouble.

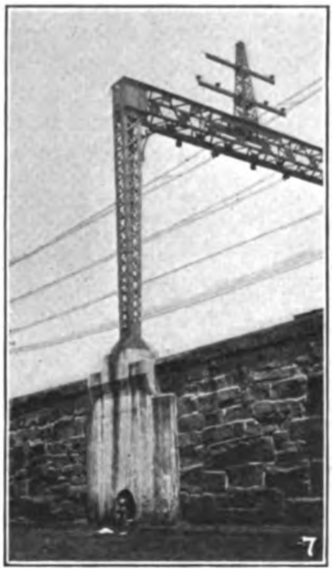
A Very Unusual Case at Niagara Falls

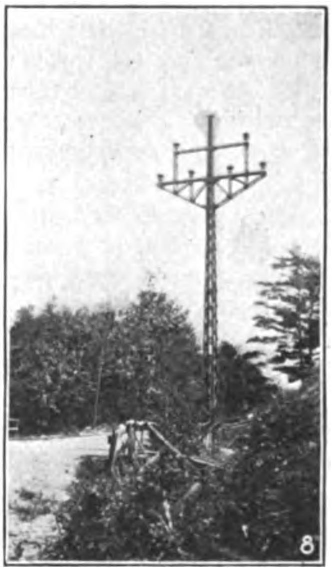
An interesting example of special structure is furnished by the cantilevers of the Niagara, Lockport & Ontario Power Company line at the Niagara River gorge. The span at the top of the cliffs was considered too long for so important a line, and it was decided to cross at the bottom of the gorge. The pitch of the face of the gorge is so steep that with towers at the very edge of the top the conductors would not clear. Accordingly cantilevers were extended well beyond the edge. The conductors span from a tower near the edge to the cantilevers; thence down to the towers at the foot; and thence across. The heavy angle at the bottom towers is up and away from the insulators, the attachment of the conductors being by special clamp. At the top, however, the angle would bring the conductors so close to the petticoats of the insulators that the latter would largely be useless. To obviate this difficulty each cantilever carries two sets of insulators. Special heads carry supports parallel to the line but a short distance each side of it. These in turn carry a steel bar at right angles to the line to which the conductor is tied, and from which it drops to the tower below.

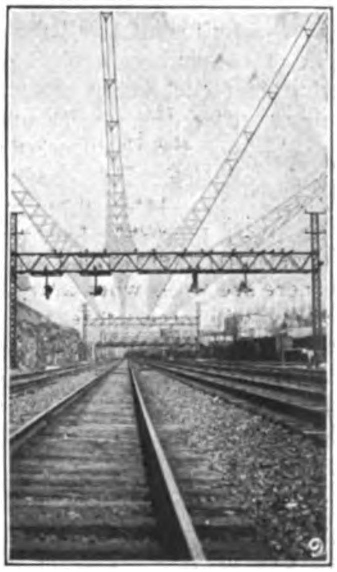
To-day such conditions are largely met by the use of suspension type insulators, which are able to handle almost any kind of complication arising from angles, whether vertical or horizontal, and that very largely on standard towers. Indeed the suspension-type insulator has very much simplified the problem of the long span, and where in the earlier days of transmission quite special structures were required for the necessarily complicated combinations of pin-type insulators and clamping devices, to-day the crossing towers as a rule have only to furnish suitable attachments for the strings of strain insulators, and sufficient strength on the part of the tower safely to meet this pull. There is, however, one case in which a special tower is still used, and that is where a long span is carried by towers one or both of which must be very high and it is important to reduce the pulls to a minimum because of the fast increasing cost of each additional pound of resistance required.

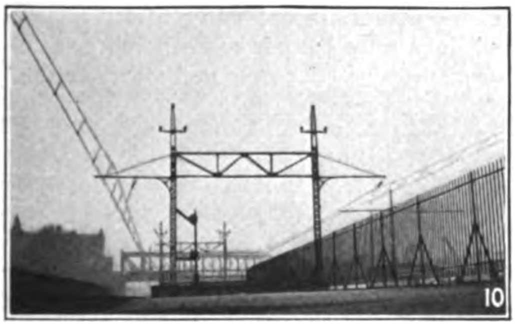
A scheme which has been used with success in several instances is to counterweight the pull of the span, either directly or through some multiplying device such as is often employed for elevators, the travel of the clamp on the span being as many times the travel of the counterweight as there are parts of rope between the sheaves. The counterweight itself must, of course, be inversely as heavy as its travel is multiplied. The operating cable is flexible steel hoisting cable attached to the conductor by suitable strain insulators and clamps; the conductor is carried over or through the tower and must have provision for taking care of the slack when the counterweight is down. In one case, where the span wire changes 2 ft. for every foot of counterweight travel, the span is connected with the line wire beyond by a jumper which, going over a sheave on insulators to a pin-type insulator, carries in the space between a small weight with a sheave through which it runs. As the span is shortened or lengthened this weight keeps the jumper taut, ample clearance from the structure preventing any contact. This treatment involves very little special treatment of the tower itself. It has also been proposed, although, so far as the writer knows, this has never been done, to mount one tower on trunnions and allow it to tilt and so adjust the sag to the load, a suitable counterweight maintaining the desired stress.

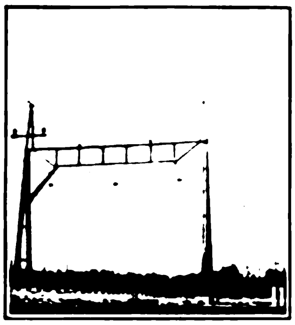












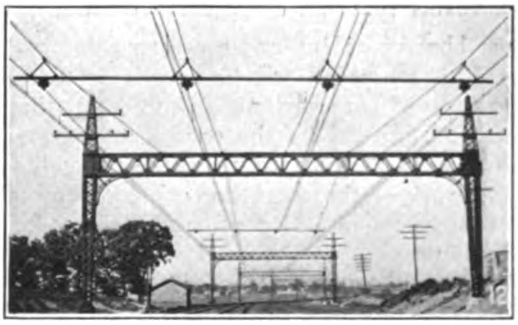


Fig. 6—Center-pole overhead supports, Pennsylvania Railroad electrification.

Fig. 7—Bridge posts bracketed out from viaduct wall on New Haven electrification at Bridgeport, Conn.

Fig. 8—Bracket type of pole in pinched location, Connecticut River Power Company.

Fig. 9—Westinghouse bridge on New Haven electrification.

Fig 10—Combined bridge and bracket overhead support on Pennsylvania electrification.

Fig. 11—Light type of overhead bridge on line of Syracuse, Lake Shore & Northern Railway.

Fig. 12—McHenry-Murray bridge on New Haven electrification. (Note the pleasing effect of the tapered posts and the curved brackets.)

CENTER POLE OVERHEAD CONSTRUCTION AND COMBINED BRIDGE AND BRACKET SUPPORTS

There is one more form of special structure—the development of a spirit of reason and fairness in the matter of high-tension crossing protection having taken its supports out of the special class—which is steadily gaining in importance, and that is the outdoor switching station. This, however, is special as a development rather than as a structure, for after all it is merely the skeleton of what up to recently has been the high-tension switching room of the power or substation. Starting as a group of plain knifeblade switches on a standard tower, for emergency sectionalizing, the outdoor switching station has developed until to-day these installations frequently consist of elaborate busbar systems with every switching and protective refinement capable of effecting under load all sorts of transposition of service.

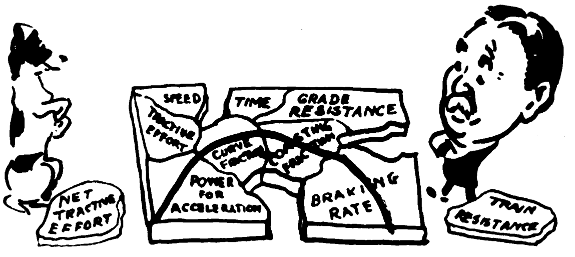
In short, the full facilities of the station to this end are moved out of doors, as when inside the station it is essential that there be ample clearances and facilities for safe and comfortable operation. Outside of this, and the circuit arrangements which are apt to be special for each case, the problem is one for the structural engineer rather than the overhead man.

Effect of Grades and Curves in Plotting Speed-Time Graphs

By C. W. Squier
Electrical Engineer

The Author Describes How Grades and Curves Are Taken Into Consideration in Plotting a Continuous Speed-Time Graph

AT THE BEGINNING of this discussion on the preliminary calculation necessary in choosing car equipment I called attention to the fact that it is usual to assume a typical run for studying the various characteristics of the equipment. Different typical runs representing the service under consideration have been worked out and the proceedure necessary for calculating and plotting the various graphs has been described. All this, however, has been done for a level tangent track. There are times when a proper study will necessitate taking into consideration the individual runs as they are actually made with due regard to the curves and grades encountered. Such studies of operation are absolutely necessary when determining the maximum capacity of a certain section of track, that is, the greatest number of cars or trains that can be operated through a given section per hour or during any given time interval.



All necessary considerations fit together to make a speed-time curve, but it's some puzzle at that

Also in laying out signals it is necessary to know the speed at various points and this, of course, will be affected by the grades and curves of the line. Problems of this nature are continually occurring in the work of the operating engineer and while it is not usual to go into this great detail in choosing the car equipment, still a knowledge of the factors involved is essential.

I shall describe briefly the calculations and methods most generally used in determining speed-time, distance-time and speed-distance curves when all variations of grade and curves are taken into consideration. As the graphs for current and power input are derived curves the methods already described for obtaining these will apply here also.

To illustrate this I have chosen an express run from Union Square to Canal Street in the new Broadway subway in New York City, with train make up and equipment as shown in Table I.

The speed in miles per hour on curves is limited to the square root of the radius of the curve in feet, and this speed is not exceeded until the last car of the train is off the curve. This is the usual assumption for the safe maximum speed while rounding curves and is limited by the elevation of the outside rail. Easements are considered as having a radius of twice that of the curve having the easement. A speed of 15 m.p.h. must not be exceeded by the train while taking crossovers, as superelevation cannot be provided at these points.

TABLE I—OPERATING CONDITIONS FOR PLOTTING SPEED-TIME GRAPH

Number of cars in train	8
Total length of train	536 ft.
Weight of car as equipped	89,000 lb.
Weight of passenger load per car (200 passengers at 140 lb. each)	28,000 lb.
Total weight of car with load	117,000 lb.
Motor equipment, G.-E. 248-A motors per car	2
Gear ratio	61:22
Diameter of wheels	32 in.
Train resistance from tests in service (See Fig. 1, Curve D)	
Curve resistance per degree of curvature	0.8 lb. per ton
Average line volts	550
Average accelerating current per motor	296 amp.
Average braking rate	2 m p.h.p.s.

The motors used are arranged for tapped-field control, and the change from full field to permanent field is made when the current drops to 200 amp. This takes place at a speed of 16.7 m.p.h. The current swing is from 200 amp. to 337 amp. and the tractive effort from 2870 lb. to 4750 lb. The run is made at the highest possible schedule speed. The amount of coasting and braking is limited to that necessary for slowing down the train whenever short-radius curves, steep down grades or crossovers make this necessary. In order to conform to actual operating conditions four seconds are allowed from the time the motorman drops off power and starts to apply the brakes to the instant that the braking rate of 2 m.p.h.p.s. begins.

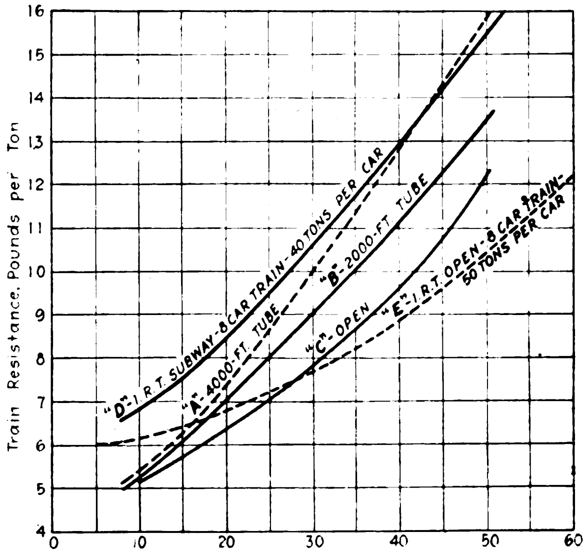


FIG. 1—GRAPHS OF TRAIN RESISTANCE

A, B and *C,* from Tests on the Hudson & Manhattan Railroad. *D* and *E,* from Tests in the Interborough Rapid Transit Subway.

Fig. 2 shows the completed speed-time, distance-time, speed-distance and power-input graphs for this run. The profile and alignment for the track are included for convenience in determining the points at which the

TABLE II—VALUES OF DIFFERENT QUANTITIES FOR EACH STEP OF SPEED-TIME CURVE CONSTRUCTION

Speed, m.p.h.	Per Motor										Rate of Acceleration or Retardation, m.p.h.p.s.	Distance from Start, Feet
	Amperes	Tractive Effort, Pounds	Grade, per Cent	Grade Resistance, Pounds	Curve, Degrees	Curve Radius, Feet	Curve Resistance, Pounds	Train Resistance, Pounds	Total Resistance, Pounds	Net Tractive Effort, Pounds		
6.4	290	4,800	Level	..	Straight	Straight	.....	...	...	.....	....	..
14.2	290	4,800	Level	...	Straight	Straight	....	218	218	4,582	1.57	...
16.7	200	2,870	Level	..	Straight	Straight	. .	228	228	2,642	0.91	...
16.7	337	4,750	Level	.	Straight	Straight	....	228	228	4,522	1.55	.
18.0	295	3,900	Level	...	Straight	Straight	.....	236	236	3,664	1.25	. .
19.0	267	3,370	Level	...	Straight	Straight	....	242	242	3,128	1.07	...
20.0	243	2,900	Level	...	Straight	Straight	.....	248	248	2,652	0.91	...
21.0	225	2,600	Level	...	Straight	Straight	.....	254	254	2,346	0.80	250
22.0	209	2,300	+0.37	216	Straight	Straight	....	261	477	1,823	0.62	...
23.0	195	2,070	+0.37	216	Straight	Straight	. ..	267	483	1,587	0.54	. .
24.0	182	1,850	+0.37	216	Straight	Straight	.....	273	489	1,361	0.46	...
25.0	172	1,700	+0.37	216	Straight	Straight	.....	280	496	1,204	0.41	...
26.0	163	1,550	+0.37	216	Straight	Straight	.....	286	502	1,048	0.36	...
27.0	155	1,410	+0.37	216	Straight	Straight	....	292	508	902	0.31	...
27.5	150	1,340	+0.37	216	Straight	Straight	.....	296	512	828	0.28	...
27.25	Coasting	....	+0.37	216	Straight	Straight	...	294	510		−0.18	930
27.25	Coasting	....	−1	−585	Straight	Straight	.....	294	294	291	0.10	. .
22.25	Braking	....	−1	−585	Straight	Straight	. . .	. .	Braking	. .	−2.00	
22.25	Braking	....	−1	−585	Straight	Straight	.....	...	Braking	.	...	1,230
22.25	Braking	...	−1	−585	11.5	500	279	262	541	44		1,550

speed is limited and to assist in calculating the combined train resistance.

How the Degree of a Curve Is Determined

The values of railway curves are commonly expressed in terms of the central angle subtended by a chord 100 ft. long. Thus a 1-deg. curve is one such that the angle at the center end of the radius is 1 deg. and the radius is 100 × 360 ÷ 2π = 5730 ft. The radius in feet for any curve is therefore to 5730 ÷ degrees of curvature.

A convenient form for tabulating the various values is shown in Table II, which gives the figures obtained for the first part of the run. The speed-time graph is plotted by using these values as described in my previous articles. The graphical method of W. S. Valentine referred to in the article of May 18 is a great convenience in a case such as this, and in Fig. 3 is shown this method as applied to the problem we are considering. From these graphs the acceleration at any speed on any grade may be read direct.

At the beginning of the run the track is straight and level for 250 ft. and the train accelerates at a rate of 1.57 m.p.h.p.s. to a speed of 14.2 m.p.h. when all resistance is cut out. The point *A*, Fig. 3, shows this speed and *K* the corresponding acceleration. From this point, *A* the speed is increased to 16.7 m.p.h., point *B*, using the full field of the motors and the rate of acceleration decreases from *K* to *L*. The change to the permanent field is then made and the acceleration rate increases to 1.55 m.p.h.p.s. as shown at *M*.

The speed now increases from *C to D* and the acceleration rate decreased from *M* to *N*. At this point the train reaches the 0.37 per cent grade and the rate of

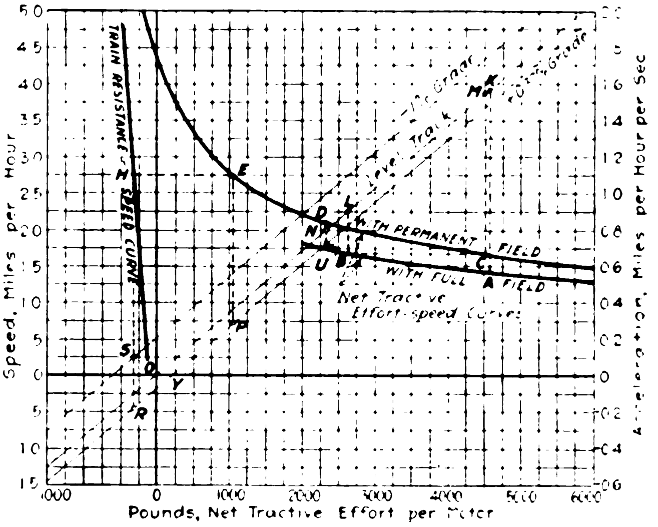


FIG. 3—GRAPHS FOR PLOTTING SPEED-TIME CURVES WITH VARIOUS GRADES AND CURVES

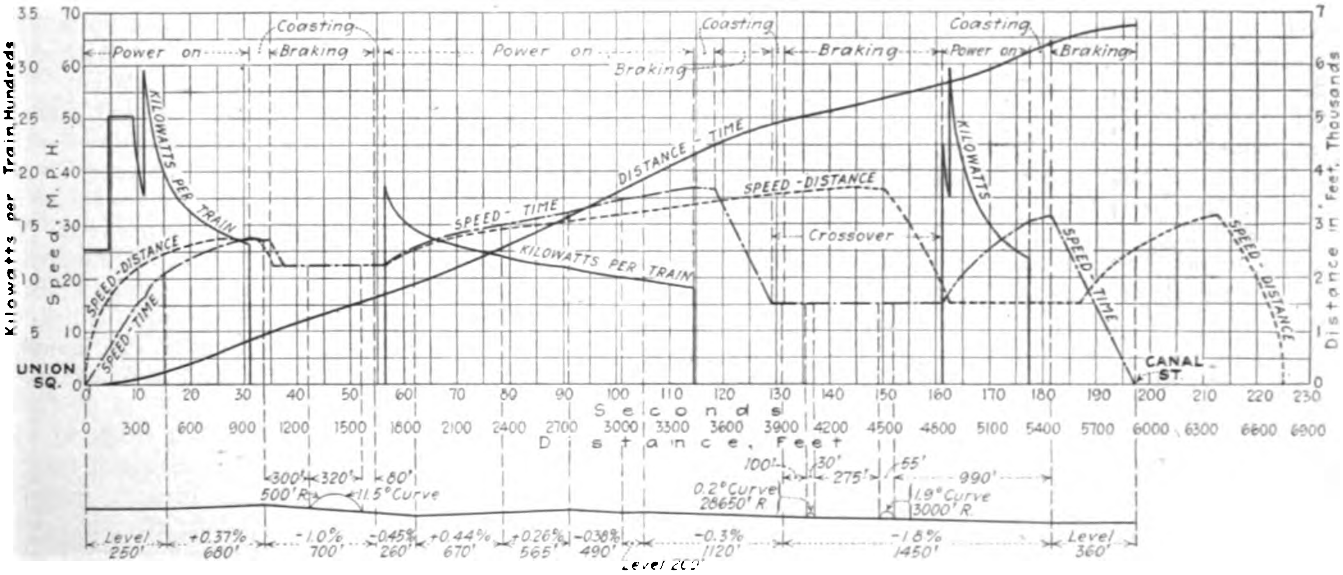


FIG. 2—SPEED-TIME, RESISTANCE-TIME AND SPEED-DISTANCE GRAPHS

acceleration is then indicated by the line *RYPU* which is obtained as follows: When a train is operating on a grade, it is equivalent to having the net tractive effort decreased by the amount of the grade resistance. The amount of the grade resistance per motor in this case is (117,000 lb. × 0.0037) ÷ 2 or 216.5 lb. This value is laid off to the right of the point *O* as shown by *OY*. A straight line drawn through *Y* parallel to *ONLMK* will be the required acceleration graph on this grade. The train continues to increase in speed to the point *E* 27.5 m.p.h. on the speed-net tractive-effort curve, and the rate of acceleration decreases from the point *U* to the point *P*.

Slowdowns Must Be Made for Short-Radius Curves

As the train is now approaching a 500-ft.-radius curve, the speed must be decreased to $\sqrt{500}$ or 22.3 m.p.h. Power is accordingly shut off and the train coasts for four seconds before the brakes are effective. The rate of retardation while coasting is found by projecting the point *H* corresponding to 27.5 m.p.h. on the train resistance-speed graph to the point *R* on the acceleration graph. This rate of retardation is found to be 0.18 m.p.h.p.s. After four seconds the brakes are applied and the speed of the train decreases to 22.3 m.p.h. When the train reaches the 1 per cent down grade the increased tractive effort from this grade is more than the train resistance at that speed, so that the train would accelerate if the brakes were not kept applied. It is thus necessary to keep the brakes on until the rear of the train is around the curve. Power is then again applied and the train accelerates to a speed of 37 m.p.h. when it is again necessary to reduce the speed to 15 m.p.h. to take a crossover.

In order to determine when the train reaches a certain grade or curve some method for determining the distance traveled must be used. As already pointed out in a previous article, the area under the speed-time graph is a measure of the distance traveled. The speed-time graph can be plotted and the area measured until it is found to be just sufficient to correspond to the required distance, or a distance-time graph can be plotted at the same time as the speed-time graph. A method of determining the distance-time from the speed-time graph is as follows:

How a Distance-Time Graph Is Plotted

The speed-time graph is divided into increments corresponding to a certain increase or decrease in speed. It is assumed that the average speed of the train during this time is equal to one-half the initial and final speed and the distance which the train would travel at this average speed in the length of time taken is computed. Thus referring to Fig. 2 we find that twenty-three seconds from the start the train has a speed of 25 m.p.h. and at twenty-six seconds the speed is 26 m.p.h. The average speed for these three seconds is 25½ m.p.h. or 37.4 ft. per second. The distance traveled will then be 3 × 37.4 or 112.2 ft. The smaller the increments taken the greater will be the accuracy of the calculations. Usually the same increments can be used as are taken in plotting the speed-time graph, and the two graphs can then be carried along together. In Fig. 2 the distance-time graph *OTUV* is shown constructed.

TABLE III—DETERMINATION OF EQUIVALENT GRADE FOR A RUN WITH GRADES OF VARIOUS LENGTHS

Per Cent Grade	Length of Grade, Feet	Rise in Feet	Fall in Feet
Level	250	......	....
+0.37	680	2.516	....
—1.00	700	......	7.000
—0.45	260	......	1.170
+0.44	670	2.948	....
+0.26	565	1.469	....
—0.38	490	......	1.862
Level	200	......	....
—0.30	1,120	......	3.360
—1.80	1,450	......	26.100
Level	360	......	....
Total...............	6,745	6.933	39.492

(39.492 ft. — 6.933 ft.) + 6,745 ft. = 0.48 per cent Equivalent Grade.

Some engineers prefer to plot a speed-distance graph as an aid in determining where to stop the construction of the speed-time curve for a given grade or curve so as to conform to the conditions governing operation on the new grade or curve. In laying out signals a speed-distance graph is necessary since the spacing of the signals will depend on the distance required to stop the train from the speed at which it is traveling. Speed-time curves provide a method for determining the power and energy consumed in a given service and speed-distance curves, aside from their use in connecting up different portions of runs, also give information of particular value to the operating engineer since they show the speed at every portion of the distance. A speed-distance graph with distance plotted as the horizontal element resembles a speed-time graph in appearance, as will be seen by referring to Fig. 2. The straight line portions of the speed-time graph when the accelerating and retarding force is constant become parabolic curves in the speed-distance graph. This has led to many graphical methods being worked out for obtaining these curves, many of which possess considerable merit. I find the method of determining distance by measuring the area under the speed-time graph the most convenient.

How Equivalent Grade Is Determined

To illustrate how the uniform grade for any particular run or series of runs is determined I will calculate this for the particular run under consideration in this article. The average or equivalent grade for any section of track connecting two points is the ratio of the difference in elevation of these two points to their distance apart measured in the same units. The accompanying Table III shows a convenient method for tabulating the various steps of the calculation. The distance that the track rises or falls for each grade is computed and from this the total difference in elevation of the ends of the run is determined. This value divided by the total distance apart of the points gives the equivalent grade which is usually expressed in per cent. The use of the equivalent grades in plotting speed-time curves assumes that the energy stored in the train as a result of down grades may be used to furnish the tractive effort necessary in addition to that supplied by the motors of the train to ascend a following up grade.

The amount of energy available as a result of such grades will, of course, depend on the amount of braking necessary on the down grades to prevent excessive speeds being attained and will also be affected by the location of the stops or stations on the line with respect to the grades.

Getting a High Vacuum at the Turbine Exhaust

The Purpose of This Article Is to Show How the Faults in Condenser Design Are Being Overcome and to Emphasize This Idea: "Cool Steam in the Turbine Exhaust Is the Desideratum"

By Hartley LeH. Smith
Chief of Testing Bureau
Brooklyn Rapid Transit System

AFTER extensive use of fairly large steam turbines had led to the development of the so-called high vacuum surface condenser it was found that its design had been based at least partially upon some serious misconceptions. It was ultimately realized, however, that there is no justification for looking upon the condenser as an end in itself. Such a conception has led to the basing of essential elements of condenser design upon principles which might be valid if its purpose were not strictly secondary, as I shall proceed to show.

High vacuum, even very high vacuum, is of no value *in a power station condenser.* The place for high vacuum is in the exhaust nozzle of each turbine in a power station. This statement may seem trite, but it is far from being so.

That's a good vacuum, and it's in the turbine exhaust at that

It was but a very few years ago, even after turbines of fairly large size and good economy had been placed in operation in numerous power stations, that surface condenser manufacturers were building condensers designed to produce high vacuum *in the condenser.* Apparently the vacuum in the turbine exhaust nozzle, was left to take care of itself. Power station engineers allowed this situation to develop seemingly in a spirit of indifference. They seem to have been dazzled by the rival claims of the several manufacturers as to the ability of the latter to produce apparatus capable of eclipsing each best previous vacuum record. But it should be noted that these records were made for that part of the condenser where the highest vacuum was to be had, that is, where the temperature was lowest.

The situation which I have described was probably brought about through the commercial relationships of the manufacturers. The turbine manufacturers made the turbine, and tried to build it of ample capacity, and reliable and economical in operation. The condenser manufacturer designed the condenser and tried energetically so to design it as to produce somewhere within it a very high vacuum. He seemed not to care particularly what vacuum existed at the top of the condenser, although he knew that it was the poorest vacuum to be found anywhere in the entire apparatus which he had turned out. On the other hand, the power station engineer did not insist that attention should be directed to it. The fact is, however, that for real *plant economy* effort must be concentrated upon it.

It would be difficult with entire justice to assign the credit for the bringing about of a better understanding of the vital facts in connection with condenser design. Certainly one factor was the entry of a large turbine builder into the condenser field in competition with the firms building condensers and accompanying auxiliary apparatus.

Until this better understanding was brought about great attention and much misdirected analysis was devoted to such matters as temperature of hot-well water and cooling of air previous to its extraction by the air pump. This pump, by the way, was generally of the reciprocating and so-called "dry" type and as such was much affected in volumetric efficiency by the temperature of the air suction. At the same time an enormous amount of attention was devoted to formulating and experimentally determining the laws of heat transfer through condenser tubes, and to expressing such transfer in terms of an average thermal transmission coefficient. All of the talk about the "contraflow," that is, bringing the hottest steam into contact with the warmest water, and its part in establishing the average heat transmission coefficient, missed the real point. In fact, the whole discussion of the surface condenser as an apparatus through which heat energy was transferred at a very rapid rate missed the point, because it placed the principal emphasis elsewhere than upon the ways and means of creating the utmost vacuum at the *top* of the condenser. That is to say, the discussion should have centered in the production of high vacuum in the connection between the condenser and the turbine where this high vacuum can do some good to the turbine and accordingly can improve the plant economy.

The Mass of the Exhaust Steam Must Be Taken into Account

As soon as designers realized that they had been putting the emphasis at the wrong place several notable changes in practice were quickly evident. The basis of contract relationship changed. Guarantees of turbine economy as affected by condenser performance came to be based, as they should always have been based, upon the vacuum between the turbine and the condenser. Condenser manufacturers, with some alarm, took into consideration the pressure drop through the tube banks instead of practically closing their eyes to it as formerly. The great congestion of heat transfer in the upper tubes of the upper bank, with its accompaniment of shockingly ineffective utilization of costly material in the lower tube bank, received at last the attention which it deserved.

Steam leaves the turbine in an extremely attenuated state. However, it has mass, and on entering the condenser it has great momentum due to its enormous speed. The mass and the momentum must be taken care of in the design or great quantities of steam will penetrate far into the condenser before interference with the steam path occurs. This fact gradually dawned on condenser designers, and more and more they have arranged the tubes in graduated density instead of having them uniformly packed in close formation.

The Coolest Water Must Be in Contact with the Hottest Steam

But even yet the inertia of past conceptions has not been entirely overcome. The contraflow principle and its relation to the average thermal transmission coefficient, in the writer's opinion, stand in the way of progress. The intake circulation water is cool. Because it is cool it has great *potential* power to extract heat from the cool steam in the turbine exhaust nozzle or the condenser inlet, and this potential power should be utilized. Cool steam is steam at very high vacuum, and obviously if it is the turbine exhaust or condenser entrance steam which is the cool high-vacuum steam the turbine benefits and hence good plant economy results.

All talk about keeping up the average thermal transmission coefficient, cooling the air so that the volumetric efficiency of the air pump may be high, etc., is quite beside the mark. The air which must be removed from a condenser is air which leaks into the condenser structure. It makes no difference at what temperature this air is removed nor what volumetric efficiency the air pump may have while in the act of removing it. The air coming into the condenser through the turbine exhaust mixed with the steam in accordance with Dalton's law* is a quantity practically negligibly small. But if the exhaust nozzle steam is to be cool steam and yet if it is to have its heat (its enormous latent heat) extracted in the condenser it must come in contact with cool water. *Cool steam in the turbine exhaust is the desideratum.*

Modern Condensers Have Graduated Tube Spacing

Instead, therefore, of the earlier forms of so-called high-vacuum surface condensers, marred by great pressure drop from the turbine exhaust nozzle to the hot-well or to the air pump of the dry vacuum or ejector type caused by closely packed tube banks, we now have condensers of various forms of shell. Sometimes these are V-shaped with graduated density of tube spacing, allowing greatly increased penetration of steam to the lower tube bank.

Devices, such as rain plates, designed to prevent the cooling of water of condensation while making its way to the hot-well are now recognized as contributing to pressure drop through the condenser. In causing this pressure drop they create an evil far worse than that which they are designed to alleviate. In consequence they have been abandoned in design, and in some cases where originally installed they have been removed.

Contracts and turbine economy guarantees are now based upon the vacuum which the condenser is capable of maintaining in the turbine exhaust nozzle. The average temperature, or an approximation to the average yearly temperature of the intake circulating water, is now used as a basis of guarantees instead of a nominal and rather high temperature. A very late conception is the necessity of providing gradual acceleration of the air flow from the pocketed air cooled space of large cross-section to the far smaller cross-sectional area of the air suction from the condenser to the air pump, thus avoiding a baneful pipe entrance pressure loss.

The fundamental fact of surface condenser performance is that, with contraflow, the temperature of the discharge circulating water establishes the potential capacity for heat withdrawal from the turbine exhaust steam. An ideal condenser employing this principle could do no better than bring the turbine exhaust steam temperature down as low as the circulating water discharge temperature. Of course, the temperature of the turbine exhaust steam establishes its absolute pressure and therefore its vacuum.

Condensation Congestion Must Be Avoided

Only to the extent that steam can penetrate to the tube bank containing the cool intake circulating water can this bank condense steam and in so doing relieve the congestion of condensation in the region where the turbine exhaust steam first finds itself. Congestion of condensation cannot occur unless there occurs a sufficiently large difference of heat potential. For this to be large the turbine exhaust steam temperature must remain far above the temperature of the discharge circulating water temperature, which temperature is fixed by the initial temperature and the rate of flow of the circulating water and the extent to which the heat of the exhaust steam is imparted to it. Contraflow condensers frequently absorb as little as 15 per cent of total heat in the lower pass, which pass, of course, having the cool water, has far greater potential heat-absorbing capacity than the upper pass.

This shockingly inadequate sharing of the load by the lower pass, with consequent overloading and inefficient operation of the upper pass, can be maintained as a condition of unbalance in one or both of two ways: Either the lower tubes with the cool water may be drowned in a cloud of air, or the tubes of the lower pass may be surrounded by cool steam. As air is a good heat insulator, obviously the first condition results in low heat absorption. Again, as cool steam is necessarily steam of low absolute pressure (in other words, steam at high vacuum) we have a condition where there is high vacuum steam in the lower part of the condenser, while in the upper part there is steam of higher temperature and therefore a lower vacuum. There is consequently a large steam pressure drop through the condenser. This latter obviously cannot exist unless the design embodies tubes in close formation, hence the modern tendency away from this arrangement.

Air in Condensers Presents a Rather Complicated Problem

The case of the insulating cloud of air is not so simple. All the air which leaks into a condenser is removed as fast as it enters by the air pump, no matter how bad the air leakage nor how poor and inadequate the pump. Otherwise equilibrium conditions could not obtain. But the essential thing here is not the *rate* of air entrance nor the equal *rate* of air removal. The essential thing is the *mass* of air existing in the condenser at any given time. A good financial analogy of this can be found in one's bank balance, which is quite distinct from the rate of depositing and the rate of checking out the account. If air leakage into a condenser is high it will require a pump of large capacity to remove air at a uniform rate *at low absolute pressure.* But still more vital than its volumetric capacity is the *limiting absolute pressure* at which the pump *can* remove *air.* Its limitations in this regard are fixed by its design or to its state of mechanical excellence with respect to maintenance, or to both jointly.

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*Dalton's Law. "This states that, if several gases which do not react on each other are put inside a certain vessel, the mixture becomes uniform throughout, and the pressure at any point is the sum of the pressure which each gas would produce if it occupied the vessel by itself." Ames' "Theory of Physics," page 135.

This point determined, it is obvious that the mass of the cloud of air in the condenser will be determined by the limiting absolute pressure and by the volumetric displacement of the pump in unit time. The product of these (times the gas constant) is the mass of air removed by the pump in unit time, which is necessarily equal to the mass of air entering the condenser in unit time. The mass of the cloud of air in the condenser, or, referring again to our analogy, the "bank balance," adjusts itself in such degree as to establish this entrance-exit equation.

Good Condenser Pump Maintenance Is Essential to High Vacuum

If the air leakage into the condenser is moderate and remains constant, but if at the same time the pump undergoes service deterioration for want of maintenance, the cloud of air in the condenser will *compress* until the deteriorated pump can take out the leaking quantity at higher absolute pressure than before; in other words, at lower vacuum. This compressed air, *occupying in the condenser the same space as before,* will have greater mass. In consequence it will have much increased heat-insulating ability and by reducing the heat absorption of the lower pass will overload the upper pass, since the entire heat coming in with the steam from the condenser must be absorbed. This overloading of the upper pass still further lowers the vacuum and thus in this manner a cumulative effect is secured.

In recent years an expedient extensively adopted is to provide a pump of very great volumetric capacity and of design inherently capable of working at very low absolute pressure, a pump of the rotary ejector type. This solves the problem of high vacuum maintenance but often at the expense of rather high power required for driving. With such a pump, if the air leakage into the condenser is slight, a source of extravagance is tapped.

As the volumetric displacement is large the pump will draw out steam when there is but little air to extract. This steam in consequence does not get into the hot-well as condensate and therefore is not returned to the boilers. This is a source of loss not always realized, but it is recognized by those who have given it proper consideration. Turbine guaranteed economy tests are not run with such pumps in action if test facilities exist for making temporary use of pumps of moderate volumetric capacity.

New Type of Lightning Arrester Makes Its Appearance

The "Oxide Film" Arrester Has General Properties Like the Aluminum Cell Arrester but Also Has Virtues All Its Own

AN IMPORTANT development in lightning arresters was announced in papers at the recent A. I. E. E. convention at Atlantic City by Charles P. Steinmetz, General Electric Company, and Crosby Field, United States Ordnance Department, who gave structural and operating details of the new "oxide film" arrester. This has now been in service long enough to demonstrate its practical qualities so that the authors felt safe in giving out details. The functioning of this arrester depends upon the fact that certain dry chemical compounds can be changed with extreme rapidity from very good conductors to almost perfect non-conductors by the application of slight amounts of heat. Lead peroxide is a good example of this property and this compound is used in the commercial arresters.

Lead peroxide is normally a powder. If, however, it is placed between two electrodes and a current is passed through it, there will be a rise in temperature due to the resistance at the contact of the peroxide and the metal. This causes heat to be generated at points on the surface, and when the temperature has attained a value of 150 deg. C. a film of lower oxides forms. This film is a non-conductor and it interrupts the current. The formation of the film by this means is, however, rather irregular and in the commercial arrester the electrodes are dipped in varnish or lacquer for the purpose of producing a uniform film.

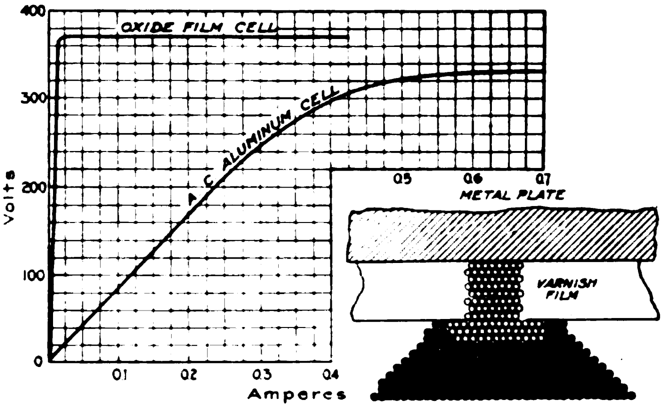


FIG. 1—VOLT-AMPERE CHARACTERISTICS OF OXIDE FILM AND A. C. ALUMINUM ARRESTERS. FIG. 2—CONVENTIONAL DIAGRAM OF LITHARGE PLUG STOPPING GAP IN OXIDE FILM ARRESTER

The commercial arrester consists of two sherardized steel disks, 6 in. or more in diameter, spun on the two sides of a porcelain ring, the interior space being filled with the peroxide. The distance between electrodes is about ½ in. Either one or both of them is covered with a thin insulating film.

When such a cell is subjected to a voltage up to about 300 the insulating film prevents any appreciable current from flowing under normal conditions (see Fig. 1). As soon as the voltage rises slightly above this value the film punctures in one or more microscopic points, the lightning charge meets with practically no resistance and flows to earth. The dynamic current starts to follow but because the insulation was punctured in very fine points the current density near these points is exceedingly great. There is thus a localized heating to a value sufficient to change to insulating litharge all of the conducting peroxide in this minute path of the current flow in contact with the electrodes. The film consequently reseals, stopping further flow of the dynamic current. The action is so rapid that the resealing occurs in less than one four-thousandth part of a second after the excess of lightning voltage has ceased. Fig. 2 represents in a conventional manner the way in which a litharge plug, indicated by the white circles, promptly fills the gap in the film.

In applying the cells commercially they are piled upon each other, to a number depending upon the voltage of the circuit, with a spark gap in series. As they are hermetically sealed, because the metal of the electrodes is spun over the porcelain separating rings, the cells can be installed out of doors as well as indoors, requiring in an outdoor installation merely some protection by peticoats to keep the rain from short-circuiting the cells. An accompanying illustration shows the details of mounting for a high-voltage arrester.

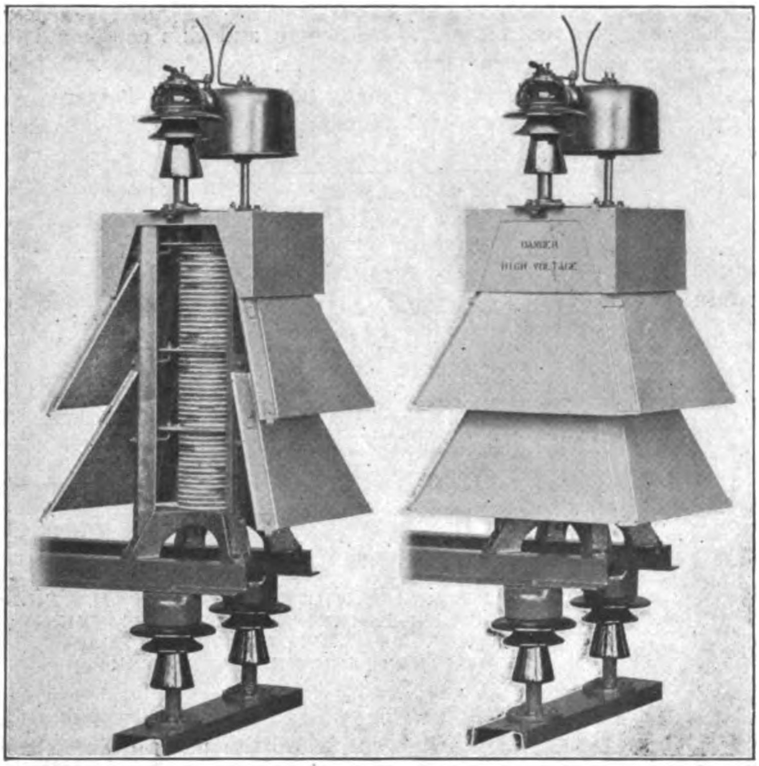


FIG. 3—OUTDOOR TYPE OF OXIDE FILM LIGHTNING ARRESTER FOR USE ON 15,000 TO 25,000-VOLT CIRCUITS

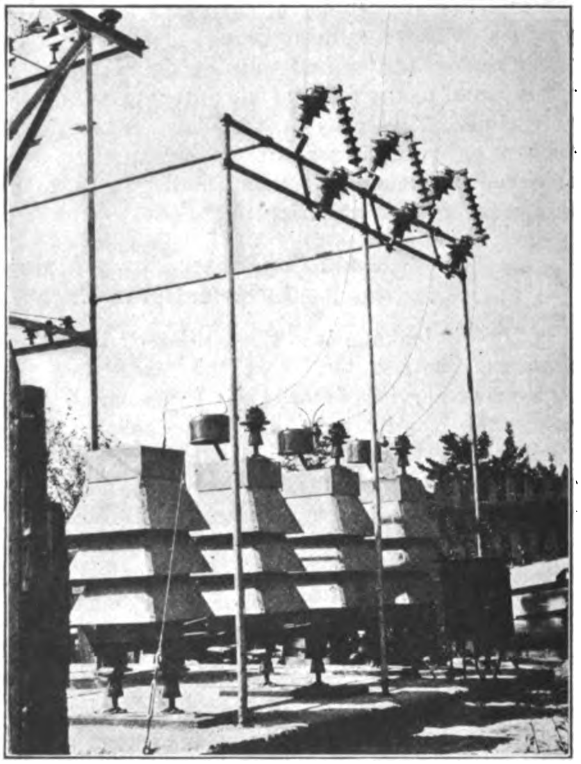


FIG. 4—OXIDE FILM LIGHTNING ARRESTER INSTALLED ON 33,000-VOLT CIRCUIT

In order to render the arrester "instantaneous" in its action, the horn gap inserted in series with the cells is shunted by a properly proportioned sphere gap, which for outdoor use must be shielded from the weather. A protected sphere gap which has been designed for this purpose is shown in one of the illustrations.

The aluminum cell arrester comprises a series of cells —usually conical and stacked into each other—of aluminum electrodes, with an electrolyte of which neither the salt nor its ions appreciably dissolve alumina. In "forming" the cell by an alternating current passing through it, the electrodes are coated with a thin non-conducting film of alumina, which grows in thickness until it holds back the impressed voltage. Any over-voltage punctures this film, but the current passing through the puncture hole again forms alumina and closes the holes. Thus the aluminum cell acts like a self-repairing electrostatic condenser of a disruptive strength equal to the impressed voltage, about 250 to 300 per cell. On account of its excellent protective qualities the aluminum cell arrester has been adopted very generally in high-power circuits in spite of the inconveniences incident to the need of daily attention in charging, the use of a liquid electrolyte, and the difficulty of testing the arrester without taking it apart except by watching the appearance of the charging arc or measuring the charging current.

The oxide film arrester does not require any charging and thus needs no special attention; it contains no liquid electrolyte of inflammable material, and like the aluminum cell arrester it can be located out of doors as well as indoors. Fig. 1 shows comparative volt-ampere characteristics of the oxide film arrester and the a.c. aluminum arrester. Both of these arresters have a leakage current which wears the plates of the cell when alternating current is supplied and it is necessary to place a spark gap in series with the cells. This spark gap is set at a value slightly above the normal potential of the circuit so that nothing but abnormal voltages will cause a discharge.

It is seen, then, that the oxide film arrester has general characteristics closely like the standard aluminum electrolytic arrester and in addition it has obvious advantages, due to the facts that it is dry rather than wet, that it will not congeal and that it needs no daily charging.

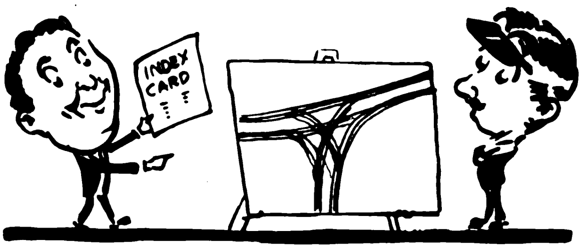
Money-Saving Factors in the Maintenance of Special Work

By R. C. Cram

Assistant Engineer, Department of Way and Structure, Brooklyn Rapid Transit System

For Economical Maintenance There Must Be Intelligent Selection of Types of Special Work, Careful Workmanship in Installation, Accurate Records of Performance and Prompt Attention to Needed Repairs

SPECIAL track work is the most expensive part of a street railway track system, both in first cost and in maintenance. It is no uncommon sight to see a special-work layout which has cost $10,000 or more confined within the limits of a 60-ft. street intersection. In pre-war times, special work would cost in place and paved from $10 to $15 per foot of single track, which is about double the cost of plain, tangent track. Slot-rail underground conduit construction cost much more than any other type, as indicated in the article by H. P. Hunting describing an installation of this type in Washington, D. C., which appeared in the ELECTRIC RAILWAY JOURNAL for June 15, 1918. The installation referred to was stated to have cost $56,239.19 net. The detailed cost figures indicated a unit cost of $65.90 per foot of single track for the special work in place and about $14 per foot of single track for adjacent tangent slot-rail track.



What would we have done without these records of special work?

These references to cost are made for the purpose of emphasizing the fact that special-work maintenance is a very important feature in the work of the way department. It hardly seems necessary to say that such high costs should be the only warrant needed for the expenditure of money in making frequent inspection and timely repairs. It may also be noted that high renewal costs often create a tendency or desire to keep a layout in service as long as possible and often beyond the time when renewal is properly due. In these times, particularly, it is difficult to secure the combination of material, labor and funds which is essential to good maintenance, and very careful planning is needed to make the best use of whatever parts of this combination may be available.

There are a number of problems and features of special-work maintenance which are more or less common to an electric railway, and an attempt will be made to present some of them in this article. While the methods and practices described are thought to be those prevailing generally, there are several factors which influence their application to individual systems. Among them are the following: (1) Size of the road in terms of mileage. (2) Number of special-work layouts. (3) General characteristics of the system with respect to whether it is a city system, an interurban system or a combination of the two. (4) Character of the special-work layouts with respect to relative simplicity. (5) General character or type of special-work construction in use. (6) Wheel contours and settings. (7) Type, weight and schedule of cars.

The first item naturally determines the second as it follows that, regardless of the general characteristics of the property, there is a fairly well fixed relation between track mileage and the amount or number of special-work layouts required for operation. Judging

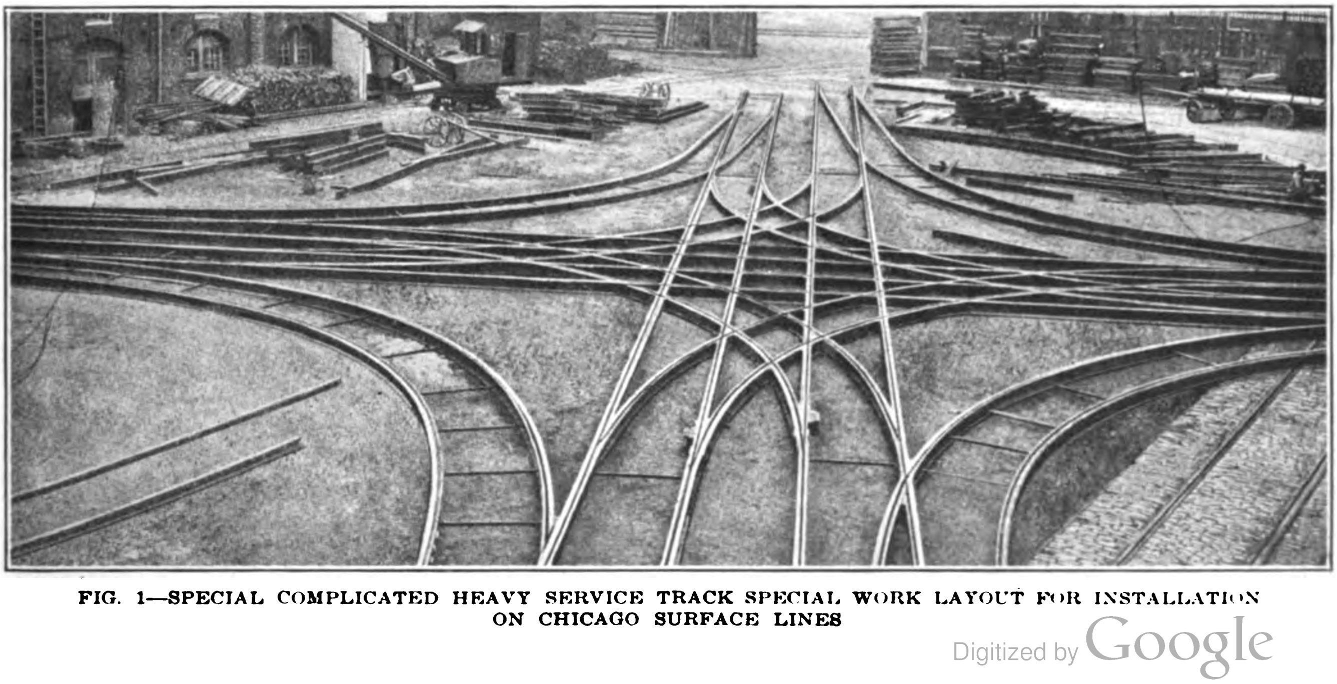


FIG. 1—SPECIAL COMPLICATED HEAVY SERVICE TRACK SPECIAL WORK LAYOUT FOR INSTALLATION ON CHICAGO SURFACE LINES

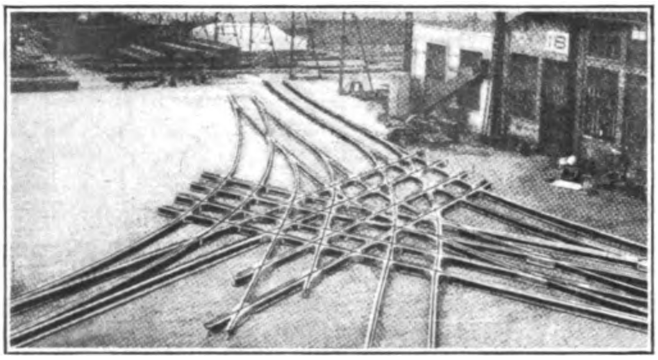


FIG. 2—COMPLICATED GRAND UNION TRACK SPECIAL WORK LAYOUT SET UP IN MANUFACTURER'S YARD FOR ASSEMBLY

from the rather meager information available, we may assume that as a rule there are from one to two layouts per mile of single track. The second item will largely determine the amount of maintenance which must be undertaken in order to keep the work in good operating condition, although the car schedules and weight of cars also have an important bearing on this item. The third item will determine the type of construction used. Large city properties usually require deep rails, heavy castings, sharp curves, tongue switches, and pavements. Interurbans usually require standard-section rails, spring frogs, split switches and little or no pavement. Combined systems naturally require both of the foregoing.

There Is a Wide Difference Between City and Interurban Special Work Layouts

The fourth item can be traced through item No. 3. City systems, especially where double tracked, have a great many complex layouts. Interurban systems, on the other hand, have very simple layouts, such as turnout ends, and long, easy, plain curves. Combined systems have their share of both complex and simple. It may be of interest to note this difference in character by comparing the complex city layouts shown in Figs. 1 and 2 with the familiar simple interurban turnout.

The fifth item in turn, shows the influence of the characteristics indicated in items Nos. 3 and 4. The complex city layouts, requiring heavy castings, deep rails, tongue switches, sharp curves and expensive pavement, naturally cost more to maintain than the more simple interurban construction where split switches, stiff or spring frogs and easy curves are used ordinarily with little or no pavement. It will be seen that repairs to special work of the city type will require the greater expense, just as it is also clear that it will require the greater outlay for original construction, not only for the work itself but also in labor cost for installation.

As to the sixth item, wheel contours and settings have a greater bearing on maintenance of special work than appears at first. On city systems, the wheel treads are comparatively narrow. (About 2¼ in. is the prevailing width.) On the other hand, interurbans or roads operating solely upon private right-of way have cars with wheel treads 3 in. or more in width. Narrow treads are particularly hard on frogs and mates because such treads will not fully span the flangeways, thus leading to rail-head cutting. To a certain extent this may be offset by the use of flange-bearing frogs.

The proper maintenance of accurate wheel setting or gage will lessen special-work maintenance. Wheels which are set or which become out of gage beyond tolerance limits will strike frog and mate points severely, will cause excessive wear of guard rails and will often

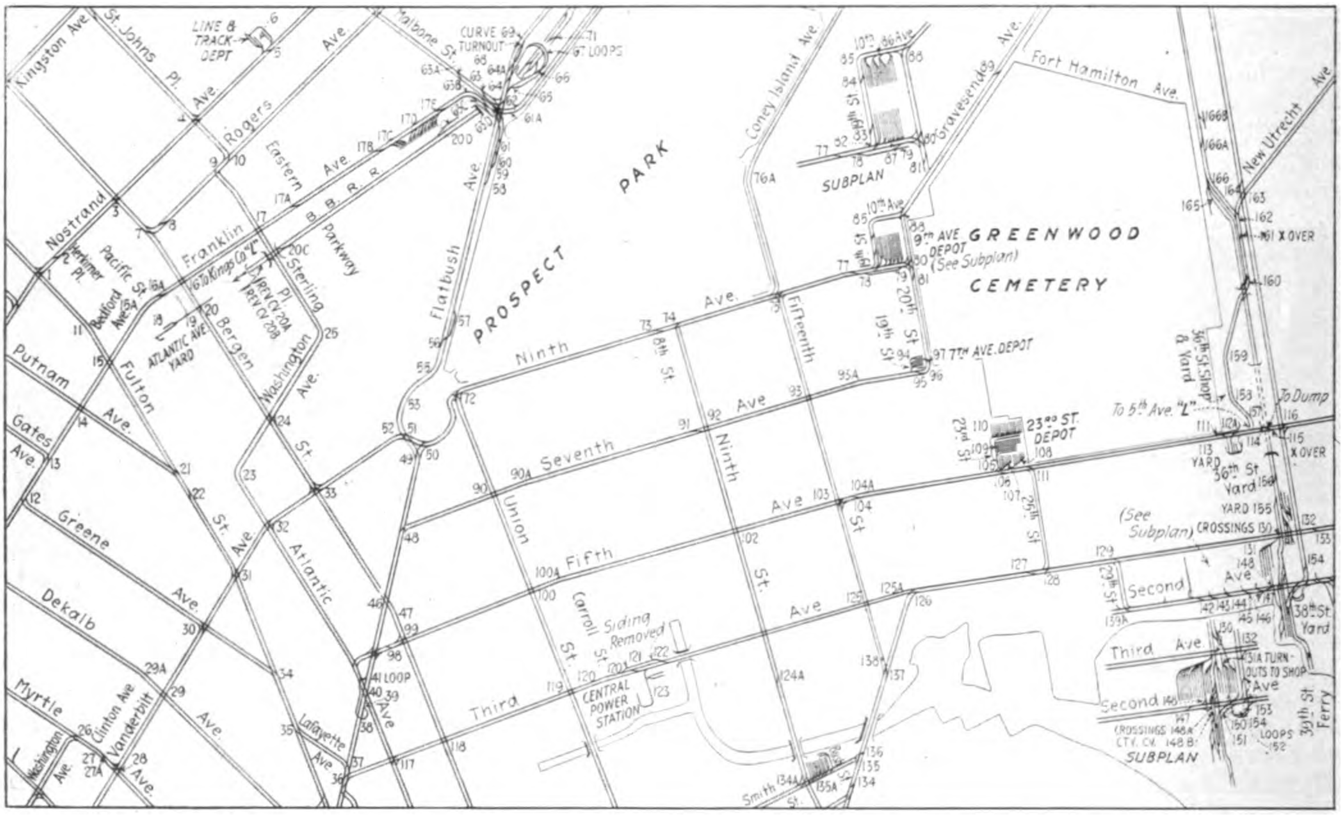
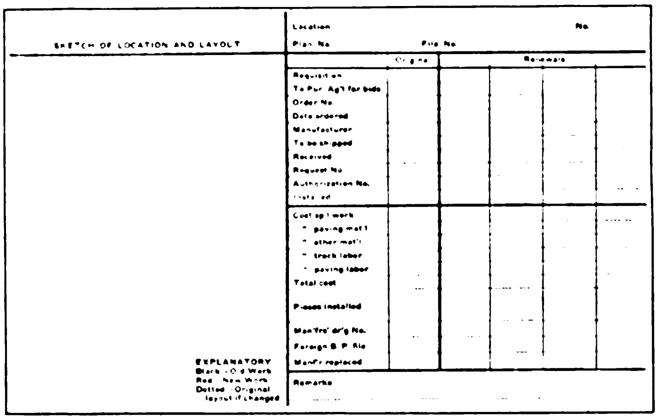

Kingston Ave
St. Johns Pl.
Ave.
LINE & TRACK DEPT
Rogers
Ave.
Malbone St.
CURVE 69 TURNOUT
67 LOOPS
Eastern
Ave.
B. B. R. R.
Parkway
Nostrand
Herkimer Pl.
Pacific St.
Franklin
16 To Kings Co. "L"
Sterling Pl.
REV. CV. 20A
REV. CV. 20B
Bedford Ave.
ATLANTIC AVE. YARD
Bergen
Washington
Ave.
Flatbush
Ave.
PROSPECT
PARK
Ninth
8th St.
Putnam
Ave.
Fulton
Gates Ave.
Greene
Ave.
St.
Ave.
Atlantic
Seventh
Union
Fifth
Carroll St.
Siding Removed
Dekalb
Ave.
Myrtle
Clinton Ave
Vanderbilt
Ave.
Washington Ave.
Lafayette Ave.
41 LOOP
Ave
Third
CENTRAL POWER STATION
Coney Island Ave.
10th Ave
15th St
SUBPLAN
Gravesend Ave.
Fort Hamilton Ave.
GREENWOOD CEMETERY
9th AVE DEPOT (See Subplan)
20th St
19th St
97 7th AVE. DEPOT
Fifteenth
Ave
Ninth
St.
23rd St
23rd ST. DEPOT
25th St
Ave
New Utrecht Ave
161 X OVER
36th St. Shop & Yard
To 5th Ave. "L"
To Dump
115 X OVER
113 YARD
36th St Yard
YARD 155
(See Subplan)
CROSSINGS 130
29th St
Second
Ave
38th St. Yard
Third Ave.
131A TURN-OUTS TO SHOP
Ave
Second
CROSSINGS 148A
CTY. CV. 148B
SUBPLAN
LOOPS 152
39th St. Ferry
Smith St.

FIG. 3—ONE SECTION OF KEY OR INDEX MAP OF SPECIAL WORK LAYOUTS ON A LARGE CITY SYSTEM

lead to costly derailments. If it is necessary to provide for more than one type of wheel contour, additional maintenance can be expected because it is almost impossible to design special work to suit different contours and at the same time satisfy the principles of correct design.

The last item refers to type, weight and schedule of cars, which influence design. For example, if it is necessary to operate both single and double-truck cars around the same sharp curves, the guard rail grooves must be ground excessively to suit the single-truck wheelbase, and more than is necessary for double-truck wheelbases. Hence the guard rails have less wearable metal in them and they will require more frequent renewal. The weight of the car, its equipment and the load carried, determine the load upon each wheel and it follows that, with a given car schedule and type of car truck, a heavy car will do more damage than a light one. On the other hand, it is believed that a very frequent service with fairly light-weight cars will cause about as much wear as a less frequent service with heavy cars.



SKETCH OF LOCATION AND LAYOUT

Location No.

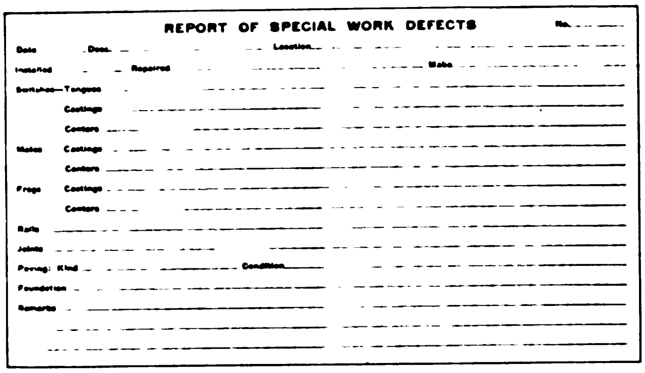
Plan No. File No.

	Original	Renewals			
Requisition					
To Pur. Ag't for bids					
Order No.					
Date ordered					
Manufacturer					
To be shipped					
Received					
Request No.					
Authorization No.					
Installed					
Cost sp'l work					
" paving mat'l					
" other mat'l					
" track labor					
" paving labor					
Total cost					
Pieces installed					
Man'f'rs' dr'g No.					
Foreign B. P. file					
Man'f'r replaced					

Remarks

EXPLANATORY
Black – Old Work
Red – New Work
Dotted – Original layout if changed

FIG. 4—CARD RECORD FOR COMPILING COSTS, ETC.



REPORT OF SPECIAL WORK DEFECTS No.

Date Dess. Location

Installed Repaired Make

Switches—Tongues

Castings

Centers

Mates Castings

Centers

Frogs Castings

Centers

Rails

Joints

Paving: Kind Condition

Foundation

Remarks

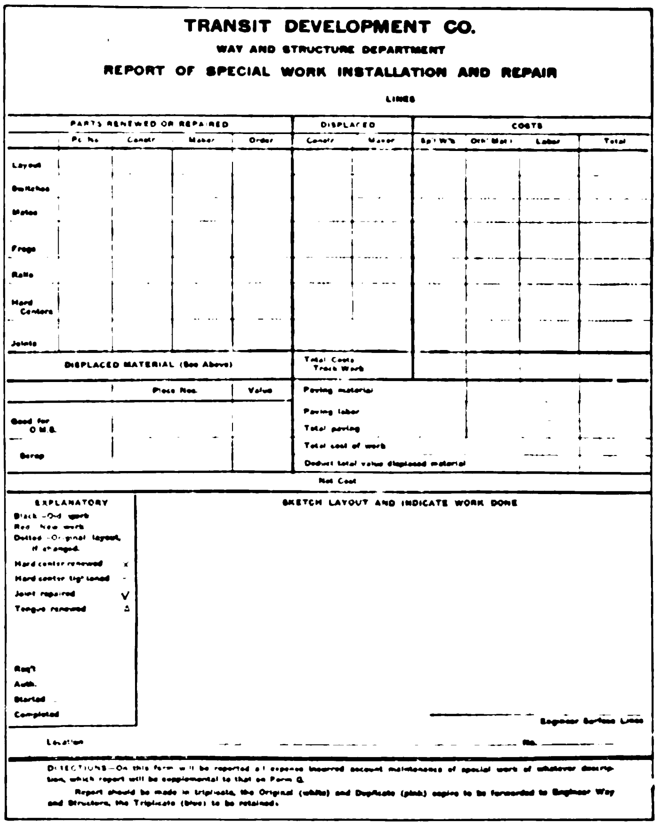
FIG. 6—FORM USED IN REPORTING SPECIAL WORK DEFECTS

Type of Special Work Also Influences Maintenance Costs

There are four general types of special-work construction, each of which has its peculiarities and requires a different degree of maintenance under equal traffic conditions. These types are: (1) Plain bolted; (2) cast steel, hard center; (3) iron-bound, hard center, and (4) solid manganese.

The plain bolted type includes both split switches and spring or stiff frogs used in open track, as well as the built-up tongue switches, open-point mates and frogs, which may be used in city work but their use determines characteristics which practically make a distinct type for each class of service. Each of the four general types mentioned has its peculiar field of service although the iron-bound hard-center type is often used under the same conditions which control the use of the solid manganese type.

There is no measure by which the performance of the various types may be compared except by installation under similiar conditions of service in a given location. Neither is there any means, except general observation, by which the service of a particular type on one road may be compared with that of another road. This will explain, to a certain extent, why the use of some one type will prevail on one road while some other type is thought best on another road.



TRANSIT DEVELOPMENT CO.
WAY AND STRUCTURE DEPARTMENT
REPORT OF SPECIAL WORK INSTALLATION AND REPAIR
LINES

	PARTS RENEWED OR REPAIRED				DISPLACED		COSTS			
	Pc. No.	Constr.	Maker	Order	Constr.	Maker	Sp'l W'k	Oth' Mat'l	Labor	Total
Layout										
Switches										
Mates										
Frogs										
Rails										
Hard Centers										
Joints										

DISPLACED MATERIAL (See Above)

	Piece Nos.	Value
Good for O.M.B.		
Scrap		

Total Costs Track Work
Paving material
Paving labor
Total paving
Total cost of work
Deduct total value displaced material
Net Cost

EXPLANATORY
Black – Old work
Red – New work
Dotted – Original layout, if changed.
Hard center renewed ×
Hard center tightened -
Joint repaired V
Tongue renewed △

Req't
Auth.
Started
Completed

SKETCH LAYOUT AND INDICATE WORK DONE

Engineer Surface Lines

Location No.

DIRECTIONS—On this form will be reported all expense incurred account maintenance of special work of whatever description, which report will be supplemental to that on Form Q.

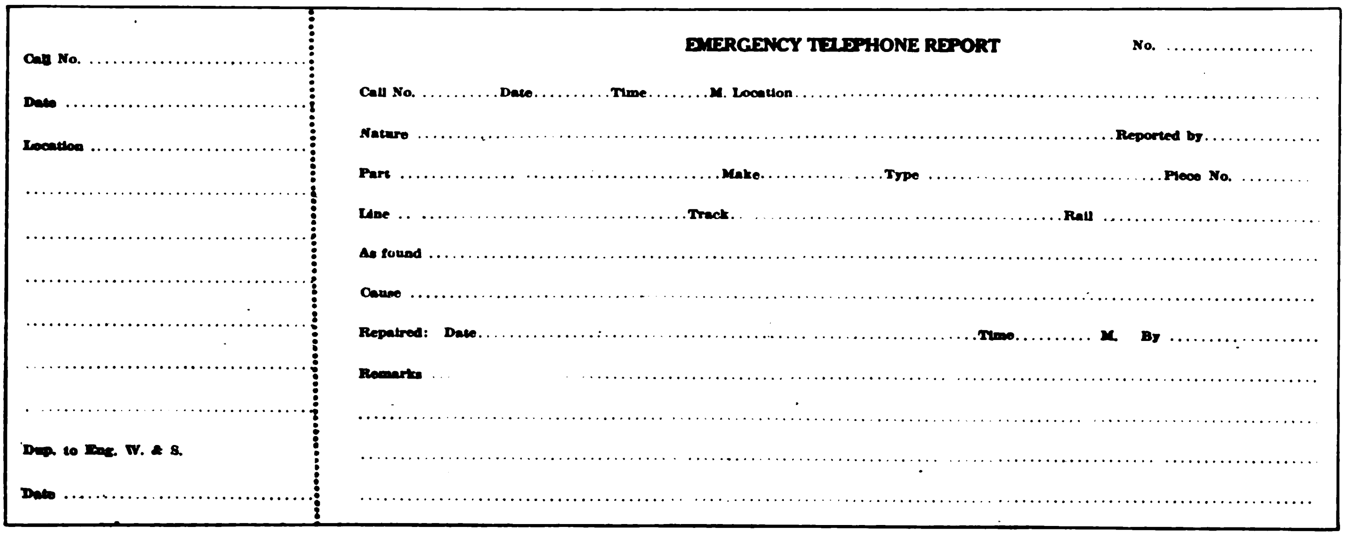
Report should be made in triplicate, the Original (white) and Duplicate (pink) copies to be forwarded to Engineer Way and Structure, the Triplicate (blue) to be retained.

FIG. 5—FORM USED FOR REPORTING ON SPECIAL WORK INSTALLATION AND REPAIR

There are as many types of hard-center fastening devices as there are manufacturers of special work. This is true also of tongue-switch construction details. Each may have merit, but as yet there is no general tendency toward settling upon a combination of the desirable features into one general type. If this could be done, there would be a great decrease in maintenance cost, owing to the reduction in the number of parts which must be carried in stock, to say nothing of the reduction in price which should come with a reduction in the number of patterns. At present, however, patents and royalties have prevented much progress in this direction, although in solid manganese layouts there is a substantial agreement in many details of construction which has been effected through the efforts of the Manganese Track Society, an association of special-work manufacturers. Incidentally, reference may here be made to two extensive articles, describing methods of fastening and maintaining hard centers, which appeared in the ELECTRIC RAILWAY JOURNAL for Sept. 19, 1914, and July 25, 1914, respectively.

Maintenance expense will, in a fair measure, be determined by the type of construction selected for a particular service and more study should be given to this selection than has heretofore prevailed. There is no doubt but that much good money has been wasted through the selection of a type not suited to the car service it was required to care for. The economical side of the question has not always been carefully considered. For instance, it has been definitely determined that one costly manganese layout may not always be as economical in a given location as two or even three less costly types of work, when interest on first cost is taken into consideration. Some interesting data on this point were included in an article by M. Bernard which appeared in the JOURNAL for Oct. 6, 1917.

Records play a large part in the work of maintaining special work. It is essential that information should be ready at hand covering such matters as location, type of construction, replacements, betterments, abandonments and costs. For the purpose of location, it is the custom to prepare a small-scale key map of the system, upon which all layouts are shown and given numbers. These numbers are used in correspondence and upon all plans, serving to identify the job even though the description by streets may be in error. When this system is in use it is a custom to have all manufacturers' plans show their numbers in addition to the company's own record numbers. Such a key map is shown in Fig. 3.



Call No. ....
Date ....
Location ....
....
....
....
....
....
....
Dup. to Eng. W. & S.
Date ....

EMERGENCY TELEPHONE REPORT No. ....

Call No. .... Date .... Time .... M. Location ....
Nature .... Reported by ....
Part .... Make .... Type .... Piece No. ....
Line .... Track .... Rail ....
As found ....
Cause ....
Repaired: Date .... Time .... M. By ....
Remarks ....
....
....
....

FIG. 7—FORM USED IN EMERGENCY REPORTING OF SPECIAL WORK DEFECTS

Further, it is a good plan to prepare drawings to a scale of $\frac{1}{10}$ in. = 1 ft., showing each layout or location, with all essential engineering data thereon, such as piece numbers, angles, lengths, street widths, obstructions, etc. These are usually made to one scale and as far as possible upon one standard-size sheet. Blueprints from these plans can be used to good advantage in the field for marking those pieces which require renewal or repairs. They save a great deal of writing and sketching, and consequently time, which is essential when getting up annual repair programs. When there are many layouts some sort of card-record system is the best method of keeping track of renewals, repairs and costs. A record card for such a system is shown in Fig. 4.

Other forms which have been found useful are those shown in Figs. 5, 6, and 7. That shown in Fig. 5 serves to notify all concerned that certain work on schedule is about to be started, calling attention to any changes in orders. Thus, also, if for some reason unknown to the field forces the work should be deferred proper instructions can be given.

Fig. 6 is a form for reporting defects, while Fig. 7 shows one used for reporting emergency defects, such as broken switches, tongues or other items requiring immediate attention. This latter form is filled in by the telephone operator who receives the report, and then it is either handed to the emergency crews, or repeated over the telephone when the crews call in for instructions.

Naturally, the use of so many report forms is not essential on comparatively small systems, where one or two department heads may have the work under close control, but upon systems having hundreds of scattered layouts forms of similar type will be found in almost universal use. It may also be noted in passing that the large systems ordinarily assign an assistant engineer or a special-work engineer to take charge of the numerous plans, schedules, records and estimates which are essential to well-ordered maintenance.

Another purpose served by adequate record systems is the accumulation of data upon the lengths of service of different types of construction in the same location. From such data it is possible to judge whether any particular type of construction is suitable for a given location and what modifications may be incorporated in renewals which will tend to improve the service given. Good records are invaluable in case of necessity for making an appraisal of a property, and for use in making charges or deductions from capital which may result from changes in type of construction.

But the best system of records ever invented, even if well kept up, will not of itself maintain the special work. It is only through constant effort and by taking the "stitch in time" that it can be properly maintained. One of the first principles of maintenance is that faulty installation will do more toward destroying the most substantial special work than thousands of cars. Good track work deserves a good foundation, and every possible precaution should be taken to see that it is secured.

Much good special work has been destroyed before its time, and the manufacturers have been blamed for its short life, whereas the blame more properly should have been attributed to lack of care on the part of the railroad company in installation and maintenance. It is common to see a complete new layout going in upon a bed of old ties. It is even more common to observe partial renewals being made on old and badly worn ties, sometimes with shims of various sorts to bring up the level. The use of special tie layouts is not so common as it should be, and the old method of interlacing ties of standard length still prevails on many roads. This may not be true in open track work where there is every opportunity for easy installation of the longer timber used in special tie layouts, but in city work the installation of ties longer than the standard length of 8 ft. is somewhat difficult, especially where traffic must be maintained, because of pavement interference. These factors are apt to make the use of special ties appear unfavorable in spite of the known fact that it is almost impossible properly to tamp ties when closely interlaced, even with a pneumatic tamper.

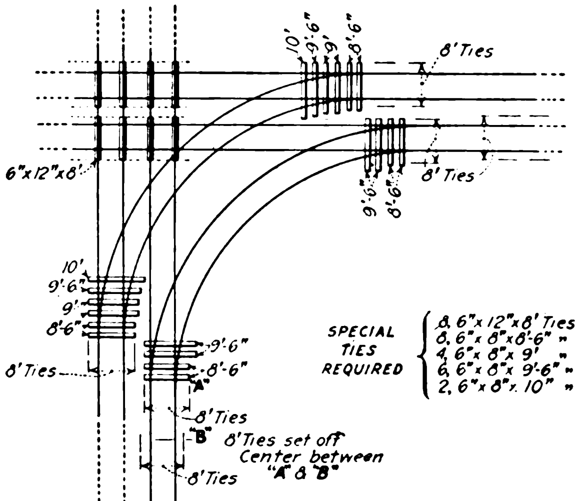


FIG. 8—SPECIAL TIE LAYOUT FOR CONNECTING CURVES AND CROSSINGS

It is possible, however, to use switch timbers, even under these seemingly adverse conditions, to an extent which will greatly benefit the stability of the installation. This can be seen by reference to Fig. 8, which is for use in renewal work where a complete special tie layout cannot be installed except at very great expense and with excessive delays to traffic. Furthermore, it is considered essential that all special work should be installed upon special tie layouts wherever possible, and as a rule only very heavy traffic conditions combined with very complicated special work will prevent their use.

The advantage gained by the use of special tie layouts is made even more evident by the results in increasing the life of railroad crossings through the installation of the special steel tie foundations. These have been rapidly coming into general use, not alone for railroad crossings but also for crossings strictly confined to street railway service. Another factor which affects the wearing qualities of special work is ballast. Many failures of special work, particularly of the iron-bound, hard-center type, both at joints and at the junctions of the centers with the rail arms, can be traced to lack of a good ballast foundation, well tamped under the ties. It is safe to say one of the chief factors in causing high maintenance expense has been the lack of use of adequate specifications for special work. Until recently there were none available except those prepared by the large companies for their own systems. Even these were not always sufficiently careful in detail to describe accurately all of the essential features. This situation often led to the acceptance of inferior material upon the lowest bid obtained by the purchasing agent, and the engineer of way had nothing but his observations to back up his claims that the special work supplied was of inferior quality.

The recommended standard specifications for the various types of special work and for materials entering into its manufacture, which were adopted by the American Electric Railway Engineering Association in 1916, represent a long step in advance. A glance through any one of them will make clear why they were needed.

FIG. 9—STOCK OF STANDARD SPECIAL WORK IN A STORAGE YARD

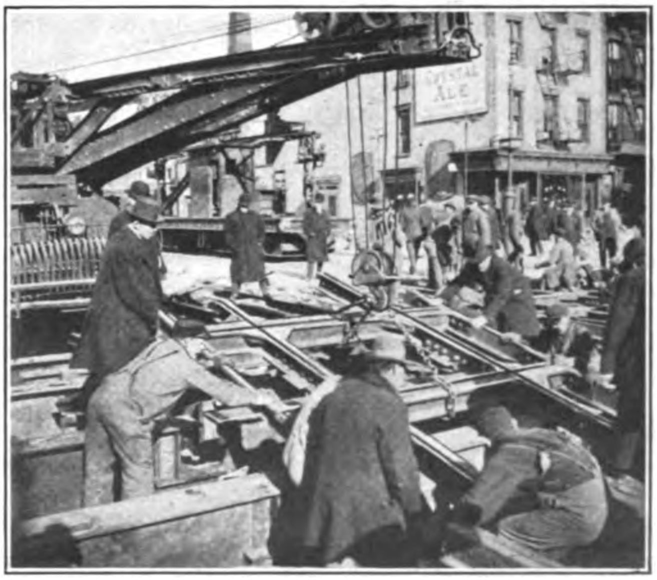


FIG. 10—CRANE CAR ASSISTING IN INSTALLATION OF HEAVY RIGHT-ANGLE CROSSING

These specifications leave nothing in doubt; every detail essential to good material and workmanship is covered and all manufacturers are placed upon the same footing in bidding under them. A more general use of these specifications by the railway companies, combined with manufacturing inspection at the plant, would undoubtedly lead to a lessening in maintenance charges.

Standardization in This Field Is Making Some Progress

The influence of standard designs on special-work maintenance is very marked. Almost every system of any considerable size has at least adopted standard engineering data, piece lengths and radii for crossovers and turnout ends. In most cases the standard lengths of switches and mates are those of the Engineering Association. The general engineering data are usually those found in the catalogs of the several manufacturers, and those data are applied to all crossovers and turnouts of the same radius, no matter by whom the work is ultimately manufactured. Simplicity is gained in this way and the number of repair parts to be carried in stock is generally reduced, while the renewal of worn parts is facilitated. In a similar manner standardization can be carried into more complicated layouts, as can be seen from the following quotation from an article by Burr S. Watters, assistant engineer of way of the Columbus Railway, Power & Light Company, on interchangeable special-work layouts. This article appeared in the issue of the ELECTRIC RAILWAY JOURNAL for May 6, 1916. After describing how the Columbus standards were designed upon standard grand unions as a starting point, including the exclusive use of right and left-hand switches of 97-ft. 7½-in. radius, of association standard lengths, Mr. Watters says: "The number of standard frogs has been cut down. * * * We have been able to obtain much better deliveries. * * * Furthermore, these standards greatly facilitate the laying out of special work. Instead of spending much time in trying to obtain the best possible design, the problem simplifies itself into determining which of the standard designs best fits the conditions imposed. These standards are also valuable because most of the pieces are interchangeable. This permits a certain number of pieces to be carried in stock, thus eliminating delays that occasionally occur in emergencies. After all of these advantages are considered, and from our experience with these standard layouts during the past five years, we feel very well repaid for our work in preparing standards, and we know that we are in a much better position to make original layouts or renewals than we were before their adoption."

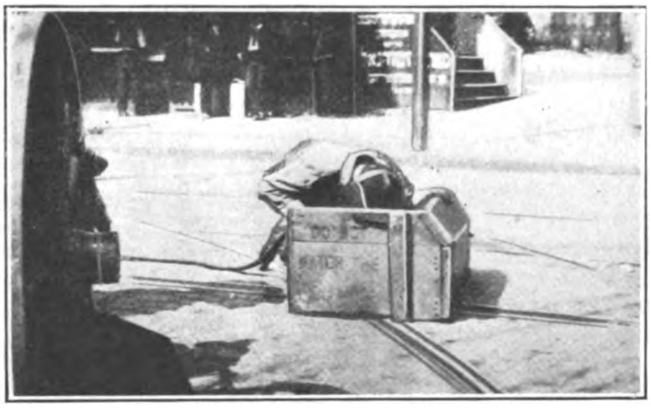


FIG. 11—USING THE ARC WELDER IN REPAIRING A FROG

It is a custom on most roads to prepare a program or schedule of the special-work renewals and repairs which will be required during the year. The preparation of such programs requires both experience and good judgment. As a rule, on the smaller systems, the track foreman prepares a list of items of work which the roadmaster checks and revises and forwards to the engineer of way. The engineer makes such inspections as he deems advisable and prepares requisitions for the material. On large systems the special-work engineer makes up this program, acting in conjunction with the roadmaster, while requisitions are prepared by the engineer of way.

Inspections under these programs are usually made annually and programs are revised to suit the individual cases at the time of making requisitions. The engineer usually prepares plans for submission with requisitions, upon which bids can be taken. Where possible, it is also a custom to order renewals and parts from existing plans, after checking details against possible changes which may be found in the field. Sometimes the manufacturers are requested to send their engineers to make the measurements. In conjunction with such programs it is also a custom to prepare a budget of the estimated cost of the entire work, which is submitted to the management for approval. Actual work is again later approved under the regular authorization procedure obtaining. In the actual work of renewals, a regular procedure is necessary and a work order system as used in Denver and described by W. L. Whitlock in the JOURNAL for Nov. 10, 1917, can well be applied. Here the foreman receives a set of instructions giving each operation in its proper order. Much of the work must be done at night, and always at great disadvantage. It is often necessary to install portable crossovers and other temporary track in order to permit the work to be done. Crane cars are a great help towards saving labor and time in this work as they readily lift the heavy parts, leaving the men free to work at actual installation instead of tiring themselves by handling heavy castings. In the absence of crane cars, a team of horses will serve the same purpose, although the speed of installation is much slower.

Arc welders and rail grinders are two indispensable tools which are used in special-work maintenance. The welders serve to build up cupped rail heads and battered frog points, while the grinders smooth down the welds after these have been completed, deepen flangeways, grind frog and mate points, and remove "fins" from switch-tongue castings.

It is desirable, in special-work maintenance, to have one or more foremen who are particularly skilled in the various operations necessary to carry on the work over which they have supervision. Many men who are good track foremen and as such render valuable service in taking charge of the usual repairs to tracks, are not necessarily well qualified to maintain special work. There are many "tricks of the trade" which a special-work foreman and a well-trained gang can apply to the work, so as to make certain that it is done properly and with a minimum consumption of time.

Applying Engineering Principles in the Design of Trucks

By *Norman Litchfield*

Some Facts About Trucks Which Should Be Understood by Every Truck Purchaser and Maintainer

THE standard types of trucks in general use to-day are of designs which have been developed partly by experimental service and somewhat by a study of engineering principles involved in the structure. By reason of the character of the work it has to perform it is a difficult matter to analyze in any complete manner the strains to which the truck structure is put. Hence even the most careful study from a theoretical standpoint must be supplemented by experiment and service. Certain fundamental factors, however, can be determined simply, and these have a large bearing on the successful issue of any design. As in the study of any structure it is necessary first to ascertain the chief external forces acting upon the truck. The conditions are quite different from those surrounding the design of a bridge truss, for example, which is stationary and has varying force applied to it through a combination of the dead weight of the structure itself, the rolling load of locomotives, cars and other vehicles, and the addition of wind pressure together with an ice and snow load. In designing a bridge structure careful attention also has to be given to the stresses which may be set up in the course of erection. These are quite different from those caused by the normal loading, and often prove exceedingly troublesome.

I don't know what you mean by bending moment, but that truck will never buckle

In the case of the car truck, on the other hand, the structure is not stationary, but instead has to be carried along at a high rate of speed over uneven rails, on poor roadbeds which subject it to continual pounding, and around curves which apply severe side thrusts and which have a tendency to distort the structure in every conceivable manner.

Eight Points to Consider in Regard to Truck Loading

Before proceeding to analyze the forces acting on the truck it will be convenient to enumerate briefly the chief factors which require study. These are:

1. The weight which is carried with the car standing straight.
2. The shifting of this weight from one side of the truck to the other by the action of centrifugal force.
3. The shifting of a portion of the load from the rear truck to the front truck by the action of the brakes.
4. A similar shifting of the load from the rear pair of wheels to the front pair by the action of the brakes.
5. The forces set up by the motor during acceleration.
6. The so-called "flywheel" effect, or tendency of the rotating parts of the truck to continue rotating.
7. The forces set up by the friction of the brakeshoes on the wheels which are transmitted to the truck structure through the brake hangers.
8. The distortional effect of the horizontal force applied to one corner of the truck by virtue of the thrust of the forward outer wheel against the rail in rounding curves.

To obtain a general idea of the manner in which these forces affect the structure, we may consider the case of a double truck with American Electric Railway Association standard axle *EC*. This axle is designed for a static load of 27,000 lb., making the total weight of the car including wheels, axles, and passengers approximately 5 tons. The other data concerning the car are as shown in the table below. With the car stationary on a level, straight track the load carried on the center plate of each truck is obviously equal to one-half the car body weight, including the maximum load. The total in the case under consideration is 58,000 lb., or 29,000 lb. per truck. In tracing out the various parts of the truck structure it is convenient and proper to start from the center plate, which is mounted directly on the bolster, which in turn rests on the elliptic springs. Under the conditions of normal loading, therefore, the truck bolster is in fact a simple beam supported at each end, with a load concentrated at the center. The distance between centers of the elliptic springs will vary with local conditions and the ideas of the designer, but may be assumed for an example to be 60 in. This gives a maximum bending moment of 435,000 in.-lb.

Passing from the bolster, the next link in the truck structure is the elliptic spring. This feature of the truck is one of some particular interest and, as its design is in itself quite a study, it will be treated separately in a later article.

Next to the elliptic spring comes the link suspending the elliptic spring from the transom, and known variously as the "swing link" or "swing motion hanger." This detail, while apparently simple, has been the source of considerable trouble on some trucks due to failure of parts not properly designed. Three general types of hangers are in use. The first consists of a continuous U-shaped strap forged fairly square at the corners; the second is also a continuous strap but it is bent to

DIMENSION AND WEIGHT OF CAR CONSIDERED

Length	50 ft.
Distance between centers of trucks	36 ft.
Wheelbase of truck	6 ft.
Weight of car body, apparatus and passengers	58,000 lb.
Weight of two trucks and motors	50,000 lb.
Weight of complete car with passengers	108,000 lb.

a radius equal to one-half the distance between the vertical legs, and the third is formed of separate vertical links forged with eyes at the bottom through which passes a pin or axle upon which rests a casting forming a seat for the elliptic spring.

As the swing links are hung from the transom the latter is naturally the next member to be considered. From thence the load is carried to the side frames and so through the coil springs to the equalizer bars and journal boxes, and finally through the wedges and brasses to the journal.

How the Weight Is Shifted on Curves

As it would be mere repetition to consider the strains in all of these parts with the normal loading, I therefore have outlined the mechanical functions of the parts of the combination and we may pass to the second condition, namely the shifting of the weight from one side of the truck to the other due to the action of centrifugal force on curves.

In an article by the writer in a recent issue of the ELECTRIC RAILWAY JOURNAL, a discussion is given of the strains in car axles. It was pointed out therein that it is customary to assume that all of the weight has been removed from the inner wheel and concentrated on the outer one through the side thrust set up by the centrifugal force or other sidewise forces.

To find the loading on the truck parts with the car tipped by action of the centrifugal force we may proceed as follows:

The weight of the car body, apparatus and passengers is 58,000 lb. It is this weight which is carried by the truck bolsters. To find the effect of the centrifugal force we must first ascertain the location of the center of gravity of this weight. The distribution of the component parts of this weight is approximately as follows:

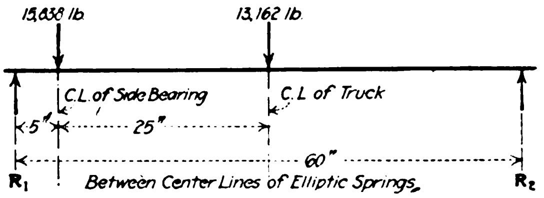


FIG. 1—DIAGRAMMATIC LOADING OF BOLSTER OF TRUCK UNDER CONSIDERATION

Car-body weight	30,000 lb.	Center of gravity 6 ft. above rail	Moment, 180,000 lb.-ft.
Apparatus on bottom of body of car, weight	10,000 lb.	Center of gravity 2½ ft. above rail	Moment, 25,000 lb.-ft.
Passengers, weight	18,000 lb.	Center of gravity 6 ft. above rail	Moment, 108,000 lb.-ft.
Total	58,000 lb.		313,000 lb.-ft.

Then 313,000 ÷ 58,000 = 5.4 ft. That is, the center of gravity of the load carried by the truck bolster is 65 in. above the rail.

It has already been shown in the axle article before referred to that the center of gravity of the total weight on the axle (27,000 lb.) is 60 in. above the rail and the centrifugal force sufficient to throw all the load on the outer rail is 12,713 lb. The proportionate centrifugal force acting on the weight carried by the bolster is, therefore,

$$F = 2 \times 12,713 \times \frac{58,000\ 4}{27,000} = 13,654\ lb.$$

The point of application of this centrifugal force is, as before stated, 65 in. above the rail. The top of the side bearings is approximately 3 ft. above the rail and the distance between center lines of the bearings is 50 in. Hence the additional load thrown on the outer side bearing is as follows:

$$F = \frac{13,654 \times (65 - 36)}{50\ 2} = 15,838\ lb.$$

As the load carried by each bolster, with everything normal, is 29,000 lb., concentrated at the center plate, this means that with full centrifugal force acting sufficiently to overturn the car, the load on the bolster would be distributed thus: 15,838 lb. on the outer side bearing and 13,162 lb. on the center plate.

The diagrammatic loading is, therefore, as shown in Fig. 1.

Here $R_1 = 6581 + (\frac{55}{60} \times 15,838) = 21,099\ lb.$

Bending moment at outer side bearing = 21,099 × 5 = 105,495 in.-lb.

Bending moment of truck = (21,099 × 30) — (15,838 × 25) = 237,020 in.-lb.

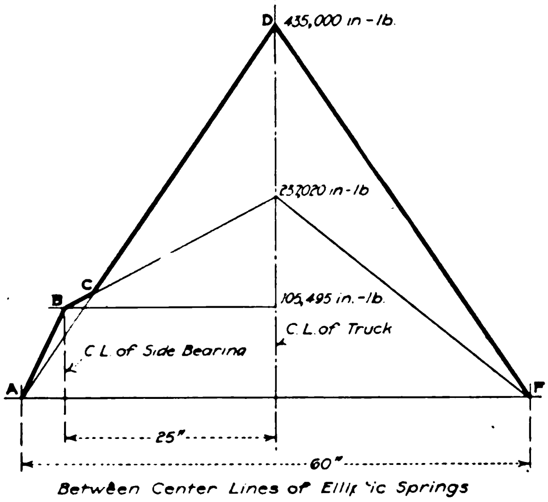


FIG. 2—COMBINED MOMENT DIAGRAM FOR DETERMINING FORCES ACTING UPON TRUCK FRAME

For convenience we may plot a combined moment diagram of the loading with the car standing in its central position and also when tipped by centrifugal force, as shown in Fig. 2. This diagram shows clearly that between the elliptic spring and the side bearing the loading conditions with the car tipped are controlling, while between side bearings the normal loading gives the maximum bending and the bolster must be designed accordingly. For those who are interested in a further detailed study of the strains in truck bolsters the writer would refer them to a very thorough article by Messrs. Chiles and Kelley, in recent issues of the *Railway Mechanical Engineer*, in which a discussion is given of the various specifications extant, and the stresses imposed by the different loadings required by different designers. This article refers, of course, to bolsters for freight-car trucks, but the reader will find it easy to alter the diagrams and calculations to suit his own passenger-truck conditions.

The authors referred to point out the fact to which the writer of the present article has previously referred, namely, the wide divergence in the conditions of loading and allowable fiber stress set down by different designers.

It will be noted that, in the set of eight factors for study enumerated herein, no mention has been made of any allowance for impact. In the case of a bridge truss this factor is ordinarily taken care of by an allowance such as given in the authoritative specification of Dr. Waddell, which is as follows:

$$I = 400/(L + 500),$$

in which L is the length in feet of the member, and I is the percentage by which the load is to be increased. Applying this formula to a truck bolster would make I equal to 400/500, or 80 per cent. Inasmuch, however, as the bolster is carried on springs which absorb a considerable portion of the blows resulting from faulty track conditions, the factor of impact is generally covered by limiting the allowable fiber stress to between 9000 and 10,000 lb. per square inch.

When Is a Rail Joint Well Bonded?

The Conductance of a Bonded Joint Is Quite Different From That of the Bond or Bonds Installed

By G. H. McKelway
Engineer of Distribution, Brooklyn Rapid Transit System

THE usual answers to the question asked in the title of this article are: "When the conductance of the bonds equals that of the rail," or "when the resistance of the joint and short lengths of the abutting rails equals the resistance of the same length of unbroken rail."

Most men giving one of these two answers will say that the two are really the same and that either could be called 100 per cent bonding.

The two answers, however, are not the same and a little thought will show where they differ. A joint with copper bonds of a cross-section just large enough so that the conductance of the strands or ribbons will exactly equal that of the rail will, if tested without the splice bars, give a result below 100 per cent conductance. This is due to some slack being necessary in the bond wire to allow for the movement of the rails, and to the additional contact resistance between the terminals of the bond and the rail.

However, it should be understood that in many cases there is a great difference between the conductance of the bond or bonds installed at a joint and the conductance of the bonded joint. This is due to the addition of the conductance of the splice bars to that of the bond. The value of the bars as conductors will frequently bring the conductance of the joint considerably higher than that of the joint alone, so that there are many "100 per cent joints" where the conductance of the bonds is much less than that of an equal length of unbroken rail.

SPLICE BARS ARE NOT A SUBSTITUTE FOR BONDS

The value of the splice bars as part of the return circuit is small and no one should get the idea that it will be possible to substitute the joint plates for bonds. This can be done only in cases where rails laid temporarily will be taken up or shifted in a short time, or sometimes on short permanent tracks such as sidings which are very infrequently used and so short that the total ground drop, though high per foot of track, will not affect operation. There is always the danger of men walking or working on the tracks receiving shocks when tracks are not bonded so that care must be taken in this work. The cost in damages when such an accident occurs would probably pay for bonding the track many times over.

Tests of the conductance of the joints are often made as soon as the bonds are installed, and perhaps a year later similar tests of the same joints are made to determine the deterioration of the bonds. All of the increased drop over the joints, as found in the second test, is charged to the deterioration of the bond contact, while probably most of it is caused by the increase in resistance of the contact between the rails and the plates, due to the loosening of the bolts and working in of rust between the plates and the rails. After the joint resistance has increased above a calculated maximum, equal to the resistance of the joint bonded but without splice bars, it is safe to assume that the bond contact has deteriorated. But before that point has been reached it is unfair to the bond to charge it with all or even a comparatively small proportion of the whole increase. It will be found that the conductance of the path through the plates will fall much faster than the one through the bonds and the latter will seldom be seriously affected until the joint has loosened up to such an extent that the bond or its contact has been damaged by the movement of the rails.

100 PER CENT CONDUCTANCE IS SOMETIMES IMPOSSIBLE

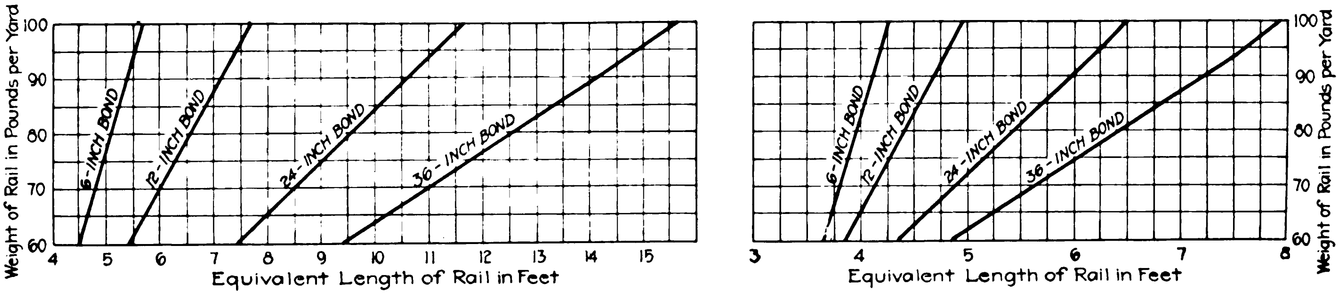
I have occasionally heard of roads having 80-lb. rails, or even heavier, bonded with one or two No. 0000 bonds where the claim is made that the resistance of the rail joints is never allowed to rise above that of 3 ft. or 5 ft. of unbroken rail. At one time a certain city official requested the company with which the writer is connected to bring the conductance of all of its joints on a certain piece of track up to the value of that of 3 ft. of unbroken rail. He quoted the measurements made by one of his engineers as showing that many of the joints were below the resistance of that length of rail. The measurements quoted were made with a Whitney bond tester where the section measured across the joint included 3 ft. of rail, so that he was asking for a minimum of 100 per cent conductance.

Owing to the poor foundation of the track in this case it was impossible to use short bonds at the joints, and the plates had to be spanned by long ones, 37-in. bonds being the shortest that could be used. After two such bonds were installed still longer ones were required to go around the shorter ones. It proved to be absolutely impossible to comply with the request if the bonds alone were relied on, as the two bonds had a cross-section of 422,000 circ.mil, as against a copper equivalent of about 800,000 circ.mil in the rail.

If the efficiency of the bond is to be calculated as it should be without taking into consideration the conductance of the joint plate it will be well to see just what should be expected of a well-installed bond. The standard bond with nearly all companies is of No. 0000 section, but the lengths vary greatly, running from 3½ in. to as many feet or more. Of two bonds of the same cross-section, but of different lengths, a joint bonded with the longer one will show the higher resistance, except with very light rail or very heavy bonds, because the section covered by the bond tester will cover not only the entire length of the short bond but some of the rail as well. The conductance of the additional length of rail will help out that of the bond.

Assume two joints of an 80-lb. rail bonded with No. 0000 bonds, one bond 12 in. long and the other 36 in. long. The path around one joint will consist of the 36-in. bond and, but for the contact resistance, will have a resistance due to 211,000 circ.mil of copper. The length measured at the other joint will be made up of 1 ft. of No. 0000 bond and 2 ft. of 80-lb. rail which has a conductance approximately equivalent to 800,000 circ.mil. The average conductance of the joint bonded with the short bond will therefore be (800,000) 2 + 211,000 ÷ 3, or 604,000 circ.mil, as against 211,000 circ.mil with the long bond.

It would appear to be an easy task to determine the resistance of a bond if its unformed length, not the distance between centers of a crimped or otherwise bent bond, is known. While this is a fact so far as the bond itself is concerned there may be a considerable difference between the resistance of the bond between the centers of its terminals and the resistance between these centers on a bonded joint. In the latter case the contact resistance between the rail and the bond terminal has to be taken into account.



GRAPHS SHOWING EQUIVALENT LENGTH OF UNBROKEN RAIL WITH SAME RESISTANCE AS BONDED JOINT
At left, one No. 0000 bond. At right, two No. 0000 bonds per joint with length 3 in. longer than distance between bond holes

There are many opinions as to what this resistance should be. The writer has collected figures from different authorities which show more than thirty different results, the highest being fifty times the lowest, the figures varying from 0.00002 to 0.0000004 ohm per terminal. When considering these differences it should be remembered, however, that they are for more than one size of terminal, the diameters varying from ⅝ in. to 1 in. Also it is very difficult to record the exact results of tests, as the contact resistance is very low so that a very small error in determining the actual resistance will make a large proportionate variation. Still another cause is the difference in the thickness of rail webs. As the webs of heavy T-rails are much thicker than those of girder rails of the same weight they furnish a much broader path for the current from the rail into the bond or vice versa.

To the writer it seems that a resistance of 0.000004 ohm for the two terminals of a bond is all that can be hoped for in practice, and this is a very low resistance for field work although lower results have been obtained in the laboratory. As this is equivalent to the resistance of only about 1 in. of a No. 0000 bond it can easily be seen that the contact resistance of a carefully compressed bond is almost negligible. However, the difference in resistance between a No. 0000 bond, or even two of them, and the resistance of the unbroken rail is so great that it will be found impossible to approach the 3-ft. limit mentioned for good bonding unless considerable help is obtained from the joint plates.

For instance, take an 80-lb. rail bonded with a single No. 0000 bond 12 in. in length, but pulled so tight that the distance between centers of the bond holes is but 12 in. The bond tester will span 3 ft. of rail, or 2 ft. of unbroken rail and 1 ft. of bond. The resistance will then be:

2 ft. of rail	0.000025 ohm
12 in. of bond	0.00005 ohm
Contacts	0.000004 ohm
Total	0.000079 ohm

This is the equivalent of 6.92 ft. of unbroken rail.

The addition of another No. 0000 bond of the same length will not cut this resistance in two as it will affect only the 12 in. covered by the bond. With two 12-in., No. 0000 bonds the resistance would be:

2 ft. of rail	0.000025 ohm
2 bonds	0.000025 ohm
Contacts	0.000002 ohm
Total	0.000052 ohm

This is the equivalent of 4.16 ft. of unbroken rail.

If a 6-in. bond were used with an 80-lb. rail the resistance of the joint would be:

2½ ft. of rail	0.0000312 ohm
Bond	0.000025 ohm
Contact	0.000004 ohm
Total	0.0000602 ohm

This is the equivalent of 4.8 ft. of unbroken rail.

A 6-in. bond is about as short as can be installed with any hope of its remaining unbroken for any length of time, but even if two of them are used with an 80-lb. rail the resistance will be as much as for 3.65 ft. of unbroken rail.

With the long bonds often used around the plates, generally from 36 in. to 42 in. in length, the resistance of the joint is much greater than it would be with short bonds, especially as the bonds are usually from 3 in. to 6 in. longer than the distance between the centers of the bond holes. With such bonds a joint resistance equal to 12 ft. of rail will often be found even when the terminals have been carefully compressed and the bond is in good condition. Thus the futility of giving any one number of feet of rail as the limiting resistance of several types of bonds is apparent.

The accompanying graphs show the equivalent length of unbroken rail that will have the same resistance as the joint if the conductance of the plates is not taken into account and if the bond tester spans 3 ft. of rail.

$860,000 of Relief—With a String Attached

Public Service Railway Through One-Cent Transfer Charge Receives Less Than One-Quarter of Desired Financial Aid from New Jersey Board—To Obtain Even This It Must File a Zone Plan by January 1

WANTED—$3,700,000 more revenue to meet increased costs of operation. Granted—$860,000 by means of a 1-cent transfer charge, upon the express condition that a plan for an equitable zone system shall be submitted to the commission by Jan. 1, 1919. This, in brief, is the story thus far of the struggle of the Public Service Railway, Newark, N. J., for a living rate of fare.

This company in March, 1918, filed a petition with the Board of Public Utility Commissioners of New Jersey, asking for increases from a franchise flat 5-cent fare with free transfers to a 7-cent fare, 2-cent first transfers and 1-cent additional transfers. In a decision just handed down, as briefly noted in the ELECTRIC RAILWAY JOURNAL of July 13, the board has affirmed its power to alter franchise rates, but it has reduced the company's financial estimates to what it considers a more "reasonable" basis and bestowed less than one-quarter of the aid desired.

WHAT THE BOARD CONSIDERS AN EMERGENCY

In considering what measure of relief should be granted to meet the admittedly more severe burdens of present-day operating costs, the commission defined an emergency in these words:

> An emergency for which a carrier is entitled to relief by a temporary emergency rate exists where, by reason of general conditions not affecting the applicant utility alone, the operating revenues are insufficient to operate and maintain its property and to pay rentals and interest on such of its securities, a default in the payment of which would jeopardize the solvency of the company.
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> During the war period and in accordance with national and state war policies, while in underwriting normal returns for public utilities we should allow rates sufficient to keep the utility solvent and in good operating condition, we must also continue our declared policy of disallowing rates, in war times, for the purpose of increasing dividends. Stockholders in such corporations must share in the burdens and hardships resulting from financial changes due to the war and cannot expect to escape wholly therefrom.

COMPANY'S ESTIMATES ARE REDUCED

The exact manner in which the commission reduced the estimates upon which the company predicated its plea for an increase of $3,700,000 in revenues is shown in the comparative table on page 116. The company's estimated appropriation for depreciation reserve, it will be noticed, was $1,188,149, on the basis of the work carried out in 1916 at the prices now prevailing. This would leave a deficit of $1,010,631 for 1918, on the estimated revenue at the old rates. For dividends, the company proposed $1,491,066 on the capital stock outstanding, equal to the amount paid in 1916, and 8 per cent on the $1,250,000 of additional stock now authorized, or $100,000, resulting in an estimated deficit of $2,601,698.

The company also estimated the annual wage increase not included in operating expenses at $635,714, and the amounts to be paid for franchise taxes and federal income taxes on the additional revenue at $257,061, making the total estimated deficit $3,494,473. After this estimate was prepared additional labor difficulties resulted in an increase in the wage estimate to $1,085,714. Based on this estimate, the additional revenue required would be $3,687,412. Accordingly, the franchise taxes and federal income taxes would be increased to approximately $292,700, making the total estimated deficit $3,980,112.

The board, however, set up estimates which appeared to it "more reasonable in the light of the operating results of previous years and the first four months of 1918." After raising the revenue and reducing the expense totals, it cut the depreciation estimate from $1,188,149 to $800,000 on the ground that this was sufficiently in accord during an emergency with the amounts appropriated to the depreciation reserve and the amounts actually spent for renewals and replacements during the last five years.

Operation on the basis of the board's figures for revenues and expenses, with no provision at all for a return to stockholders, but with the grant of $1,086,000 more wages to employees, would produce an annual deficit of $797,000. The commission estimated the additional taxes at $63,000. Thus the total amount which must be added to the company's revenues in order to enable it to meet its operating expenses, pay bond interest and rentals on leased properties, provide a reasonable appropriation to depreciation reserve and pay increased wages was estimated by the commission at $860,000.

TRANSFER CHARGE SEEMS MOST EXPEDIENT NOW

The commission decided, therefore, that the company should have approximately $860,000 of additional revenue, and its choice of method was based on the following reasoning:

> *Zone Basis*
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> This additional revenue might be secured by increasing the flat 5 cent fare now charged by introducing a zone system of charges whereby the fare should be commensurate with the distance traveled. The zoning system would tend to make the cost of the service more nearly approximate its value to the passenger and would tend to secure the maximum revenue to the operating company at the mimimum equitable cost to the passengers carried. It would also tend to make the cost per unit of service more equitable, but it cannot be resorted to to furnish emergency relief on account of the long delay that would ensue before such a system could be developed and equitably applied.
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> *Car-Mile Basis*
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> It may be suggested that the company's revenue for this emergency should be based on a study of the average revenue per car-mile adjusted to present conditions. The board does not consider that this method is logical or feasible. The cars in thickly populated traffic centers are usually crowded to capacity at certain hours and the revenue per car-mile in that portion of the line is high. As the car proceeds and the suburban area is reached or passed, the load becomes very light. If the company were allowed a uniform revenue per car-mile, the total cost per car-mile

(which does not vary largely in percentage) would be assessed on the few remaining passengers and would make the cost of the service so largely exceed its value that the method would fail by reason of such high cost to the passengers.

Transfer Basis

The company estimates that a charge of 1 cent for each transfer issued on a base fare of 5 cents will provide approximately $850,000 of additional revenue a year, which is substantially the amount of additional revenue required. By making a charge for transfers the additional revenue now required can be promptly secured. At the same time the additional burden will, in general, be carried by the long-haul passengers since as a rule the average total length of ride by passengers who use transfers (including the ride on the cash fare and the ride on the transfer) is longer than the average ride of passengers not using transfers. The transfer charge seems to be the best applicable in the present case, and we have accordingly adopted this method.

ZONE SYSTEM SHOULD BE STUDIED

While the board did not consider the zone system a proper means for emergency relief in the case of the Public Service Railway, it indicated thus its support of this plan for future adoption:

Numerous witnesses produced by the company clearly indicated their opinion that the flat fare system is an inheritance from horse-car days and is in no sense a scientific or proper charge for the service rendered. While the board's power to increase railway fares despite the existence of a municipal ordinance specifying the maximum fare to be charged has been sustained, an important question would arise as to whether we would countenance a horizontal raise of the uniform 5-cent rate without an investigation of the nature and the extent of the service rendered for the fare charged and all the elements involved therein. The charge for the service does not bear any fixed relation to the service. Under the present existing 5-cent uniform rate, some passengers are permitted to be carried a considerably greater distance for the same rate than other passengers. This may unduly discriminate against the short-haul passenger or short-rider, and any horizontal increase in the flat rate would further exaggerate this discrimination.

The witnesses for the company further testified that in the event of a horizontal increase in fares it was reasonably certain that the traffic would diminish by from 15 to 20 per cent, and that this loss of traffic would be the short-haul traffic, for the reason that most of the short-riders in cities would walk rather than use the cars at the increased fare.

If the intimations of the company are correctly interpreted, we can expect with the advent of normal times after the war an application for a readjustment of fares. The matter as to the method of raising revenue and adjusting rates having been so fully discussed in the present application, we are of the opinion that it would not be remiss for us to suggest that the company make a comprehensive study of the question for future use. It is important to the public as well as to the company that the short-haul traffic business should be retained. Such business may be the determining feature which will make possible a general reduction of fares, inasmuch as the best method of development is clearly to retain a low minimum fare. The necessity for modification of the fares being admitted, some method can certainly be devised by a proper study of the company's system. While the system is extensive, covering nearly 1000 miles of track, it is separated and operated in six divisions and is capable of a practical zoning system.

INCREASE IS GRANTED CONDITIONALLY

In allowing the company to institute a charge of 1 cent for transfers on Aug. 1, the board stipulated that the sum of $1,086,000 must be appropriated toward any wage increase granted by the War Labor Board, since this amount was allowed in the calculation. Moreover, $800,000 must be reserved for depreciation and not used for any other purpose. Then, since the transfer charge is purely an emergency one, it is said to be effective subject to a written acceptance before July 24 of these conditions:

HOW THE 1918 FINANCIAL ESTIMATES OF THE PUBLIC SERVICE RAILWAY AND THE BOARD OF PUBLIC UTILITY COMMISSIONERS DIFFERED

			Company's Estimate	Board's Estimate
Revenue from transportation			$18,418,783	$18,434,000
Revenue from operations other than transportation			465,200	600,000
Total operating revenues			$18,883,983	$19,334,000
Operating expenses and taxes (depreciation not included)			13,752,720	13,010,000
Net operating revenue			$5,131,263	$6,024,000
Income from other operations			12,000	11,000
Total operating income			$5,143,263	$6,035,000
Non-operating income			200,000	220,000
Gross corporate income			$5,343,263	$6,255,000
Income deductions (interest on funded debt and rentals)			5,165,745	5,166,000
Balance available for depreciation, dividends and surplus			$177,518	$1,089,000
Appropriation to depreciation reserve			1,188,149	800,000
Balance			§$1,010,631	$289,000
Dividends:				
Capital stock outstanding	$48,750,000			
Earnings in 1916		$1,491,066		
Additional stock now authorized	1,250,000			
Earnings at 8 per cent		100,000	1,591,067	....
Balance for the year			§$2,601,698	$289,000
Annual amount of wage increases necessary and not included above			† 1,085,714	†1,086,000
Deficit			$3,687,412	$797,000
Amounts to be paid for franchise taxes and federal income taxes if additional revenue required is allowed			292,700	63,000
Total deficit			$3,980,112	$860,000

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§ Estimated in proportion to company's original estimate.

† Revised estimate due to increased wage scale ($635,714 plus $450,000)

(a) The company shall promptly file with the board for each calendar month, beginning with June, 1918, as long as this surcharge is added to its schedule of rates, a statement giving the total amount of wages and salaries paid, duly classified by character of service rendered to the company, and the rates per hour, day or period for which the wage or salary is payable, likewise classified, and indicating any change in classification of employees and the wage rates resulting therefrom.

(b) The company shall likewise file with the board for each calendar month, beginning with June, 1918, a complete comparative income statement for 1917 and 1918 of its operations showing revenue and revenue deductions, classified in accordance with the uniform system of accounts for railway utilities (first issue) prescribed by the board, together with mileage, traffic and miscellaneous statistics as required in the annual report to the board.

(c) The board will retain jurisdiction of the emergency or war surcharge, for the purpose of modifying or abrogating it as and if the conditions change.

(d) The company shall file or submit to the board before Jan. 1, 1919, a plan whereby the method of charging at present in force may be revised by an equitable zoning system over its entire territory, proper consideration being given to all of the elements to relate more properly the cost of service to the length of haul and the value of service.

In the course of its remarks the commission alleged that in 1917 the amount which should have been

(Continued on page 115)

The Industry Is Facing More Serious Problems

Mr. Mortimer Doubts That a Fair Return Can Be Earned Under the Flat-Fare System and Urges the Industry to Adopt an "Economically Sound Method" for Stimulating Short-Haul Convenience Travel—Says Public Ownership Should Not Be Fought

A THOROUGH student of fundamental electric railway economics, and at the same time a keen observer of practical conditions and tendencies in the industry—such is James D. Mortimer, president North American Company, New York, N. Y. Mr. Mortimer has heretofore contributed much to the thought of the industry, and when he recently reurned from an extensive trip to the Pacific Coast, it seemed to the ELECTRIC RAILWAY JOURNAL that the moment was opportune for comments from him in regard to his impressions of the general utility situation—North, East, South and West.

Mr. Mortimer has frankly responded to the request of this journal, and his opinions will be set forth in this article. He feels that as one travels through the country or reads the press reports of what is occurring in various cities, he cannot do otherwise than conclude that electric railways are facing problems so serious as to threaten in the long run their permanency as a means of ransportation. The situation calls for a free discussion of the facts and tendencies. No false ideas of protection of market prices of securities should obscure the facts.

The Existing Conditions Are These

The present conditions in the electric railway industry, as they appear to Mr. Mortimer, may be summarized in this manner:

1. There has been no appreciable expansion of electric railway facilities in the last five years. It has been recognized by investors that the business is one of decreasing returns, subject to great hazard and accordingly uninviting for the investment of capital. Betting on a horse race was comparatively safe compared with the stability of electric railway net earnings. There has been no evidence of such a change in the public attitude toward the railways as suggests that private capital will again renew its interest.

2. Jitney competition sprang up, and about the time that it began to wane the industry was hit with the first of the rapidly increasing costs of operation, following the commencement of the war in Europe.

3. Many electric railways have sought the protection of the courts, and others are in imminent danger of receivership. Their earnings have been inadequate to meet interest charges, and they have lacked credit upon which to finance maturing obligations. Little has been done by the public authorities to rehabilitate such credit.

4. In cities where shipbuilding is in progress, the proper transportation of shipyard workers has become impossible. The railways lack, and have no means of procuring, the money with which to extend facilities for this important work. In other cities where war industries are active, cars are more heavily loaded than ever before. In only a few cases have any of the obvious and economical palliatives been applied.

5. The public is generally aware of the increased costs of electric railway service, and it is generally reconciled to the payment of any increased fares which the public authorities may say are fair.

6. But regulation where it exists has broken down. Where it does not exist, the public authorities have generally been afraid to assume the responsibility of allowing the public to pay the railways the increased revenues to which they are entitled. In one instance, where the franchise contract between the railway and the city provides for automatically increasing the fares under specified conditions, the municipal officials have resorted to the courts to prevent or delay the needed and agreed increase in fares. The moral and ethical standards of local administrative bodies have not been chastened by war experience.

7. Regulation first completely demonstrated its failure in Massachusetts. Its failure was forecast in other states when the character of the personnel of the commissions began to decline and when the members began the attempt to right the fancied wrongs of ages gone by. They lack courage; they wish to experiment; they delay action while the deficits multiply.

8. Organized labor has not co-operated to the full practicable extent in assisting railways to adjust their revenues to the increased costs. Organized labor has been fearful that its advocacy of higher revenues might cause public opinion to be directed against it. But labor has been insistent in its demands for higher wages. To the extent that these are necessary to compensate for increases in the necessary cost of living, labor is entirely justified. But labor has a part which it should play, and it has rather consistently declined to play it.

(Concluded from page 114)

credited to the depreciation reserve was cut to the extent of more than $500,000 to permit the payment of dividends. This it characterized as a wholly unjustifiable act and a violation of the paramount duty of the utility. If earnings do not permit a proper reservation for depreciation and also a fair return upon the used and useful property, the remedy, in the board's opinion, is not a reduction of the depreciation allowance but a prompt application to it for relief.

In regard to the rentals paid by the Public Service Railway for leased lines, the board took cognizance of the criticisms made by the opponents of a fare increase by remarking that under long-term leases utilities can secure returns to which they may not be entitled, and the abuse of leases is more marked where the lessor and the lessee are so co-related as to be practically under the same control. The board believes that to secure the complete advantage and benefits of regulation all charges should be carried as far as possible directly by the operating utility.

The sanctity of the union has been placed above the solvency of the employer.

9. Many increases in fares have been authorized. On urban lines these have usually taken the form of an increase in the flat fare. The increase in revenue has not been in proportion to the increase in fare. A 20 per cent increase in the rate has usually shown an increase of 8 to 10 per cent in revenue. There has been a relative decrease in the riding habit. The decreases in the number of passengers carried will be found to occur largely, if not entirely, during the non-rush hours. Convenience travel has been reduced. Operators of railways with 6-cent fares, observing the ill effects of the higher unit fare, realize that a new fare scheme must take the place of the time-honored American system.

"New occasions teach new duties,
Time makes ancient good uncouth;
They must upward still and onward
Who would keep abreast of truth."

1. Unit fares higher than 6 cents are economically unsound. A new fare scheme for American electric railways is necessary in the interest of preserving their place among the transportation media of the cities. No scheme of fares should be adopted that will reduce short haul and "convenience travel" or that will encourage competition. If the ride for a single fare could be sufficiently shortened, a return to the nickel unit would be desirable.

2. Public ownership of electric railways should not possess the terrors for investors that have heretofore been assigned to it. Much good may come from the advocacy of public ownership. It will at least destroy a popular issue among the politicians, and the electric railway operators need not think, because they advocate it, that public ownership is likely to become any more popular. They should have measured by this time the kind of reaction that their expressed opinions make on the public mind.

3. The electric railway industry is facing a crisis which calls for the exercise of new methods and a departure from the old principles that so far have guided it into the difficult position where it now finds itself. Is this fact generally recognized, or is the industry gradually to be forced into complete financial and economic bankruptcy?

JAMES D. MORTIMER.

10. The inadequate revenues on American urban railways have been due, not so much to the fact that the unit fare was too low, but rather to the fact that traffic was being carried too far for the fare paid.

11. The statutes of many states prevent any adjustment of present fares. Until new legislation can be enacted or the federal government exercises its wartime power, the railways will have to continue to operate with losses.

Mr. Mortimer said that he had observed some tendency on the part of urban electric railway operators to propose unit fares higher than 6 cents. If the total required revenues are divided by the number of passengers carried, an 8 or 10-cent fare may be readily justified by the arithmetic operation. But, in his opinion, continuation along this line of reasoning may well prove disastrous to the industry. The suggestion of 7, 8 and 10-cent fares may be a proper method for forcing some other fare system, but its realization in practice is not desirable. The reasons for this he stated as follows:

"A 10-cent fare is almost certain to cause the restoration of automobile carrier competition on hauls of 3 miles or less. Laws or ordinances heretofore passed restricting automobile competition can be readily amended or repealed, and the permanent effectiveness of the present laws and regulations cannot be relied on—it should be guaranteed by sound economics. It would be unwise to adopt any system of fares which would encourage the restoration of competition. If this competition again springs up, it is much more likely to have a longer life.

"Competition would, through the diversion of traffic from the street cars, require still higher fares until the point would be reached where the cars had lost all their business, including even their long-haul traffic. Then the electric railways would have no substantial place in the transportation scheme except as other methods of transportation would overcrowd the streets of most cities. The present tendencies are toward a most unstable and hazardous condition. But the good sense of the electric railway industry will return before that time comes. Its attention needs only to be called to the danger toward which it is heading to cause it to change its course."

The fundamental point, Mr. Mortimer averred, is that urban electric railways need more traffic rather than less. They need this traffic during the non-rush hours, when they have ample equipment and track facilities to care for it. The largest amount of "convenience travel" takes place during these non-rush hours, and it is generally of short haul. A stand-up ride during rush hours cannot as a rule be classed as "convenience travel."

Unit fares involving the payment of more than 5 cents are destructive to convenience short-haul traffic. A 6-cent ride is paid for by the payment of a nickel and 1 cent, or by a dime with 4 cents change. The 4 cents remaining out of a nickel have less value psychologically than 80 per cent of a nickel. In many instances a 6-cent ride accordingly has an apparent cost higher than the actual cost. To walk a short distance then appeals to many passengers as the saving of 10 cents.

Hence, Mr. Mortimer believes, if a new fare scheme is to be adopted, the industry should try to design it so that the short haul "convenience travel" will be attracted. The more traffic carried during these hours, the more frequent will cars have to be run, and frequent service encourages short haul "convenience travel"; the effect is cumulative. Continuing, he said:

"Some early electric railway executive said that straphangers pay dividends." No greater untruth has ever been stated. The remark has been handed down as an economic principle. It was seized as a battle-cry by politicians desirous of securing labor votes, and it has had its effect in promoting lower fares for workmen. But low fares during rush hours tend to promote peak travel. Peak travel increases investment, results in a heavier standing load and contributes to the general dissatisfaction directed against electric railway service.

If travel were uniformly distributed throughout eighteen hours of each day, a seat could be provided for each passenger, lower fare for the same distance made effective or passengers hauled a longer distance for the same fare, and electric railway service operated with only a small part of the dissatisfaction now so prevalent. Uniform travel is, of course, the limiting case and cannot be achieved in practice, but it is suggestive of tendencies."

NON-RUSH-HOUR TRAFFIC CAN BE PROMOTED BY LOWER UNIT FARES

In Mr. Mortimer's opinion, short-haul "convenience travel" should be promoted by the railways, even to the extent of establishing lower tariffs effective only during the non-rush hours, when working out a new fare scheme as a result of present conditions. The differential in fare between rush and non-rush hours required to cause a substantial flattening of the rush-hour peaks cannot be computed or even estimated, but it is believed that the cost of electric railway service is an item so small in the family budget that any change in price of service would not cause a heavy readjustment in the hour of factory and store closing. The greatest advantage of low tariff fares during non-rush hours would come from the cumulative effects of increased convenience riding and increased service that might be possible thereby.

PUBLIC OWNERSHIP SHOULD NOT BE OPPOSED

Turning to another subject, Mr. Mortimer stated that no electric railway should oppose ownership by the state. In expanding this idea he said:

"State ownership may do violence to our preconceived notions of sound economics and politics. Our troubles in the future may be lessened by inviting it now. Virtual state ownership has been the solution of some of the most difficult situations in Massachusetts, and the early invitation of state or even municipal ownership might have avoided municipal competition in some situations where it is now producing distressing results for the railways that pioneered in the community. It is most unwise for any utility to suggest by implication that it is fearful of the results of municipal or state ownership.

"All talk about the wasteful methods of state operation falls on a majority of deaf ears. If a utility opposes public ownership, it encourages its advocates. Were the utility to advocate state ownership, the socialists and progressives would be deprived of an issue, and an issue is far more useful to the politician than its realization. Many public ownership projects have been forced upon politicians to make good on their representations, and others have come from the reaction of some real or fancied grievance against the existing utility.

"If electric railways are to be publicly owned, however, they should be owned by the state rather than by one or more municipalities. The better and larger electric railways are inter-city, and their problems and economic structure affect portions of the state rather than one community. Unjust discrimination between cities and towns is a patent possibility with a system owned by the largest municipality or divided up among several."

When asked what the development of the near future should be, Mr. Mortimer replied:

"The coming sessions of the various state legislatures will see many bills introduced, designed both to permit and to prevent relief from being granted to electric railways. In this forthcoming legislation it is desirable that all the restrictions heretofore imposed upon the rate of fare being either above or below 5 cents be removed. The requirement that there be a universal fare good for a ride from any part of a municipality to any other part is not in line with the requirements of the times and does not accord with sound economics. Moreover, the opportunities for public ownership of electric railways should be unrestricted except for the requirements of sound finance and accounting methods."

The Slogan for Car Repairs—"Do It Right—Do It Now"

Shop Foremen Should Check Carefully All Work Done Under Them and Make Certain That No Temporary Repairs are Resorted To

BY J. J. SINCLAIR
Assistant Engineer of Car Equipment, New York Municipal Railway Corporation

IN DESIGNING electric railway cars and their equipment the engineers of the operating company and manufacturer devote a great deal of consideration to the materials which enter into the structure of the car or apparatus. They consider the strength and character of the materials and the advisability of their use in connection with the particular functioning of parts. This is followed by a close inspection to insure that the material is used as called for in the specifications.

After the engineer has calculated the various strengths of materials and the inspector has carefully checked the materials used to insure compliance with specifications, the management has every right to expect that as long as the worn parts are properly replaced all danger of breakage of vital parts which may cause serious accidents will be avoided. Parts which are worn, broken, or seriously reduced in capacity should be replaced at the proper time. It should be the aim of every man in charge of the maintenance of this equipment to make repairs at once upon inspection where in his judgment replacement is advisable. Such replacement should never be made with a temporary arrangement. In other words there should be no procrastination in connection with the work of inspection and maintenance of the equipment, as disastrous results are almost sure to follow such procedure.

In order to carry out inspection and maintenance of the equipment with a definite policy for immediate action it is absolutely essential that those having supervision of maintenance and inspection shops spend a considerable portion of their time in looking over the work of the sub-departments, to see that it has been carried out in a thorough manner. When a railway company selects a supervisor for maintenance and inspection work, considerable care is used to see that he is a man of judgment. After the selection has been made, the company relies very largely upon him to see that adequate repairs are made at the proper time. In checking the performance of work he should proceed according to a definite schedule, with a positive system, so that maintainers or overhaulers of equipment will realize that every care must be taken by them to see that all details are covered before equipment leaves their hands for final check. Then there is no reason why a car, when placed in service will not operate in a satisfactory manner, providing that it has been properly designed for the service which it is called upon to perform.

SERVICE CONDITIONS DETERMINE ELECTRICAL EQUIPMENT SPECIFICATIONS

There are many little points which need constant consideration and immediate attention to keep equipment in the full state of efficiency, some of which may be worth mentioning here.

In order to get normal service as well as emergency service from equipment which has been properly selected it is necessary that the various parts which go to make up the equipment be properly assembled, that all switches be properly lined up, that contact fingers be given proper adjustment, that circuit breakers be properly adjusted so that they will operate as safety valves in cases of overload and that fuses and fuse clips be set so that full rated capacity may be obtained.

When equipment is received it is inspected to make sure that the details have been properly covered by the manufacturer and that the equipment is in proper condition to be placed in service. After a time various parts will become worn. Inspectors should be impressed with the importance of looking ahead and anticipating trouble with these parts by at once removing any that are dangerously worn or broken and making the replacement in a thoroughly workmanlike manner. They must follow the policy of "doing it right and doing it now" rather than wait until a short-circuit from some improperly adjusted finger or temporary repair occurs, with the consequent delay, risk and criticism.

Circuit breakers should have, above everything else, the most scrupulous attention. They must be kept in proper adjustment and set to operate on overloads in accordance with outstanding instructions. Contact tips and boxes, and tripping and latching mechanism must be kept in good condition in order that when the breaker is called upon to function and protect remaining parts from short-circuit it will be ready. It should be considered as part of the safety apparatus of the car.

As an extra precaution against severe short-circuits in cables or other parts of the equipment, cars are equipped with main fuses. These fuses have a definite capacity rating. Fuses of definite capacity are selected for certain classes of equipment to perform a definite service, and it is absolutely essential that the terminal clips be kept in a normal condition and that the wires soldered into the terminals should have good, substantial contact. Often an inspector in looking over a fuse and finding terminals loose or wires improperly connected will make a temporary connection with the idea that the first time the car is brought into the shop the repair will be made permanent. This practice is wrong. A car may give trouble within five minutes after it leaves the shop with vital parts connected in such a temporary manner. That particular fuse would no doubt heat up without proper terminal connections and its capacity would thereby be reduced so that it would "blow" under normal operating conditions, causing delay to service or possibly serious accident.

In purchasing the airbrake equipment for any car, careful consideration is given to the brakeshoe pressure on the wheels, so that when the motorman applies his brakes he will stop the car under the most advantageous conditions and without sliding the wheels. After a motorman has been operating a car with the brakes properly set he can determine very closely what his stopping distance will be with a certain application of the brake.

Unless this equipment is maintained in normal condition, practically the same as when the car is first turned out from the construction shop, this braking distance will vary considerably with the varying condition of the part of the equipment which affect the final brakeshoe pressure. For that reason it is of the utmost importance that inspectors take every precaution to repair at once any leaks in the brake piping, packing leathers of brake cylinders, brake valves, etc. Under no conditions should a car be permitted to leave the shop when leaks are known to exist which will affect the braking power of the equipment. Under no circumstances should a temporary connection be made to permit such car to leave the shop.

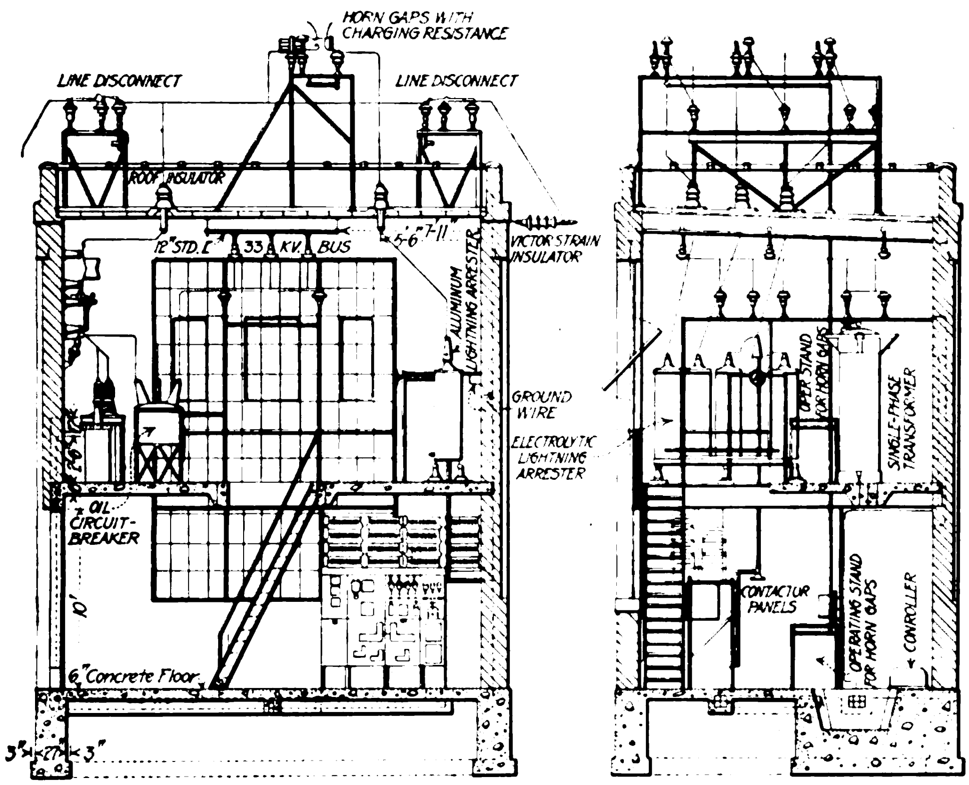
Space Saved by Double-Deck Arrangement in Automatic Substation

Features of Construction and New Equipment Which Reduce Cost and Improve Operation in Iowa Ry. & Light Co.'s New Substation

AN AUTOMATIC substation which the Iowa Railway & Light Company has recently placed in service for the purpose of feeding a section of its interurban railway lines, contains several distinct features in substation design. The building itself is of double-deck construction, and all space is economically utilized. The high tension lines coming to and leaving the station are dead-ended on suspension insulators attached to the building walls instead of the more general plan of ending them on pin-type insulators attached to the racks. The section switches and lighting arrester horn gaps are on the roof. The transformers, lightning arresters and oil switches are on the second floor. The rotary converter and all control equipment, including the handles for operating the section switches and arrester charging equipment, are all on the ground floor, which reduces the amount of stair climbing. The direct-current feeders leave the station underground. The building occupies a space measuring only 25½ ft. x 21½ ft. outside and aside from the economies resulting from the use of shorter copper leads, a considerable saving was effected in its construction over similar buildings.

Other features of the station include the use of a new type of flash-over-proof rotary converter rated at 500-kw. and insulated for 1200 volts, although now operating at only 600 volts. Extra lightning protection was provided by placing aluminum cell lightning arresters on each of the two outgoing 600-volt lines as well as on the direct-current bus. An endeavor was thus made to provide a bypass for the lightning that will be sure to stop it before it enters the control equipment.

Another feature is the method of connecting various sections of the grid resistors by short pieces of bus.


HORN GAPS WITH CHARGING RESISTANCE
LINE DISCONNECT
LINE DISCONNECT
ROOF INSULATOR
12"STD. I
33 KV. BUS
5'-6"
7'-11"
VICTOR STRAIN INSULATOR
ALUMINUM LIGHTNING ARRESTER
GROUND WIRE
ELECTROLYTIC LIGHTNING ARRESTER
OIL CIRCUIT-BREAKER
10'
6"Concrete Floor
3½"
27½"
3"
OPER. STAND FOR HORN GAPS
SINGLE-PHASE TRANSFORMER
CONTACTOR PANELS
OPERATING STAND FOR HORN GAPS
CONTROLLER

DETAILS OF AUTOMATIC RAILWAY SUBSTATION

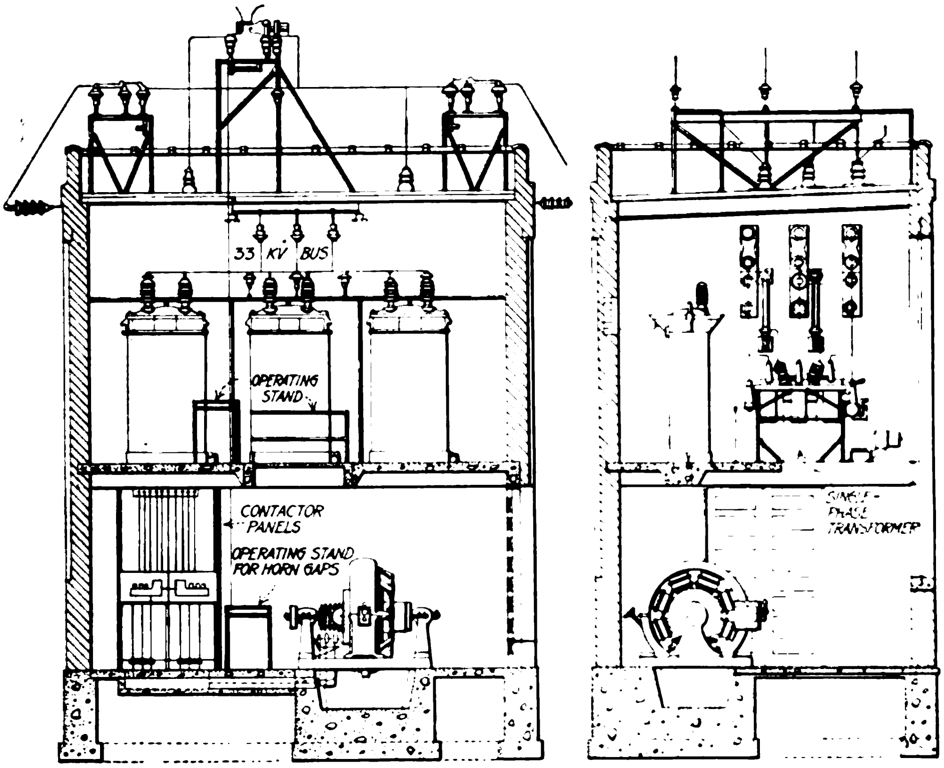
copper instead of pieces of cable. This method of construction saved considerable time in the original installation by simplifying the soldering of the different connections. They will also be much easier to maintain than cable connections.

The drum controller which actuates the contactors of the automatic control is of a new type having the spindle horizontal instead of vertical. The method of bringing the operating handles of the section switches and the lightning arrester charging equipment down to the ground floor level to reduce the amount of stair climbing and to keep employees away from the high-tension equipment is also of interest.

A special feature in the alternating-current control apparatus is the use of a new type of quick-opening relay. Another new piece of equipment which will probably be tried out after the substation has been in operation for a time is a time-limit device designed for controlling the starting of the station under such abnormal conditions as might be imposed upon it by the operation of a work train in the near vicinity of the substation.

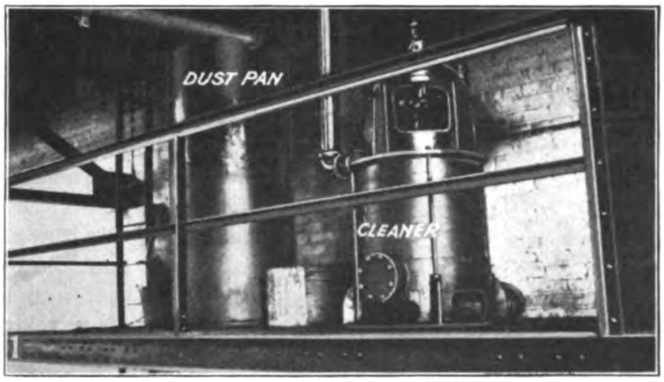
From the accompanying drawings of the station it will be observed that apparently no provision has been made for handling the transformers within the building. There is, however, a standard 12-in. I-beam in the ceiling of the top floor located immediately over a grating in the floor of the second story. By attaching a large chain hoist to this I-beam it is possible to lower any transformer to the ground level where it may be removed from the building through large double doors.

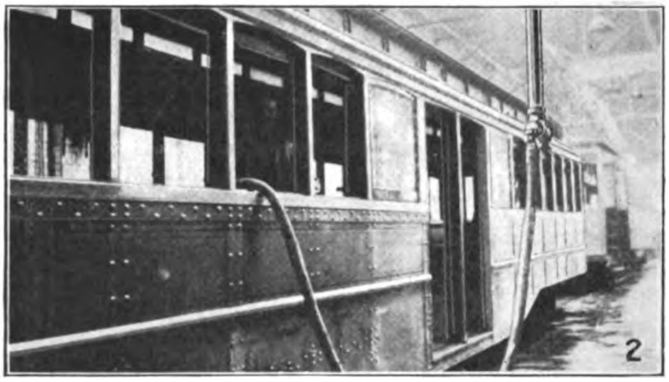
The chain hoist is not installed permanently in the substation but is kept at the main power house, where it may be obtained for use at any point on the system. The substation was designed by John M. Drabelle, electrical engineer for the Iowa Railway & Light Company.

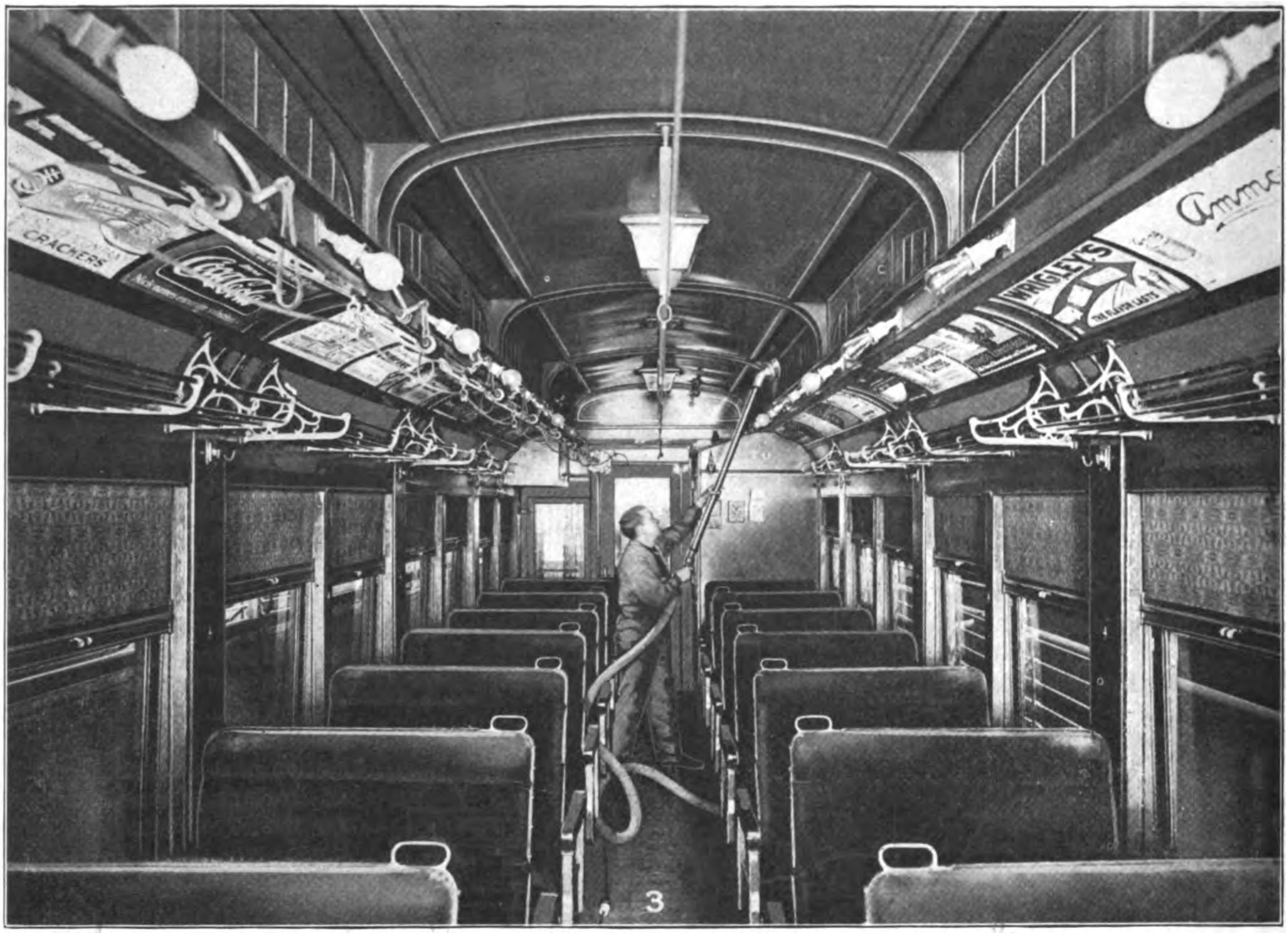

33 KV BUS
OPERATING STAND
CONTACTOR PANELS
OPERATING STAND FOR HORN GAPS
SINGLE-PHASE TRANSFORMER

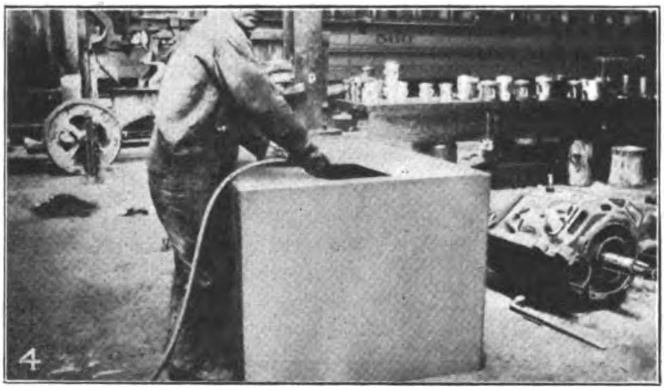
SECTIONS THROUGH DOUBLE DECK SUBSTATION

As rolling stock comes through the shops for overhaul, the Dallas (Tex.) Railway is rewiring the cars and refinishing the interior. Instead of four circuits of five 23-watt lamps, the altered cars have two circuits of 36-watt Mazda lamps running down the center line of the roof. Thus ten sockets are saved, and the energy consumption for lighting is changed from 460 to 360 watts. To improve the diffusion of light, the headlinings are removed, and the ceilings and the carlines painted white. The sockets for the new lamps are set in a white board which runs the length of the car.


DUST PAN
CLEANER
1




CRACKERS
Coca-Cola
WRIGLEY'S
3



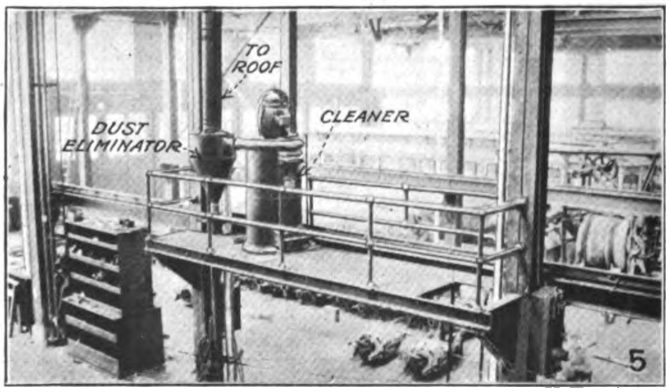

TO ROOF
DUST ELIMINATOR
CLEANER
5

Fig. 1—"Tuec" turbine cleaner mounted near the roof—wash room Cleveland Railway

Fig. 2—Suction pipe line and flexible hose for cleaning car interiors at Cleveland

Fig. 3—Vacuum cleaner arrangement in Cleveland Railway motor repair shop

Fig. 4—Cleaning car interior with vacuum cleaner

Fig. 5—Cleaning motors by vacuum cleaner and air blast

Vacuum Cleaning Equipment for Railway Repair Shops

Vacuum Cleaners Save Labor and Clean Inaccessible Places

Installation of Vacuum Cleaners in the Shops of the Cleveland Railway Make Cleaning More Efficient, Healthful and Pleasant

VACUUM cleaners have been used in the shops of the Cleveland (Ohio) Railway for nearly twenty years and have given great satisfaction both in the saving of labor and in the thoroughness of the work performed. Two "Tuec" turbine cleaners of the stationary type are in use and were furnished by the United Electric Company.

One cleaner is used in the washroom of the paint shop to remove dust and dirt from car interiors prior to painting and varnishing. Seats, window pockets and all spaces inaccessible to a broom or brush are thoroughly cleaned. In this installation the cleaner is mounted at the middle of the shop on a platform near the roof and a suction header is run in both directions to the ends of the building. The layout is shown in Fig. 1 in which the cleaner is on the right. A single centrifugal fan at the top of the cleaner furnishes the suction and is driven by a vertically mounted motor controlled from the floor. The dust tank is shown on the left with the so-called permanent line at the top. Heavy particles of dirt deposit within the cleaner, while the dust and the lighter particles of dirt are carried across to the dust chamber. The exhaust air is carried above the roof of the building when it is discharged. The only wearing parts of the machine are the upper and lower bearings on the motor shaft, and these operate in a constant oil bath.

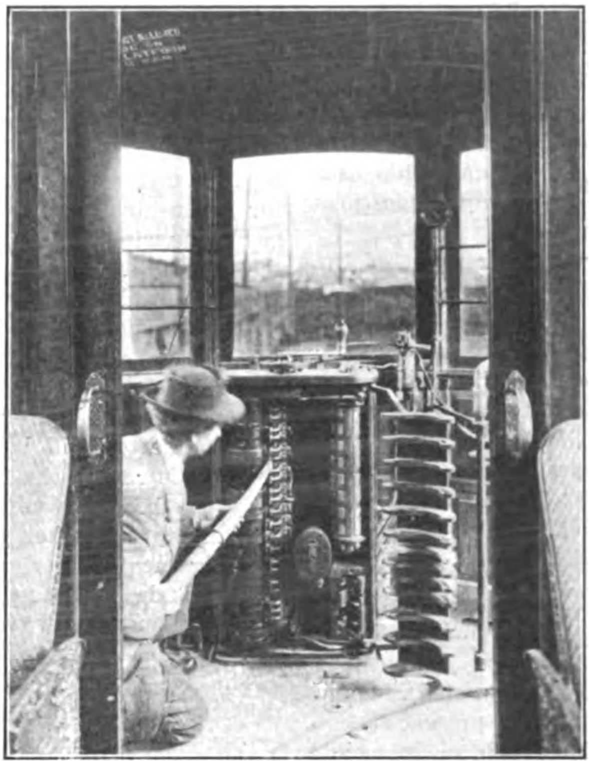


FIG. 6—CONTROLLER BEING CLEANED IN POSITION ON PLATFORM

The permanent line connects with the suction header previously mentioned and from this drop lines extend down to within 7 ft. of the floor. These drop-line pipes, as shown in Fig. 2, have at the lower end a fitting to receive the end of a flexible suction hose. In this way the whole room is served by a minimum length of hose.

The other cleaner is in the motor repair shop, where it is used to remove dust and dirt from motor frames preparatory to overhauling. This machine is of the same general type as that already described and is located in a similar position.

The operation of the motor repair shop cleaner differs somewhat, however, from that of the washroom cleaner. The motor to be cleaned is placed on a grating over a small pit in the shop floor, the pit being connected to the suction end of the cleaner. A hood made of canvas stretched on a light frame is placed over the motor as shown in Fig. 4, and an air jet is directed against the motor frame through openings in the top and sides of the hood.

The dirt thus loosened is carried to the cleaner through the suction line. The heavy particles deposit in the cleaner and the dust is washed into a settling basin under the shop floor by means of a water spray inclosed in the eliminator shown at the left of the cleaner, Fig. 5. This spray and the motor are controlled from the shop floor. The air exhausts to the roof of the building and the water runs to the sewer. The dust remains in the basin until a sufficient quantity collects to necessitate removal.

Before installing the cleaner the dust and dirt cleaned from the motor frames filled the air and made the work extremely disagreeable. Under the present arrangement there is no dust in the work room and conditions are therefore much more healthful for the men. The same is true when cleaning the car interiors. Aside from the cleanliness and more pleasant and healthful conditions resulting from the installation of the cleaners, it is possible to do the work more thoroughly, in a much shorter time, and with a materially reduced force. In cleaning car interiors and equipment parts installed on the car body a flexible hose is attached to the permanent drop lines. This hose is of sufficient length to reach all parts of the car and is provided with the necessary fittings for attaching to the permanent line and for cleaning the various parts. Accompanying illustrations show the method used in cleaning a car interior and a controller located on the car platform. The apparatus is particularly adapted to reaching inaccessible and out-of-the-way places that ordinarily would not receive attention, and is more sanitary than other methods.

Cars to Be Battleship Gray

THE cars of the Virginia Railway & Power Company are to be painted a battleship gray. President Wheelwright states that but from three to four days will be consumed in painting the cars the new color while formerly the painting and revarnishing took as many weeks. Not only will the use of battleship gray paint be more economical, but the efficiency of the system will be increased as cars will not be withdrawn from service for such long periods of time as would otherwise be necessary.

The long-standing tradition that electric railway cars must be painted and varnished much like a piano is not in harmony with these times when efficiency and economy count for more than ever before.

Well Attended Meeting of C. E. R. A.

The Convention Was Held at Cedar Point and the Discussion Centered on Labor, Automatic Substations and Publicity

THERE was a good-sized gathering at the annual summer meeting of the Central Electric Railway Association, held at Cedar Point, near Sandusky, Ohio, on July 17-18. Many of the delegates came as usual on through-routed electric cars from different points in the Central States.

At the meeting of the executive committee on Wednesday morning the election was announced to the committee of W. S. Rodger, general traffic manager Detroit United Railway instead of E. J. Burdick of the same company. The Central Electric Railway Accountants' Association also held a short informal meeting at which no papers were presented.

At the regular meeting of the association G. K. Jeffries, Terre Haute, speaking for the joint interline folder committee, reported inadequate support from the companies of the folder now in use, and Secretary Neereamer was requested to canvass the membership asking for increased orders for folders or any suggestions which would improve their usefulness.

An address was scheduled after the reports of the committees by H. O. Bentley, general attorney, Western Ohio Railway, Lima, but he was unable to be present. H. A. Nicholl, Union Traction Company of Indiana, then presented an interesting paper on the labor situation. It will be published in abstract next week. The paper was followed by a spirited discussion on the labor problem. The association then passed a resolution of sympathy for former President E. T. Peck, on account of his illness.

SUBSTATION AND PUBLICITY DISCUSSED

In place of the program printed for Thursday, G. Dorticus, General Electric Company, spoke informally on the battles of the Marne and Verdun. He also outlined the history of automatic substation developments and answered numerous questions as to their present status, difficulties, costs, etc. Harry Rimelspach, claim agent, Lake Shore Electric Railway, then spoke on the opportunities offered to the claims departments of the railway companies to improve railway efficiency, closing with a patriotic appeal to electric railways to do all they can to help win the war.

E. R. Kelsey, publicity agent, Toledo Railways & Light Company, gave an enthusiastic talk on railway advertising, showing how the best advertising assets are a company's own employees and that car space campaigns must be continuous, not fitful or for special propaganda. Any live railway, he said, bristles with news which the newspapers are glad to get as such, but advertising in the guise of news is not welcome. Any good salesman can write good copy if he will put himself into it.

The convention entertainment consisted of an informal baseball game between the railway and the supply men in the afternoon, which the latter won. A very popular feature of the entire convention was patriotic music by a mixed quartet under the direction of J. F. Starkey, general passenger agent, Lake Shore Electric Railway. The next meeting of the association will be held at Indianapolis on Thursday, Nov. 21.

LETTER TO THE EDITORS

Factors in Purifying Turbine Lubricating Oil

THE RICHARDSON-PHENIX COMPANY
NEW YORK CITY, July 8, 1918.

To the Editors:

The writer read with much interest the excellent article by Hartley Le H. Smith on "Keeping Power Plant Oil in Good Condition," which appeared in your June 15 issue.

Most engineers believe that an oil filter in connection with a steam-turbine oiling system is simply to remove grit and dirt. If this were the case very few filters would have to be installed in steam-turbine generating stations. However, due to oxidation taking place in the oil and causing the flocculent deposits, of which Mr. Smith's article treats, it is almost imperative in steam-turbine practice carefully to consider the matter of oil purification. Mr. Smith says the ordinary bag type of engine oil filter could not be successfully used for steam-turbine oil purification, and with this statement the writer agrees thoroughly. Mr. Smith suggests that the filter press, which he has seen used in one instance, is admirably suited for this class of work. The writer would like to modify this, however, as he believes that most engineers will appreciate the fact that if oil is forced through any kind of filtering medium under heavy pressure there is the possibility that suspended foreign matter will be carried through with the oil.

For this reason the type of filter made by this company has been proved to be more satisfactory than a pressure type of filter, as the oil is forced through the filtering media by a comparatively low pressure. In fact, it is designed so that the oil practically gravitates with just enough force to carry it through to the clean oil side of the filter.

The five requirements for a suitable oil filter in the modern power plant are: (1) Means for reducing (if necessary) the viscosity of the entering oil. (2) Ample precipitation area. (3) Water removal facilities. (4) Vertical cloth system of dry filtration. (5) Multiple-unit design to facilitate cloth changes without interruption of operation.

As a rule it is not necessary to heat the oil drawn from a steam turbine, but it is always advisable to put coils in a filter, especially if it is of the batch type, so that if the charge of oil has been withdrawn from the turbine oil tank and not immediately used, heat may be applied at some subsequent time when it is desired to begin the process of filtration. The fourth item should be explained by stating that, on account of the evenness of the texture of cloth and the fact that there is no chance of "channeling" (as with the use of waste, Fuller's earth, or bone black, or other loose filtering media), it should be employed and should always be in a vertical position, so that the direction of flow of oil as it is being purified is horizontal. This will prevent "caking" of the foreign matter on the filter cloth, which would be the case if the latter were in a horizontal position. Furthermore, no water should be used for the so-called "washing" of oil.

EDWIN M. MAY.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION
FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Indictments in St. Louis

Disappearance of Franchise Referendum Petition Results in Proceeding Before the Grand Jury

Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., was indicted on July 8 for second degree burglary and larceny by the grand jury in that city. The indictment is based on the alleged connection of Mr. Cameron with the forcible opening of the safe in which the Citizens' Referendum League had stored petitions for a vote of the people on the United Railways franchise settlement bill, passed on March 29 by the Board of Aldermen. Mr. Cameron promptly gave bail.

The following day Mr. Cameron made a public statement. He said in part:

MR. CAMERON PROCLAIMS HIS INNOCENCE

"I have been indicted upon the evidence of one Jackson, who confesses he committed the deed himself, and of which I am innocent and had no knowledge or connection. I have been in the employ of the United Railways for twenty years, giving nothing but faithful and honorable service. My case will be tried in court, where my innocence will be established. In the meantime I do not wish to cause any embarrassment to the company; therefore, you may consider my resignation at your pleasure."

This statement, although made primarily to the directors of the railway, was given out for general publication. The reference to his resignation from the company had to do with Mr. Cameron's acceptance of an important post with the International Railway, Buffalo, N. Y., which position it is expected he will assume as soon as the charges against him in St. Louis have been removed. The directors of the company accordingly decided to allow the resignation to lie on the table pending the determination of Mr. Cameron's innocence by the trial court. In the meantime the referendum league prepared other petitions and filed them with the proper authorities.

NO PRESUMPTION OF GUILT

Richard McCulloch, president of the company, made a statement in which he said:

"The directors would rather take Mr. Cameron's word than that of Jackson, a man in a shady business and a confessed crook. The indictment of Mr. Cameron, under the circumstances, is only ex-parte presentation and does not afford a presumption of guilt."

In an interview which he gave on July 9 Circuit Attorney McDaniel is reported to have said:

"Early in April, Jackson said Mr. Cameron told him that he must see to it that the preliminary referendum petitions, containing the signatures of 2 per cent of the registered voters, should not be filed. If the filing of these petitions had been prevented, further steps toward a referendum would not have been possible under the charter. May 9 was the last day for filing the 2 per cent petitions."

A renewal of the application for a receiver for the company is referred to on page 128.

Wage Advance in Kansas City

The Kansas City (Mo.) Railways announced to its employees that an increase of 5 cents an hour would be granted coincident with the establishment of the 6-cent fare on July 15. Further increases will be a matter of negotiations under the direction of the War Labor Board.

The company made the promise of the 5-cent increase subject to the granting of increased fare. The union refused the 5-cent offer. Another organization of employees not affiliated with the union asked the company to institute the 5-cent increase pending further negotiations over wages. This request was responded to favorably by the company.

This second organization of employees is known as the "Kansas City Railways Employees' Brotherhood." It consists of about 400 men. There is also an auxiliary of this brotherhood known as the "Kansas City Railways' Women Employees" which includes most of the women who have been recently put to work by the railway company.

The increased wages will apply only to employees on the Missouri division. There are two divisions in Kansas, including about 400 trainmen. These men will receive no increase under the arrangement announced, as the 5-cent advance is due entirely to the increased fare—and the increased fare applies only to Missouri. The fact that the railway is short of employees on the Missouri side suggests that Kansas employees are likely to seek work on the Missouri division and as a result the Kansas service may suffer.

Any negotiations taken up by the War Labor Board will of course apply to both Kansas and Missouri, but the increase to the trainmen in Kansas will doubtless be conditioned upon increased fare similar to the advance made in Missouri.

Wage Increase in Denver

Without Waiting for Increased Fares, Denver Tramway Adds $240,000 to Yearly Payroll

As a result of delay in action on the petition of May 3 of the Denver (Col.) Tramway to the State Utility Commission for an increase in fares to 6 cents the employees have become anxious concerning the wage increase to which the company had advised them they were entitled. The condition has been augmented by a storm of protest raised by the public against the increase in telephone rates, which has been followed by controversy and delay, by the dispute of the city and the State over the jurisdiction of the Public Utility Commission in rate-making cases and by a misunderstanding of items concerning the attitude of the government in regard to the questions of fare increases and the authority of the War Labor Board.

The trainmen have been encouraged and led on by labor representatives until they believed that an increase in fare would be indefinitely postponed and that before any recognition of their needs would be taken by the War Labor Board it would be necessary for them to unionize. The men believed that such a step would benefit the company in its petition for a fare increase and accordingly without confirming this by meeting with the company officials the wage committee called a meeting of the men for July 17.

As soon as the company received word of this action a statement was issued by F. W. Hild, general manager, in which he said that because of progress made in the fare increase case and confidence in the justness of the cause the following increase would be granted to take effect on or prior to Aug. 15: 6 cents an hour in pay of trainmen and shopmen; 5 cents an hour in scale for employees of the engineering department and for employees of other departments.

This step was taken in the hope that radical action on the part of the employees would be withheld. In spite of the announcement, the meeting was held and a large number of the trainmen organized and affiliated themselves with the Amalgamated Association.

With the increase just granted, the pay of the employees has been advanced 35 per cent since June 1, 1917. The present increase adds to the payroll $240,000 a year and makes the scale for the trainmen 34 to 40 cents. If the petition for a 6-cent fare is granted it is estimated that the revenue will be increased only $325,000.

Troubles Pile Up Before Boston Trustees

Quick to Realize Advantage of Full Publicity New Officials Go On Record Regarding Their Problems

The trustees of the Boston (Mass.) Elevated Railway issued statements on July 9 and 12 dealing with problems before them for settlement. The one of July 9 was referred to in the ELECTRIC RAILWAY JOURNAL for July 13. It was preliminary in its nature, but it indicated plainly that the trustees would have no option in the future than to make a substantial increase in fares. After reviewing fare applications pending and those granted elsewhere in Massachusetts and in the other states the company said in part:

"The trustees find the elevated road is no exception to the general case throughout the country, and in the analysis that they have and are making of the property they find that for the first five months of this calendar year there has been a deficit below fixed charges of $233,719, or at the rate of $560,900 a year.

"The trustees are confronted with a problem that they are compelled by the action of the last Legislature so to adjust the fares as to meet all operating expenses, taxes, rentals, interest on all indebtedness, allowance for depreciation and all other expenditures together with fixed charges on the new preferred stock recently issued as well as $5 per share on the common stock, this latter amounting to $1,194,000.

"One cent an hour increase for every employee of the company is equivalent to approximately $250,000 a year increase in the company's payroll. The total payroll for the company last year was $9,035,000. It can readily be seen, therefore, that any slight increase in fare or slight modification of tariff will by no means meet the situation, and, in view of the fact that they are compelled by the act to charge such fares as actually to meet the cost of service, they will have no option in the immediate future than to make a very substantial increase in fares.

"The case is serious, however, and requires prompt action. The trustees anticipate continuing their study of the situation with a view to ascertaining, if possible, whether some still more equitable and improved method of increasing the revenue can be devised. Any delay, however, at this time resulting from an extended survey or study of the general fare situation would be decidedly injurious, from the standpoint of carrying out the terms of the act in furnishing as good transportation as possible.

"Estimated increases in cost of operation, including dividends and depreciation for the ensuing year which are absolutely certain, making no allowance whatever for increased cost of material, increased income taxes, increased standard of maintenance, etc., or any provision for the necessary increase in rates of wages of employees, amount to more than $4,200,000.

"When it is recognized that 1 cent increase of the flat unit of fare, assuming that as many cash passengers ride the ensuing year as rode last year, would amount to $3,650,000, it can readily be seen that the situation demands prompt and strenuous action.

"The trustees, of course, expect to do everything within their power to reduce operating expenses and to bring about any economies consistent with good service. They are convinced, however, that the opportunity for such economies from the standpoint of large savings is not sufficient for the present, substantially to affect any revised tariff which may be necessary to meet the increased charges. The trustees realize that any delay in properly facing the facts at the outset merely piles up trouble for the future, as all charges under the act commenced July 1, 1918, and the dividends on all stock outstanding, together with fixed charges, rentals, taxes, bond interest, etc., including higher wages, must all be paid by the company securing ample revenue by means of increased fares.

"The trustees fully expect to take definite action on the fare question in the immediate future and sincerely hope that the public as a whole, who indicated their desire for public management by the action of the recent Legislature, will give the trustees every conceivable co-operation and benefit of doubt and show sufficient patience to permit them to work out a most difficult and trying situation."

The statement issued by the trustees on July 12 follows in part:

$2,000,000 WAGE INCREASE

"The trustees at a meeting held yesterday, in addition to taking up the question of the request of the carmen's union for an increase in their rate of pay, further studied the question of what action it seemed best to take with regard to increasing the fares.

"They find that the gross receipts of the company from all sources for twelve months ending June 30, 1918, were $19,407,000 and that the operating expenses were $14,132,668. If the same rate of increase per hour for employees were given as was allowed by the arbitrator in the case of the Springfield, Worcester and other properties, that is, approximately 8 cents an hour, there would be an increase in wage expense of $2,000,000.

"Summing up, therefore, the trustees are confronted with the necessity of securing gross revenue of at least $25,560,270 to continue present facilities, which compared with the earnings of last year of $19,407,000 leaves, without regard to increased cost of material, taxes, fuel, etc., or possible increases in wages in excess of that granted in other cities, approximately $6,200,000 to be secured.

"The only source of revenue that the trustees have is from car riders and therefore they are compelled by law to charge such fares as will earn a sufficient amount to meet all of the above additional charges.

"There are other items of increases this year over last year which it is impossible to estimate, such as increase in cost of coal, increase in cost of material, unknown increases in taxes, etc.

"In studying the situation the trustees are confronted with the fact that they are compelled to pay either a return or rental on a subway investment of $43,678,734. So far as they know the general practice in other cities where subways are constructed is for the railway to pay interest on the bonded indebtedness of subways only after having paid all other operating expenses, fixed charges and dividends. Of the total investment in subways on which a return must be earned $9,084,080 is for the Cambridge subway, which is owned by the company. The remaining investment of $34,594,654 is for subways owned by the city of Boston. The total amount that the trustees must pay during the next twelve months as a result of the subway construction is therefore $1,898,826."

Another Subway Link Opened

Temporary operation of the new Lexington Avenue subway, from Forty-second Street and Park Avenue, Manhattan, to 167th Street station on the Jerome Avenue branch, was begun on July 17, at 2 p.m. The arrangements for the opening of this part of the new rapid transit lines in New York City were perfected as a result of almost daily conferences recently between the special committee of the Public Service Commission on operation of the "H" lines, and officials of the Interborough Rapid Transit Company. It will be some weeks, however, before the necessary track arrangements will be completed at Times Square and Grand Central station to permit the through operation of the new Lexington Avenue line in connection with the old subway south of Forty-second Street and the new Seventh Avenue subway in connection with the old subway north of Forty-second Street.

For the present, service in the Lexington Avenue subway will consist of six-car trains using the local tracks. Beyond 167th Street on the Jerome Avenue branch service will be had by elevated trains operating to and from the Sixth and Ninth Avenue elevated lines via the new 162nd Street connection, except that north of Kingsbridge Road station the service will be by shuttle to and from Woodlawn.

The Lexington Avenue subway has been in course of construction for several years. It will cost completed about $58,800,000, including the equipment furnished by the Interborough Rapid Transit Company. It represents about 6.25 linear miles of subway but adds 23.6 miles of track to the new lines of the dual system in operation.

Labor Board Hearings

At Various Hearings Before Examiners the Companies Present Testimony Regarding Local Conditions

During the last ten days examiners of the War Labor Board have been holding hearings in various localities in order to secure supplementary evidence in the twenty-eight pending electric railway cases. Previously, as noted from time to time in this journal, evidence bearing upon the general labor situation in the industry had been presented before the joint chairmen, William H. Taft and Frank P. Walsh. The purpose of the present hearings before the examiners is primarily to bring out facts showing in what way, if any, the labor conditions in particular cities differ from the general situation.

NEW YORK HEARING ADJOURNED

As mentioned briefly in last week's issue, a hearing was held in New York City on July 12 in reference to the demands of employees in Buffalo, Albany, Schenectady, Rochester, Newark and Trenton. The representatives of the men in general rested their cases upon the brief prepared in the Cleveland and Detroit cases, while the railways made arrangements to prepare briefs on any important local points and submit these to the board by July 20 if possible. On July 22 Messrs. Taft and Walsh have scheduled a hearing for the presentation of general economic testimony by the Public Service Railway, and the board desires to have all the briefs in hand before that time. Representatives of Newark employees expressed the intention of filing a supplementary petition to ask for a 60-cent-an-hour rate.

In the Trenton case, Gaylord Thompson, vice-president and manager of the New Jersey & Pennsylvania Traction Company, explained that the conditions in his company's territory are in no way similar to those in Newark. His company operates through a territory largely agricultural in character, with 75 per cent of the service in Pennsylvania. The operating rate is from 70 to 75 per cent under normal conditions because of the low traffic. Mr. Thompson said that the men demanded an increase of 9 cents to 40 cents, but that a rate of 35 cents offered by the company would exhaust the revenues.

CHICAGO EVIDENCE SUBMITTED

Examiners on July 13 and 15 took evidence in Chicago to be used in determination of wage scales for employees of the Chicago Surface Lines, the Chicago Elevated Railways, the Chicago & West Towns Railway and the Evanston Railway. The proceedings consisted mostly of the introduction of briefs and other exhibits pertaining to the financial condition of the companies. Examiner John A. Henderson said that he understood it is the intention of the board to provide first a living wage for the employees and after that try to help the companies meet the added expenses.

W. W. Gurley, general counsel of the Chicago Surface Lines, said he would not contest the right of the men to a proper wage. He thought it would be useless, however, to seek the necessary higher rate of fare from the City Council. While he believed the Illinois Public Utilities Commission had the right to regulate fares in Chicago, relief from that source would probably be delayed for a long time if it was found necessary to fix a valuation for the properties. He said it took six months to do this in 1906 when the value was placed at $50,000,000, and it would undoubtedly take much longer now when the value is about $155,000,000.

A. L. Gardner, attorney of the Chicago Elevated Railways, made a short statement in explanation of the brief submitted. He contended that every cent per hour increase in wages would cost $129,562 a year. F. H. McCulloch, attorney for the Evanston Railway, argued that while his company had always paid wages similar to those of the Chicago company there was no justification for this. He made the point that Evanston is a city of homes, with working conditions most agreeable, and that no other company of similar size pays the men so well.

Willard McEwen, attorney for the West Towns company, suggested that the fare level throughout the United States be raised to 10 cents and that all surplus after paying expenses and return on investment be retained by the government. This, he said, would be a proper way of distributing a war tax, as the majority of people patronize car lines. He contended that even a 6 or 7-cent fare might not be sufficient to meet the continual increase in costs.

June 15 was taken up with the testimony of union officials as to the nature of employment of the various classes of employees.

Similar hearings before examiners were held in East St. Louis, Ill., on July 13, in the Galesburg and East St. Louis cases, and in Columbus, Ohio, on July 17, in the Elyria, Cleveland and Columbus cases. Hearings in the Portland, Ore., New Orleans, La., and Jacksonville, Fla., cases will be held in Washington, the exact dates to be announced later.

U. S. Housing Corporation Created

The Department of Labor announces the creation of the United States Housing Corporation, which will, in a large measure, take over the functions that are now being performed by the bureau of industrial housing and transportation. It is expected that this new vehicle will afford more facility in operation than would be possible under the usual governmental agency.

The executive officers of the corporation are: President, Otto M. Eidlitz; vice-president, Joseph D. Leland; treasurer, George G. Box; secretary, B. L. Fenner.

The stock is held on behalf of the government by the Secretary of Labor.

Two Weeks More Needed

Special Counsel Fisher Hopes by Aug. 1 to Complete Draft of New Chicago Merger Ordinance

Eleventh-hour opposition to the proposed ordinance for the merger of the surface and the elevated lines in Chicago and for a subway system in that city almost led to the shelving of the pending plan during the week ended July 13. At a meeting on July 15, however, the members of the local transportation committee decided to continue with their work until a satisfactory report is completed, with the hope of having the City Council approve it before adjournment. Another development at this meeting was the decision to give serious consideration to the trustee plan of Special Counsel Fisher with a view to having "service-at-cost" features worked into the measure in such shape that the companies may find it acceptable.

HOPES OF M. O. CROWD RAISED

Several obstacles were presented without any previous hint of delay to the program, which had been debated for many months by the committee. The municipal ownership element had been silent for some time, but hope for some of their plans was kindled anew with the proposal of Attorney Fisher that the constitutional barrier against such a scheme could be overcome by having the transporation lines taken over by a trustee corporation "not for pecuniary profit" but in reality for municipal operation. This plan was outlined in the ELECTRIC RAILWAY JOURNAL of May 4, 1918. The sub-committee thought it impracticable and decided to go ahead with the franchise to the existing companies. They reached the point a few weeks ago where all essentials had been practically agreed to and the final drafting of the measure was being worked out by the lawyers.

DRAFT WORK TO PROCEED

At the committee meeting of July 15, Attorney Fisher said it would require about two weeks to complete the draft of the franchise. The Aldermen told him and the companies' representatives to go ahead with the work and an effort would be made to prevent adjournment of the Council. At the same time Mr. Fisher was asked to present his trustee plan in the form of an ordinance. This he said could be done with little delay. He had overcome one of the points of previous objection by providing that the first board of trustees be selected by the companies and the City Council for a period of eight years—or beyond the date of expiration of the Surface Lines ordinances. He also proposed that the properties be taken over subject to existing liens under a guarantee of present interest rates on bonds and 7 per cent on capital stock. Fares would be raised if necessary to meet these payments, thus giving service at cost. The financial part of the Fisher plan did not appeal to the companies, but President Busby said he would consult the owners of the properties and thought that a solution could be worked out by mutual concessions.

War Bonus in Indianapolis

An increase of 3 cents an hour in the wages of motormen and conductors, in the form of a war bonus, was announced by the Indianapolis Traction & Terminal Company, Indianapolis, Ind., on June 29, the new rate to go into effect on June 30. Robert I. Todd, president of the company, stated that while the company had been losing money under its present rate of fare, and had so far been unable to secure any relief from the city or State authorities, the men were entitled to an advance in wages, as they had been working long hours to maintain the service, which had been difficult owing to the shortage of men. The new wage scale in cents per hour follows:

Less than six months' service	25
Six months and less than one year	26
One year and less than two years	27
Two years and less than three years	28
Three years and less than four years	29
Four years and less than five years	30
Five years and less than six years	31
Six years and less than seven years	32
Seven years and over	33

Three-Cent Wage Increase

The Philadelphia (Pa.) Rapid Transit Company is now experiencing large increases in gross passenger revenues and the management has therefore decided to further anticipate the increased fare and make effective at once the remaining advance in the rate of wage promised to its employees of 3 cents an hour which represents an added charge of more than $1,000,000 to the annual payroll of the company. The new wage scale for motormen and conductors is as follows: New men, 38 cents; second year, 39 cents; third year, 40 cents; fourth year, 41 cents; fifth year, 42 cents; after five years, 43 cents.

Early in May of this year the employees of the company petitioned the management for an increase in wage of 5 cents per hour, at the same time requesting that application be made to City Councils for an increase in fare to provide sufficient gross revenues to make this large wage advance.

Effective as of May 16 an increase of 2 cents an hour was granted to all employees in anticipation of the increased fare, this wage advance representing an addition of more than $700,000 to the annual payroll. City Councils on June 20 by resolution referred all procedure in the matter of an increased fare to the Public Service Commission on account of the fact that the new contract between the city and the company now pending before the commission contains provisions for changes in rate of fare, and also in conformity with the ruling of the Attorney General of the State of Pennsylvania that the sole power to regulate fares is now vested in the Public Service Commission.

News Notes

Manchester Wage Matter Settled.—Motormen and conductors employed by the Manchester (N. H.) Street Railway have accepted the offer of the company of an increase in wages of 4½ cents an hour, which was made following a demand by the men for a substantial increase.

Wage Increase in Princeton.—The motormen and conductors of the Princeton Power Company, Princeton, W. Va., have been granted an increase in wages of 5 cents an hour. The operatives on the Princeton-Bluefield interurban lines are advanced from 30 to 35 cents an hour and those on the city cars are to receive an advance of from 25 to 30 cents an hour. The men received an advance of 6 cents an hour six months ago.

Will Oppose Commission Assuming Authority.—The executive board of the Kansas League of Municipalities has adopted a resolution authorizing its officials to oppose assumption of authority over utilities by the State Public Utilities Commission. Richard J. Hopkins, Garden City, Kan., president of the League, will probably take an active part in any controversies wherein the question is the exercise of authority with reference to rates by public service commissions when clauses governing such matters are included in franchises or contracts granted by the municipalities.

City Retaliates by Cutting Power.—Because the Henderson (Ky.) Railway refused to pay street oiling taxes amounting to more than $3,000 which have accumulated during the last four years, the City Council ordered the current supplied to the railway from the municipal plant discontinued. When asked what steps would be taken by the company in the matter, John C. Worsham, Henderson, attorney for the company, said the city cars and the interurbans would stop running. A formal demand has been made on the city officials to furnish power to operate the cars.

The New Little Rock Scale.—The contract of the Little Rock Railway & Electric Company, Little Rock, Ark., with its trainmen, referred to in the ELECTRIC RAILWAY JOURNAL for June 29, page 1247, was entered into and became effective on May 22. The scale of wages prior to renewal of the contract was from 20 cents to 29 cents an hour. The new scale is from 30 cents to 37 cents an hour. The contract further provides for a ten-hour basic day with time and a half for overtime, and time and a half for the following holidays: July 4, Labor Day, Thanksgiving and Christmas.

Strike in Anniston.—Following the refusal of the Alabama Power Company, Anniston, Ala., to grant an increase in the wage scale of the motormen and conductors, the men ran the cars into the carhouse on July 1 and abandoned their runs. The men asked 25 cents an hour for the first year with an increase of 2 cents an hour up to the sixth year of continuous service. The matter was adjusted by compromise and the men returned to work on July 4. The men will receive 1 cent less than the minimum asked for the first six months. The scale of wages demanded by the men beyond the first six months has been granted by the company.

Increase in Pay on Municipal Line.—The platform men in the employ of the San Francisco (Cal.) Municipal Railway are to have their wages increased 50 cents a day as a result of a decision by the public utilities committee of the Board of Supervisors. This means an increase from $3.50 to $4. Car repairers will be increased from $4 to $4.50. Fred Boeken, superintendent of the railway, estimates the cost of this increase to the city as $10,648 a month. The men have agreed to work eight hours and twenty minutes instead of eight hours before charging overtime. This has led to a considerable discussion in San Francisco as to the desirability of inaugurating a 6-cent fare.

Examiners Wanted in Patent Office.—The Patent Office in Washington is in need of men or women who have a scientific education, particularly in higher mathematics, chemistry, physics, and French or German, and who are not subject to the draft for military service. Engineering or teaching experience in addition to the above is valued. The entrance salary is $1,500. Examinations for the position of assistant examiner are held frequently by the Civil Service Commission at many points in the United States. One is announced for Aug. 21 and 22. Details of the examination may be had upon application to the Civil Service Commission, Washington, D. C., or to the patent office.

Hog Island Line Opened.—At 2 p.m. on July 15 the Philadelphia (Pa.) Railways started operation into the Hog Island Shipyard of the American International Shipbuilding Corporation, Emergency Fleet Corporation. With the carpenters and painters still working on the prepayment gates partial operation was started with an 8-cent fare into South Philadelphia. Up to this time the bulk of the traffic has been handled by the shipbuilding corporation's own shuttle train and by workmen's trains on the Pennsylvania Railroad and the Philadelphia & Reading Railroad. These roads now handle about 28,000 people a day. No publicity was given the opening of the new line, but the cars were crowded. The very efficient police force of the Emergency Fleet Corporation facilitates loading.

Financial and Corporate

Dividend Postponed

Statement to First Preferred Stockholders at Worcester from President Dewey Explains Reasons

The directors of the Worcester (Mass.) Consolidated Street Railway postponed the declaration of the usual June 30 dividend of $2.50 per share upon the first preferred stock. A statement to the stockholders dated June 27 says:

"This action seemed to the directors advisable because of the recent great increase, amounting to about 24½ per cent, in the wages of the company's employees, resulting from the award of Henry B. Endicott, executive manager of the Public Safety Committee, to whom as arbitrator the decision of the proper increase in wages was submitted by the company and its employees. Payment of the wages on the new scale is effective beginning June 1.

"Application has already been made to the Public Service Commission for approval of an increase in the passenger rates charged by the company. Such an increase seems imperatively necessary to offset the largely increased operating expenses occasioned by the increase in wages. Pending a decision by the commission on this application it was deemed prudent to postpone the declaration of the dividend."

COMPANY HOPEFUL

"Dividends on the first preferred stock are cumulative, and the general public recognition of the need of increased revenue for street railway companies leads the directors to hope that an early and favorable decision may be expected from the Public Service Commission, and that the increase of income will enable the company to pay the postponed dividend."

In 1917 the Worcester Consolidated Street Railway converted 36,000 shares, par $100, of common into 45,000 shares, par $80, of first preferred. The New England Investment & Security Company owns the entire common stock, now 33,260 shares, par $100, and a small amount of first preferred.

The Worcester Railways & Investment Company, which finally held all the stock of the Worcester Consolidated Street Railway, completed liquidation and distribution of its assets on Dec. 31, 1917. The New England Investment & Security Company being on that date the sole stockholder in the Worcester Railways & Investment Company received all the assets including the entire common stock and the small amount of first preferred stock of the Worcester Consolidated Street Railway.

The New England Investment & Security Company for several years has asked and received the indulgence of the owner of its coupon notes and the note holder has accepted for its coupons a part of their face in cash and a part in contingent obligations of the New England Investment & Security Company. The postponing of the Worcester Consolidated first preferred dividend will affect the payment of interest on its coupon notes, which so far have been held by one party, just to the extent that the dividend payment is delayed.

Committee on Capital Issues

W. F. C. Effects Permanent Organization in Federal Reserve Districts to Pass on Securities

The Capital Issues Committee of the War Finance Corporation has made a permanent plan of organization of the committees in each Federal Reserve district. Each district committee will comprise fifteen members selected from bankers and business men in the district. This reorganization takes the place of the temporary committees that have been serving since February.

The appointments to these committees have been made with regard to geographical and business interests in each district. The chairman of the Federal Reserve Board in each district will act as chairman and the governor of the Federal Reserve Bank will act as vice-chairman. An executive committee of not more than seven members residing conveniently near the Federal Reserve city will meet regularly to pass on applications referred by the Capital Issues Committee in Washington.

Charles S. Hamlin, chairman of the Capital Issues Committee, says:

"The object of the Capital Issues Committee in passing upon all issues of new securities to determine their compatibility with the national interest is to secure the postponement until after the war of the use of capital, materials, and labor in order to give the right of way to the government's financial requirements and to the production of war necessities.

"The district committees will hereafter act definitely upon all applications to issue securities amounting to $100,000 or less, and in advisory capacity to the main committee at Washington in the matter of applications involving larger amounts. The Capital Issues Committee also has the benefit of the advice of all other departments and branches of the government, including the Food, Fuel, and Railway Administrations, the War Industries Board and other agencies having knowledge of the requirements of essential war industries."

Reorganization Appeal

Petaluma & Santa Rosa Railway Asks California Commission to Approve Its Reorganization Plan

The reorganization committee of the Petaluma & Santa Rosa Railway, Petaluma, Cal., has filed with the Railroad Commission an application for authority to transfer the company's properties to a new corporation; to issue $1,250,000 of capital stock, 10,000 shares of common stock and 2500 shares of preferred stock, the last with cumulative dividends at 6 per cent, and to issue $750,000 of 5½ per cent twenty-five-year bonds. The new company wants also to secure these bonds with the First Federal Trust Company, San Francisco, as trustee, with a mortgage by which net earnings ordinarily applicable to dividends on common stock are limited to $25,000 a year, and that all excess, not needed for the company's business requirements, shall be paid one-half as additional dividends on common stock one-fourth to a sinking fund to redeem the bonds at not more than 105 per cent, and the remaining quarter to redeem preferred stock at par.

PERSONNEL OF COMMITTEE

The reorganization committee consists of H. P. Goodman, James Otis, L. B. Mackay, Allen I. Kittle, W. H. Hamilton, Russell Lowry, Rudolph Spreckles, George P. McNear and Frank A. Brush, and its petition is accompanied by a printed reorganization agreement dated Oct. 25, 1917. The old company's capital stock is $1,000,000, of which $99,410 is outstanding. In 1904 the company executed a mortgage of all its properties to the Mercantile Trust Company, to secure a $1,000,000 bond issue, of which $655,000 is outstanding. Of a second mortgage, which is also secured with the Mercantile Trust Company, $217,000 of the $250,000 issue is outstanding.

The First Federal Trust Company was substituted as trustee on Feb. 5 last. The company, besides its bond obligations of $872,000, has deposited in pledge $80,000 of first mortgage bonds, and $33,000 of second mortgage bonds to secure a floating indebtedness of $76,000.

Default has occurred under the second mortgage agreement, and the principal amount is overdue, besides first mortgage covenants unperformed and sundry sinking fund payments unmade.

SALE BY COURT ORDERED

Last February the First Federal Trust Company sued the railway to foreclose the second mortgage, the Mercantile Trust Company intervened, and on May 17 the courts directed the sale of the properties, which sale will occur shortly. The reorganization plan was made in October last, and it is stated that the holders of most of the securities approve it. The application made on July 2 asks for a hearing, and for permission to carry the reorganization agreement into effect.

W. F. C. Makes Advance

Will Furnish Commonwealth Company $2,400,000 Out of $8,047,000 of Maturing Obligations

The Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., announced on July 16 that the War Finance Corporation had agreed to advance $2,400,000 toward the retirement of its $8,047,000 of convertible 5 per cent bonds, provided the company obtained an extension of the balance of the obligation. The bonds fell due on May 1 last. As in case of the $57,000,000 note issue of the Brooklyn Rapid Transit Company, the funds to be raised by the War Finance Corporation amounted to approximately 30 per cent of the Commonwealth's bonds.

In a letter signed by Anton G. Hodenpyl, president, two plans for carrying out the operation were offered holders of the bonds. Under one plan owners have the opportunity of taking in exchange for their matured bonds a new $1,000 five-year 7 per cent secured convertible gold bond and $25 in cash, representing 2½ per cent discount on the new bond, for each $1,000 old bond. The other proposal calls for a new $700 five-year 7 per cent convertible gold bond, together with $17.50 representing a discount of 2½ per cent on the $700 bond, and $300 in cash for each $1,000 of bonds matured. The larger cash payment would represent a payment on principal and to it will be added interest on $300 at 7 per cent from May 1 to date of payment.

The old bonds of $500 and $100 denomination will be entitled to one-half and one-tenth, respectively of the amounts set out in the offers. By reason of the discount the price of the new bonds is equivalent to 97½ and holders will receive a return of 7½ per cent if they keep the bonds to maturity.

The letter asked owners of the old bonds to deposit them under one of the plans as soon as possible. After Aug. 5 deposits will be received only with the consent of the company. When the plan is declared operative, notice will be sent to all owners of deposit receipts who may receive then their cash and new bonds.

First Refunding Issue Proposed

The Syracuse & Suburban Railroad Syracuse, N. Y., has filed with the Public Service Commission for the Second District of New York a petition in which it asks authority to issue a first refunding mortgage to secure an issue of $1,000,000 of 5 per cent bonds. The petition shows that the company is to use the proceeds, if the commission approves, by applying $400,000 to the retirement of a like amount of first mortgage bonds due on Aug. 2, 1927, and $150,000 in first consolidated gold mortgage bonds, due on April 1, 1953. It is also proposed to use $225,000 to reimburse the treasury for capital expenditures already made and for capital expenditures which must be made in the immediate future and $225,000 to be used for such capital expenditures as may be necessary after the expenditure of the first $225,000. The amounts are to be expended under certain conditions and restrictions named in the mortgage.

A Minimum Income Law

Counsel for New York Commission Says It's Time for Such a Law for Public Utilities

In an address made before the National Municipal League, printed in *The Bulletin of the City Club*, ex-Judge William L. Ransom, chief counsel of the Public Service Commission for the First District of New York, said that public utilities were entitled to a living income, and that the public could not afford to have these properties deteriorate to the point where it was impossible adequately to supply the public needs. In answer to the question, "What use ought municipalities to make now of the power placed in their hands by a condition of rising costs and the companies' need for exceeding the rates fixed by franchises?" Mr. Ransom said:

"I believe there is a great opportunity for a firm, just, broad-minded, far-visioned assertion of the public right and interest. The thing the public needs and wants most is good, adequate, satisfactory service. The public cannot afford to force the deterioration and breaking down of the public utility properties, until service goes to pieces, operation becomes unsafe, and the public needs are miserably met. The public utilities are entitled to have a living income; the public interest demands that no less than the interests of the utilities or the investors. The time is at hand when we may have to start an agitation for a 'minimum income law' for our utilities unless public utility service is to go to pieces.

"When the companies agreed to be and remain bound by a 5-cent fare limitation, they gained something of value for it, something which the public gave them in return for such a covenant. If now the companies wish to be relieved from their agreement as to fares, ought not each municipality to impose just, fair, reasonable terms, as conditions of such modification of the contract? It appears to me that the turn of events has placed a wholesome and salutary power in the hands of municipalities—not a power obstinately and short-sightedly to block the rate increases necessary to a continuance of decent service, but a power to procure just and desirable changes in franchise terms, for future public protection.

"Old franchises, granted in reckless disregard of public rights, as to duration, terms and the like, may now be put upon a fair, modern basis. The companies which ask public authorities to modify the fare provisions of franchise contracts will doubtless recognize the propriety of municipal insistence upon other changes in the public interest."

Principal Remains Unpaid

Unable to Take Up Maturing Bonds Key Route Will Continue to Pay Interest

In view of the general financial situation and of the financial condition of the San Francisco-Oakland Terminal Railways, Oakland, Cal., this company announced on July 3 that it would be unable to provide for the payment of the issue of Oakland Transit Company first consolidated mortgage 6 per cent gold bonds maturing on July 7. In a circular to the bondholders F. W. Frost, secretary of the company, said:

"The bankers of San Francisco and Oakland who have from time to time considered the formulation of a plan of reorganization, which is complicated by the twelve bond issues upon the company's property, have found it impractical to put forward a plan, with any hope of success, until the franchise situation of the traction division has been readjusted and the earnings of the company have been improved.

"A resettlement franchise is now under consideration by a general committee appointed by the Mayors of the cities of Oakland, Berkeley and Alameda, which committee is understood to have about agreed upon a draft of the proposed franchise.

"The revenues of the company can only be improved by an increase of the rates of fare. Applications for increases have been made to and hearings had before the Railroad Commission. Immediately upon a settlement of the franchise and rate matters, it is the expectation of the directors to undertake a plan of reorganization which, when completed, will be presented to the security holders for action.

"The directors expect to provide for the payment of interest upon the transit bonds referred to pending the completion of the above outlined plans."

Receivership Petition Renewed

The alleged referendum burglary referred to elsewhere in this issue, is used as an argument for the appointment of a receiver for the United Railways, St. Louis, Mo., in an amended petition filed on July 13 in the United States District Court by John W. Seaman, New York, a holder of the company's preferred stock. This receivership suit is a renewal of the one filed by Mr. Seaman on Jan. 7 last, which was dismissed.

The petition charges "improper influencing of State and municipal legislation," and says that "all such expenditures and misconduct are unlawful and harmful to a majority of the stockholders, who had no knowledge of such expenditures."

The fact that the company was compelled to borrow from the United States government $3,500,000 to pay off bonds maturing on June 1 and the inability of the company to pay the mill tax judgment of more than $2,000,000 are submitted as proof of insolvency.

Financial News Notes

Would Sell $3,000,000 of Notes.—The Columbus Railway, Power & Light Company, Columbus, Ohio, has applied to the Ohio Public Utilities Commission for permission to sell $3,000,000 of two-year 7 per cent notes.

Ohio Road Being Dismantled.—The property of the Suburban Traction Company, owned and operated by the Interurban Railway & Terminal Company, Cincinnati, Ohio, is being dismantled and the rails, etc., are being sold for junk.

Ordered Sold on Aug. 5.—The St. Petersburg & Gulf Railway, St. Petersburg, Fla., has been ordered sold under foreclosure on Aug. 5. Unsecured creditors of the company are said to be organizing to oppose the sale on that date as not likely to prove to their best interest.

Montreal Dividend Deferred.—The directors of Montreal (Que.) Tramways have deferred the payment of the dividend on the common stock payable ordinarily on Aug [illegible] The directors state the dividend is deferred until any appeal is heard regarding the increase in fares, to which reference was made in the ELECTRIC RAILWAY JOURNAL for July 13, page 78.

Extra Dividend in Washington, D. C.—The Capitol Traction Company, Washington, D. C., has declared an extra dividend of one-half of 1 per cent payable on Aug. 1. The company has been distributing quarterly dividends of 1¼ per cent each, the last payment having been made on July 1. Last December an extra dividend of 1¼ per cent was paid.

Petition to Dismantle Refused.—The Indiana Public Service Commission has entered an order denying the petition of Charles M. Alford to dismantle that part of the Gary Connecting Railways which extends from Gary to Woodville Junction. The commission points out in its order that during war times it is the duty of that body to keep every line of transportation open. It indicated that the road could be made to earn enough to keep it in operation.

Minneapolis Tax Valuation Reduced.—The Minneapolis Street Railway, controlled by the Twin City Rapid Transit Company, Minneapolis, Minn., has had its tax assessment cut from $8,102,355 to $7,960,905 for 1918. City Assessor G. L. Fort, commenting on this, the first reduction of the company's taxation valuation ever made, called attention to the fact that in 1917 the company's common stock was quoted at $96 a share and now it is quoted at about $40.

International Notes Offered.—E. H. Rollins & Sons, Boston, Mass., are offering collateral trust 6 per cent gold notes for the International Traction Company, Buffalo, N. Y., of 1917, due on Aug. 1, 1920. The authorized issue is $5,000,000, of which there is outstanding $2,000,000. The outstanding notes are further secured by a supplemental indenture, made by other interests, pledging with the trustee $2,667,000 refunding and improvement mortgage 5 per cent gold bonds of 1962, of the International Railway, the entire capital stock of which is owned by the International Traction Company.

Tacoma Property Financing.—Finance Commissioner Shoemaker of Tacoma, Wash., has completed an analysis of the financial report of the Tacoma Railway & Power Company. The analysis is said to show that a reserve fund of $223,480 in 1910 was converted into a deficit of $683,870 in 1917. Commissioner Shoemaker alleges that instead of issuing low interest bonds for additions to plant, the company has apparently expected to take care of new facilities from earnings. The property is said to have increased in value from $2,800,000 to $6,300,000 with no increase in bonds or stocks, the company bringing this about by borrowing from the Puget Sound Electric Company. Commissioner Shoemaker suggests that the company should be refinanced with a reduction of debt.

B. R. T. Note Plan Operative.—The plan for refunding the $57,735,000 Brooklyn (N. Y.) Rapid Transit Company note issue into a new three-year 7 per cent note issue for the same amount has been declared operative. Thirty per cent of the new notes are to be taken up for cash by the War Finance Corporation which permits the company to give holders of the old notes 30 per cent of their holdings in cash and 70 per cent in the new notes. The new notes will be deliverable, with payment in cash of the 30 per cent balance, at the office of the Central Union Trust Company, on Aug. 15, and holders of the old notes who have not yet deposited them have until Aug. 9 to do so, if they desire to obtain the part cash payment. After that, they will be offered only the new notes.

Suit to Test Responsibility for Taxes.—Fourteen suits were filed against the Philadelphia (Pa.) Rapid Transit Company on July 15 by its underlying companies to recover income and excess profits taxes paid the government a few weeks ago. The suits are filed primarily to test the action of the holding company in refusing to pay these taxes, which, according to counsel for the underlying concerns, is in violation of the contracts entered into by the Philadelphia Rapid Transit Company and its subsidiary companies when the contracts were framed. Ellis Ames Ballard, counsel for the Philadelphia Rapid Transit Company, several weeks ago appeared before the special committee of the House at Washington, urging that in framing the new $8,000,000,000 revenue bill it provide that underlying companies be forced to pay their own income and excess-profit taxes.

Another Step in Northern Electric Reorganization. — The Sacramento (Cal.) Northern Railroad has filed with the Railroad Commission for approval a copy of its proposed mortgage securing the payment of $5,500,000 of 5 per cent twenty-year first mortgage bonds. The Sacramento Northern Railroad was organized in June for the purpose of acquiring the properties formerly owned and operated by the Northern Electric Company, the Northern Electric Railway, the Northern Electric Company—Marysville and Colusa Branch, the Sacramento & Woodland Company, the Sacramento Terminal Company and the affiliated companies. The properties of these companies were sold at foreclosure on May 28, 1918, to Walter D. Mansfield, Oscar J. Cushing and George F. Detrick, acting for the reorganization committee of the Northern Electric Railway. The purchasers of the properties propose now to transfer the sale to the Sacramento Northern Railroad. In its decision of May 25, 1918, the commission indicated the condition under which it would authorize the transfer of the properties. The details of the plan of organization of the successor company were reviewed in the ELECTRIC RAILWAY JOURNAL for June 15, page 1161.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$71,190	*$45,993	$25,197	$19,875	$5,322
1m., May, '17	65,428	*39,979	25,449	18,711	6,738
12m., May, '18	902,794	*536,073	366,721	233,238	133,483
12m., May, '17	861,583	*487,555	374,028	220,318	153,710

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$254,438	*$183,761	$70,677	$70,343	$334
1m., May, '17	236,728	*174,718	62,010	67,985	†5,975
12m., May, '18	3,107,855	*2,159,311	948,544	843,734	104,810
12m., May, '17	2,973,215	*1,931,979	1,041,236	812,431	228,805

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$337,079	*$240,069	$97,010	$68,084	$28,926
1m., May, '17	301,645	*202,805	98,840	64,870	33,970
12m., May, '18	3,841,814	*2,766,053	1,075,761	798,300	277,461
12m., May, '17	3,309,740	*2,050,501	1,259,239	765,337	493,902

NEW YORK (N. Y.) RAILWAYS

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1 m., May, '18	$1,017,842	*$842,434	$166,803	$284,481	†‡$54,096
1 m., May, '17	1,045,801	*792,483	253,318	284,393	‡26,163
11 m., May, '18	10,985,820	*8,492,016	2,493,804	3,117,185	†‡45,041
11 m., May, '17	10,435,616	*8,340,461	2,095,155	3,104,589	†‡425,367

*Includes taxes. † Deficit. ‡Includes non-operating income.

Traffic and Transportation

Buffalo Fare Referendum

Six-Cent Fare for That City Will Go Before Voters as Result of Court of Appeals Decision

The New York State Court of Appeals at Albany, N. Y., on July 12 upheld the power of the voters of Buffalo, N. Y., to hold a referendum on the question of whether or not the action taken by the City Council shall be repealed in reference to waiving certain franchise agreements with the International Railway and recommending to the Public Service Commission, Second District, that the company be allowed to charge a 6-cent fare within the city limits. The action of the Court of Appeals affirms the decision of the Appellate Division at Rochester and also the opinion handed down by Justice Herbert P. Bissell in the Supreme Court of Erie County.

REFERENDUM PETITIONS FILED

Referendum petitions asking the City Council to repeal its action in reference to the 6-cent fare agreement with the International Railway have been filed with the City Council. They contain more than 15,000 names, almost four times the number required by law. Under the Commission Charter the Council is now required to reaffirm its previous action or repeal it. If the 6-cent fare agreement with the company is reaffirmed, a special referendum election must be held within ninety days. The referendum is now a certainty and plans are being made by the inspectors of election for taking the vote on the question. Henry W. Killeen, of Penney, Killeen & Nye, of counsel for the company, says that the voters will overwhelmingly defeat the Council's 6-cent fare action and a strike of the company's employees will result unless there is intervention on the part of the federal authorities.

Clifton Reeves, government labor mediator, who has been in Buffalo, making a study of the local traction problem, has gone to Washington to make his report to the War Labor Board. The board has announced that it has no desire to take over the operation of the International Railway as a war necessity, but just what action will be taken by the board is now awaited by the city authorities.

The ultimatum of Mayor George S. Buck to E. G. Connette, president of the International Railway, in which the Mayor threatened to petition the Supreme Court of Erie County for the appointment of a receiver to operate the company, should the company's directors vote to suspend the wage increase of 8-cents an hour, recently granted the platform employees, has apparently had its desired effect. At the meeting of the board of directors of the company, no action was taken on the matter of withdrawing the wage advance, but President Connette says that the increase will be withdrawn at the next meeting of the board. He says now that the company cannot collect the additional 1-cent from passengers until after the final count on the proposed referendum, which will probably be adverse to the increase. He declares the company is not in a financial condition to assume the additional expense of $2,000 a day involved in the wage advance.

EMERGENCY RESOLUTION URGED

Efforts are being made by Thomas Penney, vice-president of the railway, and Mr. Killeen, of counsel, to have the Council enact an emergency resolution waiving the franchise agreement with the city and allowing the Public Service Commission to determine what is a just and equitable rate of fare to be charged for the duration of war and six months thereafter. It is the contention of Mr. Killeen that an emergency resolution could not be reviewed by voters at a referendum election. An opinion of the city attorney holds that any action taken by the Council on a franchise matter is subject to a referendum. This opinion has been upheld by the Supreme Court, the Appellate Division and by the New York State Court of Appeals.

Albany Fare Increase Opposed

Flat denial as to the merits of the claims of the United Traction Company for a fare increase in the city of Albany, N. Y., was made at the hearing held recently in the 6-cent fare case before the Public Service Commission.

The three main issues on which Arthur L. Andrews and Judge Woollard, representing the city, based their arguments against the justice of a fare increase follow:

First, it is contended that the figures showing cost of operation as submitted by the company are not properly allocated. It is claimed that these contain figures which really should be increased capital charges.

Second, that in the great and growing deficits the past three years, starting with $219,000 in 1915 and representing $244,000 in 1917, are contained expenditures for track repairs which should be apportioned over a longer period and also met by funds which should have been accumulated for this emergency during the company's "years of plenty."

Third, that notwithstanding the fact the application for fare increase applies to the system of the United Traction Company in its entirety, the merits of the case should be tried on the zone basis and the case of each community be taken and considered separately.

Judge Woollard charged that the company had suffered from poor management since being taken over by the Delaware & Hudson Company in 1907.

Seven Cents for Tacoma

City Council Approves Increase in Fare As Emergency Measure in Aid of Prosecution of War

The City Council of Tacoma, Wash., on July 6 passed the ordinance authorizing the Tacoma Railway & Power Company to collect 7-cent fares within the city limits. It was decided the whole affair was a war emergency and should be put on that basis. The preamble to the ordinance follows:

"An ordinance relating to street car fares and service in aid of the prosecution of the war between the government of the United States and the imperial German government; authorizing the Mayor of the city of Tacoma to enter into a temporary contract on behalf of the city with the companies and prescribing the form of such contract; repealing all ordinances or parts of ordinances in conflict herewith; and declaring an emergency."

In order to avoid legal tangles no ordinances are repealed by number and the whole proceeding is based on the assumption that the people will grasp the conclusion reached by the committee of twenty-five that it is absolutely essential that immediate, ample service be given by the railway and that the city is willing to go the limit in means to secure this service.

The principal features of the new agreement are as follows:

Fare inside city on all lines, 7 cents. Tickets fifteen for $1, on sale at various stores, shipyards, etc. Universal transfers provided between the Municipal Railway and the lines of the Tacoma Railway & Power Company. One hundred and six cars, the number operated in normal times, to be put back in operation. Cash fare boxes to be taken out to be made over to receive pennies and metal tickets. Old tickets already sold to be honored. Carmen to be paid 50, 55 and 60 cents an hour.

City will get 2 cents out of each transfer collected by the Tacoma Railway & Power Company. City will get 3 2-3 cents on every transfer it takes up coming from the Tacoma Railway & Power Company lines.

Little Rock Fares Before Council

Without discussion the City Council of Little Rock, Ark., on July 8 referred the petition of the Little Rock Railway & Electric Company for an increase of fares to 6 cents to a special committee, composed of the public utilities committee of the Council and three citizens. This action was taken after D. H. Cantrell, president of the company, explained the reason for the company's request, and after the reading of a message by Mayor Taylor recommending that the petition be denied.

Trenton Fare Case Closed

All the Evidence Submitted, Final Argument Heard and Board Now Ready for Briefs

The hearing before the Board of Public Utility Commissioners of New Jersey on the application of the Trenton & Mercer County Traction Corporation for the abolition of strip tickets and the establishment of a 6-cent fare was concluded on July 2. It was agreed that Frank S. Katzenbach, Jr., counsel for the company, and George L. Record, special counsel for the city, should argue the case before the commission on July 19.

VALUATION DISCUSSED

The hearing on July 2 was occupied chiefly with a discussion as to whether the valuation of the physical property for taxing purposes made by State Engineer Louis Focht for the State Board of Taxation in 1915, should be admitted in a rate case. The utilities board decided finally to admit the valuation for what it was worth with the understanding as stated by Mr. Focht that it was not made with a view to representing the investment in the property.

Mr. Katzenbach asked Rankin Johnson, president of the railway company, concerning Peter Witt's plan for a 3-cent fare by which a second fare would be collected for all passengers who pass the center of Trenton, the cars to be operated part of the time on the "pay-as-you-enter" plan and the rest of the time on the "pay-as-you-leave" plan. Mr. Johnson said the chief difficulty in carrying out such a plan was that the resulting revenues were unknown. According to Mr. Johnson the deficit from a year's operation on such a basis might amount to several hundred thousand dollars, the burden of which, under Mr. Witt's plan, would rest entirely on the railway. Mr. Johnson said that the adoption of Mr. Witt's suggestion for an hourly schedule from Trenton to Princeton and to Hamilton Square increasing the company's revenues has resulted in a decrease in gross receipts during the five months it has been in operation.

Mr. Witt again testified on July 1. He advocated the tearing up of another suburban line, that from Lawrenceville to Princeton, in addition to those he has already recommended should be eliminated. He said that a 6-cent fare would produce less revenue in Trenton than the present 4½-cent rate. When asked if he had in mind increased revenues with 6-cent fares put into effect during the past few months in other cities, the witness replied that he had no knowledge of what had been the effect on the revenues with the increased fare in those places.

MR. WITT SUGGESTS ONE-MAN CARS

Mr. Witt recommended the use of one-man cars exclusively during the non-rush hours. He would add a woman conductor to these cars during rush hours. The witness said that by the adoption of one-man cars and the use of fare boxes, passengers would pay as they enter the car on approaching the center of the city. After passing that corner they would pay as they left the car. By the elimination of transfers and by this system, he estimated that so many more people would ride that the revenue of the company would be increased sufficiently to meet all demands.

Mr. Record introduced at the hearing J. C. Brackenridge, who testified at the hearing in 1915 regarding the elimination of strip tickets, as to the valuation of the company's property.

Counsel for the city and for the corporation completed oral argument on July 9 before the commission. Briefs will be submitted to the board by counsel during the week commencing July 15. The case will then be taken under advisement by the commission.

Mr. Katzenbach argued that there could be no equity in a policy which provides a single valuation for rate making and taxing purposes. He insisted that there was a marked difference between values for taxes and for rate making and declared that all authorities agree that a property may have different values for different purposes. Mr. Katzenbach read a decision of the Wisconsin commission stating that the difference between valuation for taxation and for rate making is entirely proper and logical. He showed that the deficit of the company for the year 1918 at the present rate of fare would exceed $300,000. With such a deficit, he argued, the company would be powerless to provide improved service. It might be different, he said, if the company were asking for a higher rate of fare than neighboring companies are receiving, but the reverse was the case.

NO OBSTACLE IN WAY OF COMMISSION

In view of the recent decision of the Court of Errors and Appeals, the speaker said, giving the Utilities Commission power to abrogate franchise agreements, there was no obstacle in the way of favorable consideration of the company's application by the board. Referring again to valuations, he said the one made by the J. G. White Engineering Corporation was the only accurate and complete appraisal of the company in existence. He expressed the view that this valuation gives the commission "something to lean upon." None of the other appraisals which the city insisted upon using had been made with the care which characterized the White report. Mr. Katzenbach said that the conditions imposed by the city upon the company through the leases had been carried out by the company. He then outlined the recommendations made by Mr. Witt. He declared the people would prefer to ride comfortably at 6 cents a ride than to travel in Mr. Witt's one-man cars.

Mr. Record argued that the company should reduce its expenses to meet war conditions instead of seeking an increase in fares. He objected to a different valuation for taxing purposes than that presented for rate making. He argued against the decision of the Court of Errors upholding the abrogation of franchise agreements and said that whether the franchise was to stand or fall rested with the utilities board. He said the company bargained for the contract it has with Trenton and now it asked for relief from terms of the grant which it had come to consider onerous, but did not want the perpetual clause of the franchise disturbed. He said that the commission existed to protect the people's interests. He then attacked the leases of the company which he said the board's predecessor had approved notwithstanding the testimony of its chief engineer that the company could never earn money under them.

"In a Hell of a Fix"

According to a conclusion recently reached and announced by the Public Service Commission of the State of Washington, the Spokane & Inland Empire Railroad, Spokane, Wash., "is in a hell of a fix." Commissioners F. R. Spinning and A. A. Lewis assent officially to everything concerning the situation except the form of statement used, but Chairman E. F. Blaine maintains that no other words will aid the public to understand what has happened. Here is the stated condition confronting the Spokane & Inland Empire Railroad and the commission:

The government assumed possession of this railroad on Jan. 1, 1918, and by order No. 28 established rates radically different and in excess of prior rates, and without consultation or approval of the State Commission. After such passenger and freight rates were in effect for periods of twenty and of five days, respectively, the director general relinquished possession of the road and there is no question but that it is now subject to the jurisdiction of the State Public Service Commission.

But what are the rates? Were the said rates in suspension during the period from the date of order No. 28 to July 1, the date the road was turned back by the Director General? If in suspension, under what provision of the State statutes were they suspended? Can it be said that the rates established by order No. 28 are in force? They were federal rates and in no sense State rates. Perhaps the road is without any rates and must, until new rates are established according to the State statutes, operate gratis or not operate at all.

The new Spokane & Inland Empire Railroad rates are fixed on the basic charge of 3 cents a mile with a 10-cent minimum similar to the increase recently filed by the Washington Water Power Company. They were protested on the ground that they imposed a 10-cent charge for less than 1 mile.

Change in Unit Fare

Five-Cent Unit Fare with Shorter Zones Approved for Massachusetts Northeastern Street Railway

The Massachusetts Northeastern Street Railway was authorized in an order dated June 29 by the Public Service Commission of Massachusetts to revise its rates upon the basis of a 5-cent unit fare with shortened zones, in the endeavor to procure additional revenue. The present unit of cash fare upon all lines is 6 cents, but a ticket rate of 5 cents is available for about 3.5 miles from the centers of the cities of Haverhill and Lawrence. Certain workingmen's and commutation tickets are sold at reduced rates. The present fare zones range from 1.35 to 6.45 miles in length, with an average of about 4 miles. Including transfer privileges, a maximum ride of 7.65 miles and an average ride of about 5.25 miles are available for a single fare. Lap-over privileges are in use on certain lines.

Fare Sections According to Population

For this system of irregular overlapping zones, the company proposes to substitute a new fare scheme containing certain features of the copper-zone system and certain features of the previously standard fare system used on New England lines. The company proposes a division of its system into fare sections according to population density and other local conditions varying from 1.7 to 3.8 miles in length, and a subdivision of each fare section into two approximately equal zones. The average length of the proposed fare sections is about 2.5 miles and the average fare per mile about 2 cents. The cash fare is to be 5 cents for each fare section, but passengers may ride from any point in the first fare section to any point in the first zone of the adjacent fare section, i. e., over any three consecutive sections, at the rate of 7.5 cents by the use of tickets which are sold in strips of ten for 75 cents.

This arrangement amounts to a reduction in the length of existing zones from an average of 4 miles to about 2.5 miles, a reduction of the unit of fare from 6 to 5 cents, and a graduated increase, instead of the payment of a full additional fare, for rides beyond the first fare section. The plan also involves the abolition of overlapping zones, of certain free transfer privileges, and a reduction of the transfer area where such privileges continue.

The tariff also provides for the sale of twenty-ride workingmen's tickets good during certain hours between designated points, at 75 per cent of the regular cash fare, and for certain round-trip excursion rates to Hampton Beach and Canobie Lake Park. On four short beach lines it is proposed to retain the present fare zones and 6-cent unit, as these are operated during the summer only. By the changes planned the company expects $72,500, or about 9 per cent increase in revenue.

The commission's investigation of revenue and cost conditions on the property indicates that the company might reasonably justify its need for additional revenue of at least $150,000 a year. The board holds that the company should be allowed a reasonable degree of discretion in regard to the exact fare plan to be adopted, unless the scheme proposed is likely to yield an excessive increase in revenue, to prove discriminatory as between different groups of car riders, or to impose burdens upon the public disproportionate to the revenue results obtained.

In the populous centers of Lawrence, Haverhill, Amesbury and Newburyport the company plans to issue transfers which allow passengers to ride within any two contiguous fare zones for 5 cents. Fare concessions are also made to other points through the issue of workingmen's tickets.

At the hearing complaints were made of specific increases between certain points, but few of these were 25 per cent for passengers who choose to avail themselves of the commutation tickets provided by the company. The company agreed to adjust some of these complaints by modifying the length of the fare zones, or by the establishment of special tickets. The commission in general approves the company's tariff plan, but on the summer lines from Plum Island Pavilion to Plum Island Point (1.4-mile existing zone length) and from Salisbury Beach to Black Rocks (existing zone length 1.5 miles), it rules that the 5-cent rate should apply. With other minor changes the company's schedule is adjudged fair and reasonable, and the commission commends the administration of the road and announces its approval of a new tariff modified as outlined.

Fare Statistics Played Up

Doherty News, published by Henry L. Doherty & Company, New York, N. Y., used to advantage recently statistics of fare increases, citing sixty-seven cities in the United States having a population of 100,000 or more and noting that in fifty-seven of these cities street-car fares have been increased, or applications for increases are pending. Thirteen among the sixty-seven are either charging or have been authorized to charge 6-cent fares. In three the zone system is in effect.

In Cleveland, often called the "low-fare city," the highest rate permitted under the present agreement with the city is in effect, and steps are contemplated to amend the agreement to permit of higher fares. In four other cities revenue has been increased by the abolition of reduced-rate tickets.

In thirteen cities a 6-cent fare has been asked for, while in two cities such an application is in immediate prospect. Two other cities are asking for permission to impose an extra charge when a transfer is issued and thirteen cities are asking for increased revenue in other forms.

Skip Stops in Philadelphia

The skip stop was put into effect in Philadelphia on July 15. Only the central section will be immediately affected by the fuel administration's order to the Philadelphia Rapid Transit Company to conserve fuel by reducing the number of car stops. Of 699 regular stops in the district between the Delaware and Schuylkill Rivers, and between Spring Garden Street and South Street, 135 will be abandoned. This is about 19 per cent reduction. In this one district the curtailment of stops will effect a saving of about 1025 tons of coal for essential war industries. The other sections of the city will not be affected until later because of the time required to study traffic conditions.

Wilmington Fares Six Cents

For the present at least the Wilmington & Philadelphia Traction Company will charge a 6-cent fare in Wilmington, Del., instead of the 7-cent fare recently authorized. This was settled on July 3 by agreement of counsel for both sides of the controversy before Chief Justice Pennewill and Judges Rice and Heisel, sitting as a special session of Superior Court, after the judges had decided sufficient notice had not been given to the public regarding the effort to have the Board of Public Utility Commissioners authorize the company to charge 7 cents. The application for a 6-cent fare was made on May 7. A public hearing was held. The application for a 7-cent fare was made on June 3. On the same day an order was entered allowing the 7-cent fare with four tickets for 25 cents. Objection being entered to the 7-cent fare the board replied that it held two public meetings. The court considered the second of these was not properly called. In commenting on the proceedings before the commission the court said in part:

"The court has no doubt that the board have endeavored to do their duty to all parties, but we think it not improper to suggest that their duties might be made easier in the future if they should adopt some plain and simple rules governing their procedure, including a rule providing for a fair hearing on the part of both the public and the public utility."

In its order to the company the court said:

"It is hereby ordered that the order of said Board of Public Utility Commissioners for the city of Wilmington, bearing date of June 5, 1918, for the granting of leave to charge a 7-cent fare, be amended and modified so as to permit the said Wilmington & Philadelphia Traction Company to charge a straight fare of 6 cents."

Appeals to Chamber of Commerce

Theodore P. Shonts, president of the New York (N. Y.) Railways, on July 15 addressed a long letter to the officers and members of the Chamber of Commerce of New York City in which he said that the emergency conditions confronting the company "threaten early bankruptcy" if permission is withheld for an increase to a fare of 6 cents. Mr. Shonts said in part:

"This is purely an emergency action. We do not ask the Board of Estimate to abrogate any of the city's rights or powers, not to alter—except for the temporary emergency—any franchise condition.

"The emergency is extreme. It threatens early bankruptcy. It is a matter of the deepest concern to every civic and business body and to every business man and resident of the city. We believe that when the public knows the facts its judgment will be fair. The interest of the public is continuous and adequate service. Such service cannot be rendered by a utility company unless its income will meet operating expenses, maintenance, depreciation, and a fair return to the owners on the capital invested. Our income is meeting none of these conditions."

Mr. Shonts announces that he will send similar communications to all leading commercial and taxpaying organizations, whose good-will, he observes, is a supremely important factor in all of the transit work.

The Merchants' Association approves a commission hearing on the question of increase in fares, but reserves official sanction for or against the project pending decision by the Public Service Commission. In the bulletin of the association, *Greater New York*, issued July 15, is published a review of the subject, in which the city is asked to suspend street railway contracts to enable the Public Service Commission to consider increased fare applications.

Los Angeles to Zone

The Pacific Electric Railway, Los Angeles, Cal., has made public a statement of the changes it desires in its fares in connection with the application for higher rates referred to in the ELECTRIC RAILWAY JOURNAL for June 8, page 1114.

The plan to adjust all interurban fares on a mileage basis is stated briefly as follows:

One-way fares, 3 cents a mile, and round-trip fares, 2½ cents a mile, while no increase in round-trip fare will be more than 20 per cent above the existing round-trip fares.

On commutation tickets, a ten-ride individual ticket, limited to thirty days from date of sale, will be 2 cents a mile; a thirty-ride family ticket, limited to forty days, 1½ cents a mile; and for the daily commuter, a sixty-ride ticket, limited to forty days, as follows: One to 10 miles, 1 cent a mile; 10 miles to 15 miles, 9 mills per mile; 15 miles to 20 miles, 8 mills per mile; more than 20 miles, 7½ mills per mile.

In Los Angeles it is proposed to establish a zone system of fares. The present 5-cent fares will be continued to points on all lines within a radius of approximately 5½ miles of the Hill Street or Main Street stations, as the case may be. Beyond this distance where the present fare is 5 cents the same will be increased to 7 cents. Fares in cities outside Los Angeles will be increased from 5 cents to 6 cents a ride.

Iowa Roads Secure Relief

Iowa interurban railways have practically been granted the right to establish the 3-cent fare basis. A federal order has been issued restraining the state officials and legal department from instituting civil and criminal proceedings against three Iowa interurban railways that are about to increase their fares to 3 cents a mile. The hearing was before Judge Martin J. Wade, of Iowa, Judge Walter Sanborn, of the Eighth Circuit Court of Appeals, and Judge James D. Elliott of the United State District Court in the city of Sioux Falls, S. D.

The three interurbans directly effected are the Cedar Rapids & Marion City Railway, Mason City & Clear Lake Railway and the Clinton, Davenport & Muscatine Railway. The roads were placed under bond to cover refunds in case the 2-cent fare is found not to be confiscatory and that the roads are making a satisfactory income under the 2-cent fare. Until the case is finally disposed of all companies will be required to furnish each ticket purchaser a certificate showing the amount of fare paid.

Increased Fares or Reduced Service

J. J. Stanley, president of the Cleveland (Ohio) Railway, announced on July 8 that Attorney Charles Higley had been selected to represent the company on a board of arbitration to decide whether the rate of fare shall be increased or the service be reduced, following an expression from the city administration to the effect that the fare will not be raised until the Federal War Labor Board has announced its decision on the wage question.

A letter, embodying Mr. Stanley's views, was presented to the City Council on the evening of July 8. It was read and referred to the street railway committee without comment. Mr. Stanley pointed out the position the company will occupy if a large increase in wages, dating from May 1, should be allowed and no funds be accumulated to pay the debt. He argued that the rate of fare should be made large enough at once to take care of the situation.

Another attempt was made recently to induce the company to reduce the rate of dividends to stockholders from 6 per cent to 4 per cent. Mr. Stanley, however, is still unwilling to ask investors to make this sacrifice.

Airs His Troubles in His Cars

William O. Wood, president of the New York & Queens County Railway, Long Island City, N. Y., operating in an important industrial district in which many plants are engaged on government work, in his efforts to obtain men for motormen and men and women for conductors, has posted in each end of every car operated on the system a large placard reading as follows:

"Help Wanted. Factories in this borough engaged in government work to win the war require additional car service.

"To provide for it and at the same time adequately to serve our regular patrons, we must have men and women to operate the cars.

"We need men for motormen, men and women for conductors.

"An allowance will be made for period of instruction, and 30 cents an hour as soon as qualified, with further increases on account of length of service.

"Steady work—permanent employment."

Mr. Wood said:

"I have tried all the ordinary methods of advertising for help, and at last have decided to resort to this scheme. I paid for advertisements in the New York papers, the Brooklyn papers and the Long Island papers, but labor does not seem to realize the opportunity we are offering. We are paying the best wages of any company in the city of New York for beginners. Those engaged in government work are complaining of our service, but we cannot get the men and women to run the cars. I, therefore, concluded that if I placed before all of our riders the advertisement such as is now displayed, it might help us."

The company operates more than 70 miles of city and suburban railway.

Increase for Ohio Interurbans

The Public Utilities Commission of Ohio has just allowed increases in fares to fourteen interurban roads in that State, awards being made according to the showing of financial necessity of each. The range of fares is from 2 to 3 cents a mile, with the majority of the roads being allowed 3 cents.

Commenting on the rate raises, F. W. Coen, president of the Central Electric Railway Association, stated to a representative of the ELECTRIC RAILWAY JOURNAL that the result showed a reasonable attitude on the part of the commission and appreciation of the situation confronting the interurban railways.

On the Lake Shore Electric Railway, of which Mr. Coen is vice-president and general manager, the raise is about 0.4 cent, making the average 2.6 cents. This it is estimated will yield an increase of 10 per cent in the income. The plan was to keep about the same differential with interstate steam rates as before.

Transportation News Notes

Six Cents in Battle Creek.—The City Commission of Battle Creek, Mich., has authorized the Michigan United Railways to charge a 6-cent fare in that city.

Increase Authorized for Maryland Company.—The Cumberland & Westernport Electric Railway, Cumberland, Md., has been authorized to increase its rates 20 per cent.

Wants Seven-Cent Fare.—The Southern Public Utilities Company, Charlotte, N. C., has petitioned the Corporation Commission to be allowed to increase its fares to 7 cents, or four tickets for 25 cents.

Skip-Stop Hearing in Milwaukee.—The Railroad Commission of Wisconsin ordered a hearing held on July 17, on the skip-stop plan and also on the near stops. The hearing is in response to the petition from the company.

One Killed and Thirteen Injured.—Two cars on the Stark Electric Railroad, Alliance, Ohio, collided 3 miles east of Alliance on July 4. One man was killed and thirteen other persons were injured. The cars were very badly damaged.

Penalize the Thoughtless.—The International Railway, Buffalo, N. Y., has discontinued the practice of selling tickets on its interurban cars. Hereafter when passengers have failed to buy a ticket before boarding a car, the regular one-way fare will be charged.

Would Increase Suburban Fare.—The Montgomery Light & Traction Company, Montgomery, Ala., has applied to the Public Service Commission of Alabama for an increase from 5 to 10 cents in fare on the Pickett Springs line. A hearing was set for July 18.

Skip Stop for Fort Worth.—G. H. Clifford, general manager of the Northern Texas Traction Company, Fort Worth, Tex., says the skip-stop system will be put in operation on all lines in the city as soon as the plan can be worked out and street markers showing places where street cars will stop can be placed along the streets.

2,000,000 Pennies and 200,000 Metal Tickets.—Nearly 2,000,000 pennies and more than 200,000 metal tickets were secured by the Kansas City (Mo.) Railways for use when the 6-cent fare went into operation on July 15. The decision of the Missouri Commission in this case was reviewed in the ELECTRIC RAILWAY JOURNAL for July 6, page 30.

Railway and Bus Conference.—A conference between officials of the Minneapolis Street Railway, controlled by the Twin City Rapid Transit Company, and jitney bus owners is to be arranged by City Aldermen, with a view to formulating a plan for co-ordinate operation of the two modes of transportation, pending the outcome of franchise negotiations.

Macon Fare Hearing Aug. 13.—The hearing on the petition of the Macon Railway & Light Company, Macon, Ga., for an increase from 5 cents to 6 cents in railway fares has been set for Aug. 13. Macon's Mayor and Council have agreed to waive the provision of the franchise contract to a 5-cent fare, leaving the whole matter in the hands of the commission.

Fare Case Rehearing Refused.—The Public Service Commission of Missouri on July 5 overruled the motion of Col. E. M. Harber, city counselor for Kansas City, for a rehearing of the Kansas City Railways fare increase case, in which a 6-cent fare recently was granted by the commission. It is said that the city will now carry the matter to the courts.

Bartlesville Wants Fare Increase.—The Bartlesville (Okla.) Interurban Railway has filed with the State Corporation Commission of Oklahoma application for an increase in fares to be charged between points on its line. The company asks permission to increase local fares in the towns of Bartlesville and Dewey, in which it operates, from 5 cents to 7 cents.

Kaw Line Asks Rate Raise.—The Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., filed with the Interstate Commerce Commission on July 13 an application for permission to increase passenger rates to 3 cents a mile, so its rates might be made the same as prescribed for steam lines by the general increase order of the Railroad Administration.

Three Fives Replace Two Sixes.—On July 4 the Claremont Railway & Lighting Company, Claremont, N. H., was allowed to put into effect an increase in passenger fares. Formerly the length of the car line was divided into two zones—6 cents per zone. According to the new schedule, the car line is divided into three zones, and the fare has been made 5 cents in each of the zones.

Conductorettes in Baltimore.—The first women conductors to be employed by the United Railways & Electric Company, Baltimore, Md., went to work on July 10. The women are to fill vacancies only and do not replace men except when the latter leave service, their employment being strictly a war measure with the railway. They will receive the same pay as men conductors.

Service Cut and Rates Advanced.—The Twin City Rapid Transit Company, Minneapolis, Minn., some time ago decided to cut service and advance rates on its Lake Minnetonka suburban lines. Patrons of the line, at a mass meeting at Excelsior, the main suburban point, agreed to the two changes as presented by Horace Lowry, president of the company, and A. W. Warnock, general passenger agent.

Increase in Rates on Calistoga Valley Roads.—The San Francisco, Napa & Calistoga Valley Railway, Napa, Cal., on June 19 was granted permission by the Railroad Commission of California to increase rates. The increase consisted of permission to abolish all round-trip rates and increase on commutation and school children's tickets of 10 per cent. The new rates became effective on July 1.

Car-Bus Connections at Austin.—To serve Camp Mabny, a government school for automobile mechanics, located 5 miles from the center of Austin, Tex., a bus line (Liberty Motor Bus Company) makes connection with a terminus of the Austin Street Railway 1½ miles from camp. The trolley ride is 5 cents cash or 4½ cent ticket; the bus ride, 10 cents. The camp structures are brick buildings and ultimately will have facilities for training more than 3000 men.

Formal Fare Appeal Made.—The Morris County Traction Company, Morristown, N. J., has appealed to the Board of Public Utility Commissioners for an increase in its rates of fare. A flat 6 cents in each of its twelve zones is asked, as against a 5-cent fare generally and tickets at six for a quarter, which are sold solely within the limits of Summit. Notice of the company's intention to file such an application was published in the ELECTRIC RAILWAY JOURNAL for July 13, page 80.

Skip Stop in Dallas Aug. 1.—Orders directing the immediate inauguration of skip-stop operation of cars on the lines in Dallas have been issued by Wiley Blair, Federal Fuel Administrator for Texas. M. N. Baker, supervisor of public utilities of Dallas, had been at work on a plan using the skip-stop system. The orders received from Fuel Administrator Blair will serve to speed up this work. It is announced that the plan will likely be put in operation throughout the city by Aug. 1.

Missoula Opposed to Fare Raise.—According to recent reports the city of Missoula, Mont., will resist the increase in fares on the Missoula Street Railway from 5 cents to 7½ cents for rural lines out of Missoula. Application for the increase has been made by the company to the Railroad and Public Service Commission. The city officials contend that the franchise provides for a 5-cent fare within 3 miles of the city limits, and that the company is bound by this provision not to raise its fares.

Six-Cent Fare in Effect in Sioux Falls.—The 6-cent fare voted to the Sioux Falls (S. D.) Traction Company at the election on May 28, noted in the ELECTRIC RAILWAY JOURNAL of June 8, page 1113, was put into effect by the company on July 1. The paper tickets have been replaced by metal tokens which are being sold at the rate of five for 30 cents or seventeen for $1. The operation of one-man safety cars is planned. A special edition of *On the Cars*, the company's paper, was issued to acquaint the public with the changes.

Six Cents in Vancouver.—The city of Vancouver, B. C., has passed a by-law authorizing the British Columbia Electric Railway to charge 6 cents within the city. The City Council of New Westminster and the Council of the municipality of Point Grey have passed resolutions agreeable to similar changes. South Vancouver, whose affairs are in the hands of an administrator, has signified its willingness to allow a 6-cent fare. From Victoria it is reported the City Council is not agreeable to granting the company permission to raise fares unless concessions are made.

Savannah's War Program Approved.—The Savannah (Ga.) Electric Company on July 10 was authorized by the Railroad Commission of Georgia to install the sweeping changes, made in its petition, first to the City Council, then to the Railroad Commission. July 15 was named as the day when the new system was to go into effect. On that date the Whitaker and Liberty Street cars were to be discontinued during the war, and the skip-stop system was made effective. The one-man crew cars on the Battery Park, Fifty-fourth and the Indian Street lines also becomes effective on July 15.

May Appeal Ohio Fare Case.—It is understood that an application will soon be made by the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, for a rehearing in the case in which the Supreme Court of Ohio on June 20 sustained a ruling of the Public Utilities Commission of that State to the effect that it had no authority to increase the rates of fare of interurban roads which have accepted certain rates in consideration of franchises from the cities and counties through which they pass. The decision of the court was referred to in the ELECTRIC RAILWAY JOURNAL of June 29, page 1254.

Increase on Atlantic City-Pleasantville Line.—Increases in rates on the Atlantic City and Somers Point division of the Atlantic & Suburban Railway, Pleasantville, N. J., that will advance the revenue of the company $15,897 a year were allowed by the Public Utility Commission on July 13. The new rates, in the nature of war surcharges, are 12 instead of 10 cents from Atlantic City and Pleasantville, 6 cents instead of 5 cents between Linwood and Somers Point; 6 cents instead of 5 cents between Pleasantville and Absecon; six tickets for 60 cents instead of six for 50 cents between Atlantic City and Pleasantville. There are no changes in the sixty-trip commutation tickets sold by the company.

Louisville Interurban Fares Increased.—On July 1 the Louisville & Interurban Railroad, Louisville, Ky., increased fares on all suburban lines to approximately 2½ cents per mile. Business books will be sold at a rate of approximately 2 cents per mile. Except on milk, cream and livestock, the increase in freight rates will be 25 per cent. At the same time the suburban rates were advanced the company raised the rates to and from Camp Taylor from 5 cents to 10 cents, 5 cents from the city to the city limits and 5 cents thence to the camp. This particular increase resulted in protests from both soldiers and civilians. After a conference with a committee from the Board of Trade, the company announced that the fare would again be placed at 5 cents, subject perhaps to later revision.

Brooklyn Petition Goes to Committee.—The Board of Estimate of New York City at its meeting on July 12 referred to the committee on franchises, without comment, the petition of the Brooklyn Rapid Transit Company that the matter of increased fares on all the lines of the company be transferred to the Public Service Commission, with power to act. The company wants to increase the rate of fare to 7 cents, and intimated that if consent to the increase could not be obtained it would establish the zone system which was in operation while Brooklyn was an independent municipality. Petitions similar to that of the Brooklyn company, presented by the New York & Long Island Traction Company, the New York & Queens County Railway and the Long Island Electric Railway have also been referred to the same committee.

San Diego Fare Case Stated.—Many misstatements made in regard to the proposal of the San Diego (Cal.) Electric Railway to increase fares, referred to briefly in the ELECTRIC RAILWAY JOURNAL of June 15, page 1168, led to the company issuing a special edition of the *San Diego Electric Railway News* on June 1, so as completely and fully to advise the public of the facts. The company explained that it has not made application to raise fares to 6 cents or any other sum. The application is a statement of facts in relation to the affairs of the San Diego Electric Railway and the Point Loma Railroad and a request on behalf of the companies that the Railroad Commission investigate the railways and suggest a remedy to be pursued. The company has reprinted the main text of its application to the Railroad Commission.

May Again Raise Rates.—It is said unofficially that the Springfield (Mass.) Street Railway has found that the elimination of all reduced rate ticket privileges and the increase in fares of the new zone system outside of Springfield will not supply the additional revenue needed by the company and that a new tariff calling for a further fare increase will probably be filed with the Public Service Commission of Massachusetts to go into effect on Sept. 1. A few months ago the company announced that an increase of $600,000 in the yearly receipts was needed in 1918 but with the new wage scale the estimate is now $1,000,000. The Springfield rate case was referred to in the ELECTRIC RAILWAY JOURNAL for April 6, page 663, and May 4, page 882, while the wage decision was reviewed in the issue for June 22, page 1202.

Claims Right to Fix Fare.—The Toledo Railways & Light Company, Toledo, Ohio, claims the right to fix its own rate of fare in the absence of valid legislation by Council regulating fare. This claim, despite the assertion that the company must "take what the city offers or get off the streets," was made by the utility in a brief filed to enjoin the city of Toledo permanently from interfering in the collection of the 5-cent fare and a 1-cent charge for a transfer. The company's brief states: "In the absence of any valid legislation by the city regulating the rates of fare in force upon the railway system, it is obvious that the company is at liberty to fix the rates at whatever figure it deems proper, subject, of course, to the right of the city to pass valid legislation fixing a rate of fare which will allow a reasonable rate of return upon the property."

Increased Fares for Peoria.—By virtue of an order entered on July 2 by the Public Utilities Commission of Illinois the Peoria-Railway, controlled by the Illinois Traction System, Peoria, Ill., adopted straight 5-cent fares on July 3. The sale of commutation books and tickets has been abandoned. The commission did not authorize the company to charge a fee of 2 cents for each transfer issued. The order is temporary and until the commission has made a thorough investigation of the earnings of the company. The showing made by the company was deemed sufficient to merit partial relief until the final decision had been announced. The lines of the company in Peoria were not included in the previous order of the commission allowing increases to the company, which decision was reviewed briefly in the issue of the ELECTRIC RAILWAY JOURNAL for June 1, page 1072.

Towns Agree to Fare Increase.—The towns of Portland, Westfield and Ripley, N. Y., through which the lines of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., pass, have consented to an increase in passenger rates and the matter will be presented to the Public Service Commission for the Second District, to determine what is a just and reasonable rate of fare. By the terms of the franchises granted to the railway by these towns and other communities along the company's line between Buffalo and Erie, Pa., the company was limited to charge certain fares. Some time ago the company petitioned the Public Service Commission for permission to increase its interurban fares to 2½ cents a mile, but the franchise agreements blocked action, the commission holding it had no authority to increase fares in towns and cities where the company was bound by franchise restrictions. The company claimed it was a matter of being allowed to charge a higher rate of fare or having to abandon its line west of Fredonia to the New York and Pennsylvania state line.

Personal Mention

J. D. Woodward has been elected president of the Selma (Ala.) Traction Company to succeed Robert Wetheril. Mr. Woodward has also been appointed general manager to succeed A. H. Knean.

B. H. Elliott, formerly superintendent of lines of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has been appointed superintendent of power houses and substations of the company.

E. L. Tait, heretofore assistant engineer of maintenance of way of the British Columbia Electric Railway, Vancouver, B. C., has been appointed engineer of maintenance of way, succeeding A. C. Eddy, who has been granted extended leave of absence for military duty, having joined the U. S. Army.

Arthur H. Young has resigned as director of the American Museum of Safety, New York, to take charge of the employee relations department of the International Harvester Company. Although giving up the actual direction of the museum's work, Mr. Young will continue with that institution as vice-president, in which capacity he has succeeded the late Dr. Frederic R. Hutton.

O. F. Brock has been appointed purchasing agent of the Birmingham Railway, Light & Power Company, Birmingham, Ala., to succeed Charles T. Doerr, who recently resigned to become local purchasing agent at Birmingham for the Air Nitrates Corporation, agents for the United States government in the construction and operation of the nitrate plants at Sheffield, Ala.

A. C. Eddy, maintenance-of-way engineer for the British Columbia Electric Railway, Vancouver, B. C., is now a captain with the Fifty-fifth United States Engineers. He volunteered for service in May, and left on May 31 for Camp Grant, near Chicago. Before leaving, his friends in the company presented him with a purse of more than $90, the presentation being made by George Kidd, general manager.

L. L. Newman, assistant general manager of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has also been elected vice-president of the company. Mr. Newman was appointed assistant general manager of the company early in 1916, prior to which time he was superintendent of way and structures. Previous to Mr. Newman's connection with the Birmingham Light & Power Company, he was employed in various departments of the Pennsylvania Railroad.

James E. Carnes, formerly contract agent and advertising manager of the Nashville Railway & Light Company, Nashville, Tenn., has been appointed to the newly-created position of sales and new-business manager. Mr. Carnes' new duties will embrace responsibility for all activities in the sales and lighting department as well as the direction of advertising. Mr. Carnes entered the employ of the company in 1904, and during his fourteen years' connection with the company has served in practically every department.

Lieut. Nugent Fallon, Boston, Mass., is now serving as aviation instructor at the Naval station in Pensacola, Fla. He was formerly superintendent of the South Boston division of the Boston (Mass.) Elevated Railway. He has had an adventurous career as a flier in the service of both England and France at the front. He was promoted from ensign to lieutenant for gallantry in action, on the recommendation of Admiral Sims, commanding the United States Naval forces in European waters.

Thomas F. Hill, of the railway department of the Southern Public Utilities Company in Anderson, N. C., has had his authority extended to cover the meter and contract department, as the result of the resignation of A. E. Holman, who has been superintendent of the latter department for some years. Mr. Hill is one of the oldest men in point of service with the company and its predecessors. He was with the old Anderson Traction Company when that company operated the railway in Anderson and the electric railway from Anderson to Belton.

R. M. Little has been appointed director of the American Museum of Safety, New York, N. Y., to succeed Arthur H. Young. Mr. Little was formerly a trustee of the museum. He is thoroughly versed in work along sociological lines, having served as chairman of the executive committee of the Organized Charities of Chicago and as general secretary of the Philadelphia Society for Organizing Charity. In March, 1917, President Wilson appointed him chairman of the United States Employees Compensation Commission, an office he held until called upon to take up active directorship of the Museum of Safety.

E. B. Wade recently received his commission as captain of the Engineers Corps of the National Army. Captain Wade has been on the staff of Ford, Bacon & Davis, consulting engineers, New York, N. Y., for a number of years. In 1915 he was engineering accountant for the Board of Commissioners of the Port of New Orleans, for the firm, in the construction of cotton warehouses and grain elevators. Since Dec. 1, 1916, Captain Wade has been attached to the New York office, but was sent to California, where he specialized on valuation work as engineering accountant. He went into the service on May 27 at Camp Merritt, N. J., and is doubtless somewhere in France by this time as his corps is no longer in this country. Captain Wade is thirty-eight years of age. He is well known in electric railway and professional engineering circles.

Hamilton Baluss, who has been general manager of the West Chester, Kennett & Wilmington Electric Railway, Kennett Square, Pa., for the last twelve years, has resigned to accept a position with the United States Ordnance Department as army chief inspector at Philadelphia, Pa. After leaving high school at Detroit, Mich., Mr. Baluss took up the study of law, but abandoned this to enter electric railway work. He held positions with the Detroit, Ypsilanti, Ann Arbor & Jackson Railway, the Grand Rapids, Holland & Chicago Railway and the Chicago & Joliet Electric Railway. He then became general manager of the Marquette City & Presque Isle Railway; then general manager of the Susquehanna Traction Company at Lock Haven, Pa., and then general superintendent of the Cincinnati, Georgetown & Portsmouth Railroad. He resigned from the last-named company to become general manager of the West Chester, Kennett & Wilmington Electric Railway.

William C. Bird, who has been acting as assistant to William T. Cobb, president of the Rockland, Thomaston & Camden Street Railway, Rockland, Me., has been elected general manager. With the presidency Mr. Cobb had combined the duties of general manager, but since he was elected president of the Bath Iron Works, Mr. Cobb has necessarily been absent from Rockland much of the time. In Mr. Cobb's absence Mr. Bird has performed the duties of manager. Mr. Bird was born in Rockland, was graduated from the Massachusetts Institute of Technology in 1912, and during the following year engaged in railroad construction work in Canada. During the next four years his efforts were wholly devoted to railroad construction and operation in the West and South. His last position prior to returning to Rockland was assistant to the chief engineer of the Texas, Oklahoma & Eastern Railroad, with headquarters in Kansas City. On Feb. 1, 1917, he became assistant to President Cobb of the Rockland, Thomaston & Camden Street Railway, which does power business.

Obituary

Wesley Meeteer, president of the Wallace Supplies Manufacturing Company, Chicago and New York, died at his home in East Orange, N. J., on July 10. Interment took place in Wilmington, Del., on July 13.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Recent Incorporations

***Emergency Fleet Railroad Company, Camden, N. J.**—Incorporated to construct a line from the shipyard plants in Camden to connect with the Public Service Railway. Capital stock, $250,000. Incorporators: Norman Grey, G. T. Seeley, assistant director of the division of passenger transportation of the Emergency Fleet Corporation, and G D. Connelly.

***American Power & Railway Company, Charlotte, N. C.**—Incorporated to operate electric and steam railroads, also to generate and transmit electric power. Capital stock, $100,000. Incorporators: H. M. Victor, C. B. Bryant and D. D. Trawick.

Franchises

East St. Louis, Ill.—The East St. Louis, Columbia & Waterloo Railroad has been granted a twenty-year franchise by the City Council of East St. Louis to use certain local streets of the city, with the provision that 2 per cent of the gross receipts taken in the city is to go to the city treasury of East St. Louis. The cars of the company are now operated over tracks owned by the East St. Louis & Suburban Railway. Regular passenger cars are operated between Waterloo and East St. Louis.

Track and Roadway

Valdosta (Ga.) Street Railway.—Work will soon be begun by this company on the construction of a ½-mile extension to the fair grounds.

Chicago, Milwaukee & St. Paul Railroad, Chicago, Ill.—A contract has recently been awarded by the Chicago, Milwaukee & St. Paul Railroad to the Union Switch & Signal Company, Swissvale, Pa., for the material for the installation of an automatic block signaling system on its line now being electrified, from Othello to Black River Junction, a distance of 184 miles, where it divides and extends to Tacoma, Wash., 27 miles, and to Seattle, Wash., 9 miles, a total distance of 220 miles. The railroad company's field forces will do the construction work.

Lincoln (Ill.) Municipal Railway.—A report from the Lincoln Municipal Railway states that the construction of 1 mile of new track is contemplated.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Maine.—The Lewiston, Augusta & Waterville Street Railway has filed with the Public Utilities Commission of Maine for its approval a petition which evidences the first step toward the large improvement of its service promised at the recent hearings in Lewiston when it asked for increased rates to better its financial standing and enable it to make contracts on reasonable terms. It contemplates a complete rehabilitation of the service between Lewiston and Bath and improvements to other lines. The company has completed negotiations with the United States Shipping Board Emergency Fleet Corporation whereby the latter, in order to secure better car service in Bath and between Bath and Brunswick, agrees to assist to the extent of $165,000 by providing new cars, transformers, transmission lines and other equipment.

Interborough Rapid Transit Company, New York, N. Y.—Operation has been begun by the Interborough Rapid Transit Company on the Lexington Avenue extension of the subway from Forty-second Street to 167th Street on the Jerome Avenue branch. From there elevated and shuttle service will be provided to the end of the line.

Sapulpa & Interurban Railway, Sapulpa, Okla.—This company will eliminate some curves on the Sapulpa-Kiefer line.

Philadelphia, Pa.—By agreement reached on July 11 in the negotiations for the suspension or annulment of the subway contract for the period of the war, the Keystone State Construction Company will not extend its present operations, but will confine its activities to the completion of the actual work within the limits where the streets have been opened. This status will continue until the City Councils reconvene and either approve or reject the terms of settlement.

Philadelphia (Pa.) Railways.—Operation was begun on July 15 by the Philadelphia Railways into the Hog Island Shipyard of the American International Shipbuilding Corporation, Emergency Fleet Corporation. Up to this time the bulk of the traffic has been handled by the American International Shipbuilding Corporation's own shuttle train and by workmen's trains on the Pennsylvania Railroad and the Philadelphia & Reading Railroad.

Knoxville Railway & Light Company, Knoxville, Tenn.—Plans are being made to construct a viaduct on Gay Street from Depot to Vine Avenue to cost about $200,000. The cost will be borne by the City of Knoxville, the Southern Railway and the Knoxville Railway & Light Company. J. B. McCalla, city engineer.

Morgantown & Wheeling Railroad, Morgantown, W. Va.—It is reported that a contract has been awarded to Kelly Brothers, Clarksburg, W. Va., for grading in connection with the improvement of the line of the Morgantown & Wheeling Railroad between Randall and Barker.

Shops and Buildings

Cincinnati & Dayton Traction Company, Cincinnati, Ohio.—Plans are being made by the Cincinnati & Dayton Traction Company to construct a new terminal on Spring Grove Avenue, Cincinnati.

Oklahoma Union Railway, Tulsa, Okla.—A new carhouse will be erected by the Oklahoma Union Railway at 700 South Maybell Street, Tulsa, to cost about $25,000.

Power Houses and Substations

Pine Bluff (Ark.) Company.—A report from the Pine Bluff Company states that it will purchase two 600-hp. boilers.

Vincennes (Ind.) Traction Company.—This company reports that its power station at Vincennes has been abandoned and power is now being purchased from the Indiana Power & Water Company.

Kansas Electric Utilities Company, Parsons, Kan.—A frequency changer set of 1000-kva. capacity is being installed by the Kansas Electric Utilities Company in its power plant.

United Railways & Electric Company, Baltimore, Md.—A report from the United Railways & Electric Company states that it is now installing one 20,000-kw. turbo-generator in its Pratt Street power station.

Boston & Maine Railroad, Boston, Mass.—Plans have been prepared by the Boston & Maine Railroad for extensions and improvements in its power house near Lawrence. The work is estimated to cost $14,000.

Atlantic Coast Electric Railway, Asbury Park, N. J.—A new power station is being built by the Atlantic Coast Electric Railway at Allenhurst, N. J., and it is expected that it will be ready for operation at an early date.

New York (N. Y.) Railways.—Plans have been prepared by the New York Railways for alterations and improvements at its station at 13-17 Front Street. The work is estimated to cost about $6,000.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Coal Production and Transportation

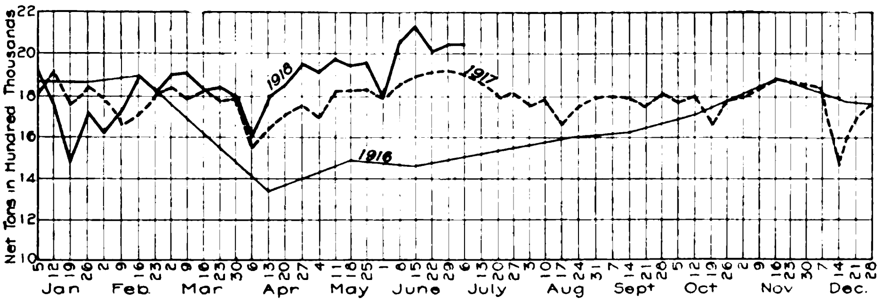
Modified Mine-Run Coal Prices Fixed by Government—Labor Shortage Affects Anthracite

Following the report of the United States Geological Survey, for the week ending July 13, it is learned that the observance of July 4 caused bituminous coal production during the week of July 6 to decrease 2,081,000 net tons or approximately 17 per cent. The total output (including lignite and coal made into coke) is estimated at 10,259,000 net tons as against 12,340,000 net tons during the week preceding and 9,241,000 net tons during the current week of 1917. The average production per working day (five-day week) is estimated at 2,052,000 net tons, slightly lower than the average production per working day during the week of June 29 of 2,057,000 net tons and 11 per cent greater than average production per working day during the week of July 6, 1917. Railroad shipments during the week decreased from all districts. Improper working conditions with a better car supply, are reported in a majority of the coal fields.

A shortage of mine labor may cause a curtailment of anthracite allotment, contemplated by the Fuel Administration for the twelve months to April 1 next. Such allotment was based upon an estimated production of 54,345,783 tons of domestic anthracite for the coal year. The actual output of domestic anthracite sizes for the three months period to the end of June was 13,279,889 tons. That is, at the rate of 53,120,000 tons for the year, or 1,226,000 tons less than was counted upon in the estimate.

The prices of "modified mine-run" coal shipped on and after July 5 have been fixed f.o.b. cars at the mine per net ton at not to exceed the applicable government mine prices for screenings at the mine where such "modified mine-run" coal is produced plus the following percentages of the margin or difference between the applicable government mine prices for mine run and screenings at such mines, viz.:

	Per Cent of Such Margin
Run of mine passed through—	
2-in. openings	40
3-in. openings	75
4-in. openings	90
5-in. openings	95



ESTIMATED AVERAGE TOTAL PRODUCTION PER WORKING DAY OF BITUMINOUS COAL INCLUDING COAL COKED

Increased Cost of Production

Manufacturer Shows How Costs Have Advanced During First Six Months of 1918

While prices have advanced considerably in the electric railway field it is doubtful if the increases represent altogether the higher production costs with which the manufacturers have to contend. In this connection are given below some figures furnished by the Drew Electric & Manufacturing Company, manufacturer of electric railway, light, power and gas materials, Indianapolis, Ind. These figures show the increases in costs during the first six months of 1918.

	Per Cent Increase
Copper	10.6
Lead	13.3
Tin	44.5
Zinc	12.9
Malleable iron	10.0
Molders and coremakers	33.3
Furnace tenders	25.0
Laborers	20.0
Machinists	20.0
Freight rates	25.0
General expenses (estimated) such as postage, printing, advertising, office supplies, fire and liability insurance, clerk hire, etc.	20.0

"The above comparisons," says James H. Drew, president of the company, "speak for themselves. Considerably more might be said on the subject of other handicaps that confront the manufacturer at this time, such as traveling expenses, migratory tendencies of skilled and unskilled labor, restrictions on raw material, delays in receiving raw material, delay in payment of accounts, and many other subtle and hidden items that run up the cost of manufacture and cannot be discovered until the balance sheet is brought in."

Cotton Costs Reflected in Electrical Goods

Advances in Cotton Goods and Yarns Account for Much of the Higher Cost of Insulated Wire, Tapes, Etc.

Rising prices of raw materials inevitably affect the cost of manufacturing electrical products of many kinds, though it is difficult to predict just what the influence of a given advance in raw-material cost will be upon the selling price of equipment in any particular case. There are two principal reasons for this—the latitude allowed the cost department or price-fixing branch of the manufacturing organization in compensating for the advance and the varying amounts of any particular material used in different types, forms or sizes of apparatus. Nevertheless, it is possible to instance actual figures drawn from practice to show that changes in raw or finished component material costs may have an appreciable effect upon the ultimate price of the finished product.

UPWARD TREND OF COTTON

An investigation along this line was recently made by the ELECTRIC RAILWAY JOURNAL with respect to the effect of price changes in cotton upon the selling price of electrical equipment. Cotton has undergone an extraordinary change in price since the beginning of the war. Spot cotton was quoted at 12.50 cents per pound in New York City on July 30, 1914, the day the Cotton Exchange closed, and on Nov. 16 of that year the price upon the reopening of the exchange had fallen to 7.75 cents. During the interim President Wilson inaugurated the "Buy a bale of cotton" movement, and at that time the price was about 10 cents. It is well known that since the fall of 1914 cotton has increased in price until it passed the 30-cent mark in the spring of this year, shot up to 36 cents or thereabouts on a speculative drive, and the quotation of June 22 was 30.4 cents. Electrical insulation is dependent upon cotton as its base material, and of tapes alone probably 97 to 98 per cent are fabricated of cotton yarns. Wire covering trolley cord and many other products are affected by the rising and falling prices of cotton, but it appears that the day-to-day temporary fluctuations have less influence upon the resulting cost of electrical equipment and supplies than the longer and more sweeping changes. The reason for this is doubtless that manufacturers are accustomed to purchasing raw material of a cotton base far ahead of the dates upon which this material is to be utilized in production, and the market price at some future time may be taken into account rather than the price actually paid some months previously for a given consignment of insulating material base, when the establishing of sales figures takes place.

CHANGES IN PRICE OF GOODS

The accompanying table gives an idea of the changes in price which have occurred since the war began, the increases ranging from 106 to 342 per cent. These materials all bear the marks of increased labor cost as well of increased raw-cotton price, and in the case of tape alone it is known that labor cost has increased certainly 50 per cent since the outbreak of the war.

	Before the War Prices	Last Paid Price	Approximate per Cent Advance
68/72 gray goods, lb...	$0.06	$0.21	250
4/4 muslin, yd........	0.08	0.255	219
Cotton tape, gr. yd....	0.385	1.05	173
Varnished cloth, yd....	0.108	0.307	184
Cotton yarn, course, lb.	0.215	0.95	342
Cotton yarn, fine, lb...	0.85	1.75	106

On account of the increase in the price of material manufactured from cotton, the total cost of generators and motors, which are insulated with cotton tape, has been increased from 0.05 per cent to 1.5 per cent.

EFFECT ON WIRE AND CORD

In the case of the coarser sizes of wire the range in price from the beginning of the war was from about 14 cents per pound to 39 cents, this of course being due in part to the increase in the price of copper and also to higher labor charges. An analysis by the cost department of a prominent wire maker indicates that of this increase probably about 7 cents per pound can properly be charged to the rise in the price of cotton from 12.5 cents to 30 cents. Magnet wire rose from 18 cents to 33 cents per pound between 1914 and 1918, and about 9 cents of this may be attributed to cotton price advance, the smaller wire having a relatively larger amount of cotton insulation. Trolley cord increased from 35 to 75 cents per pound during a period when cotton advanced from 10 to 35 cents, and about 60 per cent of the advance in the price of cord, or 24 cents, may be charged to cotton, labor cost having about doubled in the period.

New Equipment to Be Provided for Boston Elevated

New equipment will be provided for the Boston (Mass.) Elevated Railway as soon as war conditions will permit, it was announced after a meeting of the trustees of the company on July 2. The road went over to public management on July 1 under the recent law providing for service at cost with an ultimate return of 6 per cent on the investment, and the trustees anticipate availing themselves of the options and bids made not long ago to the company on new cars and other equipment. The company has secured quotations on 100 new center-entrance motor cars and 100 trailers, but it will be several months before deliveries can be made on account of the absorption of materials and labor by the government.

Rail Prices Still Under Consideration

Stand Taken for $42 a Ton for Bessemer Product in Spite of Higher Cost

Rail prices and prices on other parts of the steel output were under consideration on Monday at a meeting in New York of the Director of Steel Supply and the steel producers' committee. No decision was reached, however. There is but 100,000 tons additional of rail wanted for this year but, it is understood, the Railroad Administration wants the price fixed because of large purchases to be made in 1919.

A stand has been taken for $42 a ton for Bessemer rails in spite of an average cost of production of $50 or more. One prominent producer contends that the rail manufacturer should receive $60 for Bessemer and $65 for open-hearth rails.

Iron Age suggests that "a possible solution of the rail controversy is the payment of different prices to different mills in view of widely differing costs. This might be worked, seeing that the government will take nearly all the output."

Rolling Stock

Rochester & Syracuse Railroad, Inc., Syracuse, N. Y., has placed an order for a double truck snowplow sweeper from the Russell Snow Plow Company, through Wendell & MacDuffie, its representatives in this territory.

Tampa (Fla.) Electric Company's order for eight Birney-type safety cars, referred to in the ELECTRIC RAILWAY JOURNAL of July 6, was placed with the American Car Company, St. Louis, Mo., and not the St. Louis Car Company.

United Railways Electric Company, Baltimore, Md., advises the ELECTRIC RAILWAY JOURNAL that the cars referred to on July 6 as ordered by the company, are "merely the equipment of twenty high-speed double-truck cars with multiple-unit control."

Philadelphia, (Pa.) Rapid Transit Company has ordered fifty additional cars, duplicates of former types, from the J. G. Brill Company. The cars were purchased and will be delivered under priority certificate before next winter. The cars, complete, cost $13,000 each. This totals 150 cars on delivery from the Brill Company. The Philadelphia Company is reported as also re-equipping and overhauling several hundred other cars at a cost of about $1,000 each.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., referring to the action of the City Council of Terre Haute approving the purchase of thirty one-man cars for the Terre Haute Traction & Light Company, states under date of July 15 that the contract for these cars has been verbally closed, but the official contract has not yet been signed. The cars are of the Birney one-man standard type, as manufactured by the American Car Company, St. Louis, Mo., and with the regular standard equipment and safety devices specified on the Birney one-man car with a seating capacity of twenty-eight. The cars were practically bought as stock equipment. Reference to this order was made in the ELECTRIC RAILWAY JOURNAL last week.

Wilmington & Philadelphia Traction Company, Wilmington, Del., whose order for twenty-two new cars, placed with the J. G. Brill Company, mentioned in the ELECTRIC RAILWAY JOURNAL of July 6, are being bought by the United States Shipping Board, Emergency Fleet Corporation, and come through on a priority preference. They are to be operated on the company's lines between Darby and Chester, Pa. This rolling stock is to be leased by the Wilmington & Philadelphia Traction Company and will eventually become its property. The specifications follow:

Number of cars ordered	22
Date order was placed	June 24, 1918
Date of delivery	90 to 120 days
Builder of car body	J. G. Brill Co.
Type of car	Passenger, motor
Seating capacity	52
Weight:	
Car body	21,000 lb.
Trucks	14,000 lb.
Equipment	12,000 lb.
Total	47,400 lb.
Bolster centers, length	21 ft. 10 in.
Length over all	45 ft 4 in.
Truck wheelbase	5 ft. 9 in.
Width over all	8 ft. 6 in.
Height, rail to trolley base	11 ft. 5 in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Nevasplit
Roof	Arch
Air brakes	General Electric, straight with emergency
Armature bearings	Babbitt lined
Axles	Hammered steel
Bumpers	Hedley
Car signal system:	Consolidated Car Heating buzzers and bells and pneumatic door light signal
Car trimmings	Car builder's
Center and side bearings	Brill
Control	Pneumatic for two-car train operation
Couplers	Tomlinson form 8
Curtain fixtures	Curtain Supply
Curtain material	Pantasote
Designation signs	Electric Service
Door operating mechanism	National Pneumatic manual air operated
Fare boxes	Johnson
Fenders or wheelguards	H-B
Gears and pinions	G. E. heat treated
Hand brakes	National Staffless
Heater equipment	Peter Smith electric
Headlights	Ohio Brass, gold ray
Journal bearings	Plain
Journal boxes	Brill
Lightning arresters	M D-3
Motors, type and number	4 G. E.-247-D, inside hung
Registers	International double
Sanders	Ohio Brass, air controlled
Sash fixtures	O. M. Edwards
Seats	Brill reversible
Seating material	cherry slats
Slack adjuster	Anderson
Springs	Brill
Step treads	Universal
Trolley catchers or retrievers	Ohio Brass
Trolley base	U. S. 11
Trolley wheels or shoes	5-in. wheel
Trucks	Brill, 27 M. C. B.-1
Ventilators	Railway Utility
Wheels (type and size)	33-in. rolled steel
Special devices, etc.	Simplex Jack

Trade Notes

Standard Underground Cable Company, Pittsburgh, Pa., last week sold $40,000 of lead-covered cable to the Georgia Railway & Light Company.

Tubular Woven Fabric Company Pawtucket, R. I., has received an order from the Bay State Street Railway, Boston, Mass., for 500 ft. of 1½-in. and 200 ft. of ¾-in Duraduct.

M. H. Callan, general manager of plants, and W. P. Pussinger, general manager of sales, have been elected vice-presidents of the Chicago (Ill.) Pneumatic Tool Company.

Dual Welding Apparatus, Elizabeth, N. J., has been chartered with a capital stock of $50,000 by M. Lucas, Frederick De Meese and Robert Zuber of Elizabeth. The company proposes to manufacture welding equipment.

Babcock & Wilcox Company, Bayonne, N. J., manufacturer of boilers, etc., has commenced operations in a large new addition to its plant recently completed. The structure, which with its new equipment is estimated to cost $1,500,000, is about 150 ft. x 330 ft.

Henry R. Worthington Company, Harrison, N. J., manufacturer of pumping equipment, is said to be considering plans for extensions to its plant on property recently acquired adjoining its works, at Ann Street and Ogden Avenue. The property is about 65 ft. x 225 ft.

Railway Improvement Company, New York, N. Y., announces that it has received an order for Rico anti-climbers to take care of the fifty additional new cars for the Philadelphia Rapid Transit Company's Hog Island service. The first 100 cars recently constructed for this service are also equipped with Rico anti-climbers.

Westinghouse Air Brake Company, Pittsburgh, Pa., at a recent meeting of directors, elected George W. Wildin general manager of the company, vice A. L. Humphrey, resigned. Mr. Humphrey continues as ranking vice-president and in that capacity will as heretofore have general direction of the company's operations in all departments and subsidiary organizations, Mr. Wildin reporting to him.

W. L. Chandler, of the Dodge Sales & Engineering Company, Mishawaka, Ind., as chairman of the standardization committee of the National Association of Purchasing Agents, informs the ELECTRIC RAILWAY JOURNAL that the National Retail Hardware Association, made up of twenty-nine affiliated organizations, has indorsed the standard size 7½ in. x 10⅝ in. for all catalogs and similar literature.

"Iron Trade Review," Cleveland, Ohio, has published a revised and amplified booklet giving the complete schedules of maximum prices on iron, steel and non-ferrous products as fixed by the government, which now are in effect. It is claimed to be the only up-to-date price manual on iron and steel now in circulation, as the numerous changes during the past six months have rendered practically obsolete those previously printed.

J. W. Maloney on July 1 severed his relations with the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., to begin practice as a consulting mechanical and electrical engineer in New York, N. Y. He will specialize in the design and application of railway brake and control apparatus of the mechanically, electrically or pneumatically operated forms. Mr. Maloney's experience in these lines has extended over a period of more than twenty years. Until further notice, his address after July 1, will be 574 Eighty-first Street, Brooklyn, N. Y.

New Advertising Literature

Du Pont Chemical Works, New York, N. Y.: "Tar Products," a twelve-page pamphlet describing their nature and use.

Bastian-Blissing Company, Chicago, Ill.: Catalog illustrating and describing the "Rigo Welding and Cutting Apparatus." Complete units are first outlined in the pages of this interesting publication, followed by a detailed description of regulators and torches.

NEW YORK METAL MARKET PRICES

	July 10	July 17
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	30	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.87½	8.90
Tin, Chinese*, cents per lb	92	92
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	July 10	July 17
Heavy copper, cents per lb	23½	23½
Light copper, cents per lb	20	20
Red brass, cents per lb	19	22
Yellow brass, cents per lb	13	14
Lead, heavy, cents per lb	7	7
Zinc, cents per lb	5⅝	5⅝
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	July 10	July 17
Rubber-covered wire base, New York, cents per lb	30 to 37	30 to 39
Weatherproof wire (100 lb. lots), cents per lb., New York	32.10 to 32.40	32.40 to 34.10
Weatherproof wire (100 lb. lots), cents per lb., Chicago	33.42 to 35.00	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross tons	$62.50	$62.50
T rail, high (Shanghair), cents per lb	4½	4½
Rails, girder (grooved, cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanised wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80½%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste, cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.64	$1.80
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.65	$1.81
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	75	73

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* Government price. † These prices are f. o. b. works, with boring charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, July 27, 1918 *Number 4*

C. E. R. A. Shows Resourcefulness at Cedar Point Meeting

UNUSUAL interest attaches to meetings held during war-time, such as the recent summer meeting of the Central Electric Railway Association, on account of the difficulty of securing speakers and attendants, and of the responsibility laid by circumstances upon those in charge of the programs to see that each item has a bearing upon the winning of the war. The meeting held at Cedar Point, Ohio, by the C. E. R. A. was in part an outing and in part a conference for the discussion of pressing matters. It took the place of the boat ride which has come during the last few years to be a conspicuous feature of the year's activities. The outing in itself was excuse enough for the meeting, because, as more than one speaker forcibly pointed out, it is more important than ever for men engaged in the transportation business to foster personal acqaintance as a means of facilitating interchange of ideas and information. But the program of talks on timely subjects was a real success, in spite of the fact that it bore little relation to the printed schedule. The result was so striking that a suggestion was made to the effect that the same procedure be followed in future meetings. Of course, this could not literally be done, as it is very important that at least part of a program involve careful and adequate preparation. There is a lesson in it, however, namely, that a meeting thrown upon its own resources can instruct as well as entertain itself. In war-time it may be necessary to utilize this fact more and more, and in planning programs it will be well to have in reserve a number of semi-impromptu talks by experts who will explain in non-technical language the latest developments in their several lines of work.

Has the Three-Cent Rate on Steam Roads Affected Interurban Passenger Traffic?

THOUGH the straight 3-cent rate recently put in force on steam roads by the order of the Director-General of the federalized railways has been in force only a short time, some idea of the trend of its effect on interurban passenger earnings can now be gained, although quantitative figures are not yet available. This trend as indicated by a recent brief survey is about as follows:

On those roads where the steam road competition was practically negligible and in great industrial districts where electric railway equipment was already being operated practically up to the limit of its passenger-carrying capacity the gains in traffic are, of course, negligible. On those lines which parallel steam roads through the great agriculture belts the gains are slight, since in these districts local traffic has largely been destroyed by automobile competition and the long-distance traffic is light. The greatest gains seem to have been made by those roads operating into large city terminals. On some of these roads for hauls ranging from 15 to 75 miles in length the gain has been noticeable.

On the whole, however, the gain has not been at all sufficient to justify the statement made by a member of the public utilities commission in one of the states containing a large interurban mileage who is quoted as recently saying to electric railway operators in connection with an increased fare petition: "Now is the time to fill your cars." As a matter of fact, the present indications bear out the advice of the War Board recently quoted in these columns that this is no time for hopes of profitable competition with the steam roads, or, to get down to bed rock in the matter, competition with the government. There are far greater possibilities in increased income from higher rates of fare than from any increase in traffic taken over from the steam roads as a result of their 3-cent fare rate.

You Cannot Indict an Entire Industry

"I DO NOT KNOW the method of drawing up an indictment against a whole people," said Edmund Burke in his famous speech on conciliation with the American colonies. Similarly we do not know how to, and we do not think it proper to, indict a whole industry.

The electric railway industry is on the threshold of great, of revolutionary changes. Already in many cities the long-headway, two-men heavy car is being replaced by the short-headway, one-man light car and the industry's price for a generation—the 5-cent flat fare regardless of distance—is in a state of rapid dissolution.

But as electric railways endeavor to make these changes, they are likely to be told that they must have been a lot of blithering idiots not to have done these things before. Is this true?

One answer to such a blanket indictment must stress the fact that the founders of electric railways were not permitted by the public sentiment of their time to charge higher fares because almost every franchise had an ironclad stipulation for a 5-cent fare. Another answer must bring out the fact that the more economical one-man car with automatic devices was not developed until a late period because of public opposition to be traced back to bobtail horse-car days. A third answer is found in the fact that the past generation knew nothing and cared nothing about "depreciation," "obsolescence," "service-at-cost" and other things that now make the electric railway man's life a busy nightmare.

It is easy to criticise the operators of a private corporation for the mistakes and failings of their predecessors, but who would dream of criticising the present officials of a municipal corporation for what was done by mayor and aldermen 'way back in '89? Why not give the private corporation official an equally fair start for character and probity?

No doubt many operators have failed to take advantage of changed conditions, particularly in acting on the principle that the electric railway is no longer a monopoly—but give them a chance, ye Mayors, Councillors and Commissioners! They often know what ought to be done but need just a bit of encouragement from you to put it over!

A Large Working Force Turnover Causes Disorganization

A MAN cannot step into a new position, be it that of manager or waterboy, and develop his normal work output the first day. It takes some time for him to determine the exact nature of his duties and to become accustomed to his working conditions and the local routine. Not only is he inefficient himself during his "breaking-in" period, but by reason of the fact that he must receive his instruction from others, the output of his fellow workers is also affected. Obviously, different classes of work call for training periods of different lengths and the experienced hand creates less confusion than the green one. But no matter what the line of work or what the experience of the men involved, a large working force turnover is a fruitful cause of disorganization and makes the maintenance of discipline difficult. This problem is a serious one with the electric railway industry to-day since upon the maintenance of organization and discipline depends the safety of their patrons as well as the mere ability to move cars over rails.

What are the causes of the unsettled employment conditions? We would naturally expect military conditions to be the chief cause where the men concerned are of draft age. But the turnover is not by any means the direct result of large numbers of young men entering the military or naval services. It also is large with old, experienced men both of the salaried and working classes. The high wages and salaries now being offered in other fields of endeavor are the main cause of unsettled conditions among these men. Yet by all means they should be retained in the industry. They can be retained only if the compensation which they receive is commensurate with their training and experience, the continuity of employment which exists on an electric railway being considered as one part of their compensation, and if their working conditions approximate those in other lines of work. No more inspiring illustration of the "lure of the rail" can be found than the devotion of our experienced railway men to their work despite the higher pay and easier working conditions outside. But the "lure" cannot be expected to maintain its attraction indefinitely, nor can the wages of electric railway trainmen be paid out of an empty purse.

Make Better Use of Claim Agents in Public Relations Work

THE operating head of a certain electric railway system recently called the claim agent into his office and said in effect: "My idea is that a claim agent should be a hard, unyielding sort of fellow who knows how to bluff and who cannot be bluffed. There is no place in a claim office for good fellows. Their work is dirty work, and they may as well realize it."

Could anything be more absurd? This operator may be a good engineer, but his ignorance of public relations is both broad and comprehensive. There are few electric railway employees who can be of greater service in public relations work than the members of the claim department.

The claim department policy is of the utmost importance. If the operating head thinks that every claimant is a thug and a thief, the claim agents who carry out his policy certainly cannot be makers of friends. On the other hand, if the company makes it known that it takes every possible precaution to prevent accidents and that it is always ready and willing to treat fairly those who have suffered through its fault, the public will in time treat the road fairly.

The traveling public is not made up of people who look upon a transportation company as legitimate prey. The public is made up of average men and women who respond to fair treatment and kindness when they receive them and who are just human enough to respond with harsh treatment and meanness when they are treated in such a manner by company representatives.

For the sake of a few dollars, no railway is big enough to be able to afford making an enemy. Money paid out to satisfy unjust claims is money that is gone. The settlement ends the matter financially. But an enemy made by saving a few dollars is a persistent liability that grows greater with time. Indeed, a miserly attitude in a claim department creates enmities that cost small fortunes later on. One time a claim agent boasted that he had saved $20 by bluffing a workman who was not clever enough to hold out for what the claim agent would have been willing to pay. Later that workman was on a jury in an important case, and his influence was sufficient to swing the verdict against the company for $10,000. Does it pay to save at the spigot and waste at the bunghole?

All claim agents should be instructed in the art of making friends. They should treat every person with whom they have dealings squarely and fairly. Like salesmen (which they really are), they should do everything in their power to build up good-will for the company. Of course, they should not pay out money which does not rightly belong to the claimants. But even refusals can be worded in such a way as to make friends. Good reasons can often be substituted for dollars.

The idea of combining fair dealing, kindness, frankness and sound ethics with claim work is not new. More than one company has proved that such a policy costs less money than the old one of fighting everyone, and that at the same time it is a constructive force in the creation of good-will. Too many companies, however, are still mentally living in the stone age, when the only way to handle one's fellow-men was with a club. This will not now do with claimants or in any other kind of public relations work.

Efforts Continue Toward Drafting a Service-at-Cost Franchise

ARE the electric railways to find their salvation in the service-at-cost plan? Cleveland was the first city to try this form of franchise in a modified way. Unfortunately there was a limit to the sliding scale of fares which was intended to provide proper service and meet all costs. Dallas more recently adopted an ordinance of the same general character, having also a maximum in its schedule of fares. The new Philadelphia franchise met this situation more adequately by providing for adjustable fares without limit subject to the approval of the State commission. Then came the Boston relief measure which is now so familiar, having no limit to possible rates of fare and providing also that the State would make up any temporary deficit by a tax on the communities served by the company.

In Chicago, after working many months on a franchise to the existing companies providing for merger and for subways, the public representatives have turned to a proposed form of trustee corporation to take over the system subject to existing liens--a novel method of municipal operation with a guaranteed return to security holders assured by provisions for flexible fares. Whether or not this type of ordinance will be approved by the companies and the public is a matter which it will require some months to determine. The situation is interesting, however, as an illustration of the growing tendency toward service-at-cost legislation.

In this connection it might be profitable to turn to the experience of Cleveland as set forth in a statement recently filed with the War Labor Board. Making the point that "there is no such thing as absolute service at cost," the company's attorneys contend that the service-at-cost idea is impossible of attainment and wrong in principle.

The Cleveland management undoubtedly has given the Tayler plan of franchise a long and fair test. Starting with a 3-cent fare and a charge for transfers, the company after a year's trial gave a rebate on transfers. When the new fare schedule was found inadequate to keep up the interest fund, higher rates were put into effect until at last the maximum was reached and then the financial outlook became more than ever a cause for worry.

At the close of the last fiscal year the company reported that eight years of operation under the Tayler ordinance had resulted in a serious impairment of capital. In addition to this deficit, the company has no reserve funds for renewals, replacements or damage claims. Its 6 per cent return is, of course, guaranteed, but even this protection is said to be jeopardized unless the management resorts to the privilege of curtailing service to such an extent as to reduce its operating expenses to a safe level.

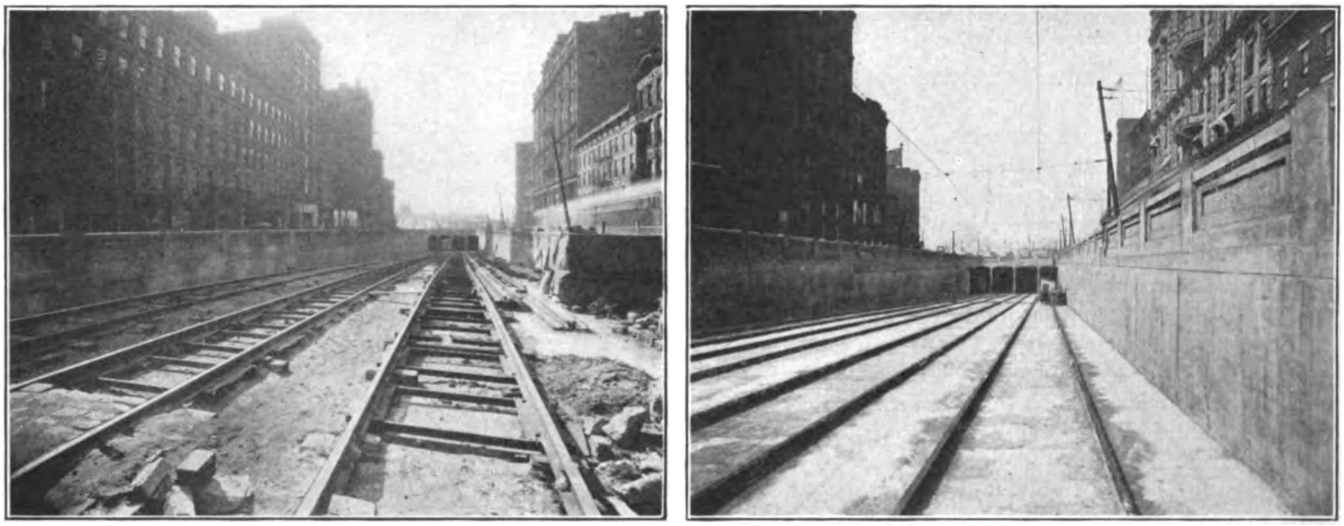
The Cleveland franchise differs from several of the more modern enactments in offering a fixed return on investment with no encouragement for initiative and economy. The older Chicago ordinances provided for a division of surplus over and above expenses. However, they contained the handicap of a fixed fare. The new Boston measure is based on a sliding scale of fares with no maximum limit, but the stock return is fixed for various periods of years. It is not unlikely that a type of franchise will yet be worked out for some company which will properly recognize interest on investment as a necessary element of the cost of service and will make explicit provision for any higher rate of return necessary to attract new money. The guarantee of 5 or 6 per cent looked attractive some years ago, but in future even an assured 7 per cent may not be sufficient.

Company Section Delegates at the Atlantic City Convention

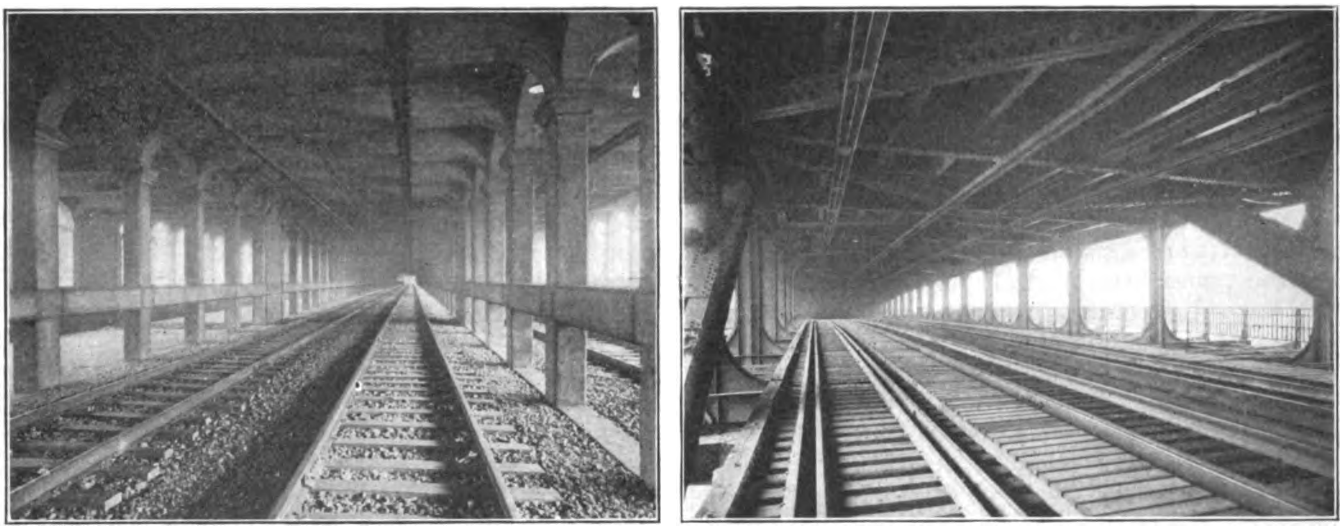
THE company section movement in the American Electric Railway Association is now at such a stage that it seems essential for representatives of the sections to get together to discuss ways and means for keeping up the interest during the coming strenuous war period. We use the word "coming" advisedly because thus far, with all of the splendid patriotism that has been shown, the war is just beginning seriously to affect the lives of individuals and organizations in this country. The company sections of the association have an important part to play in these times, and they should be thoroughly prepared now to play this part well. An opportunity will be afforded at the coming convention for conferences of those vitally interested in the section work to compare notes and outline programs for the coming winter, and it is none too early to lay plans now.

In every section there is one man to whom the members look for inspiration (and generally for hard work also) in the local activities. This is the man of analytical turn of mind who sees the opportunity which is before the section and who can formulate suggestions for meeting this opportunity. This man should be at the Atlantic City convention, specifically charged with the responsibility of bringing home a bagful of ideas which will make the 1918-1919 season a real success. And the only gage of success is the extent to which the section contributes to the winning of the war. Cannot each section send a representative to the convention so impressed with the importance of his job that he will really get something worth while? There will be an unwonted seriousness at the meeting this year that may well be reflected in the sections.

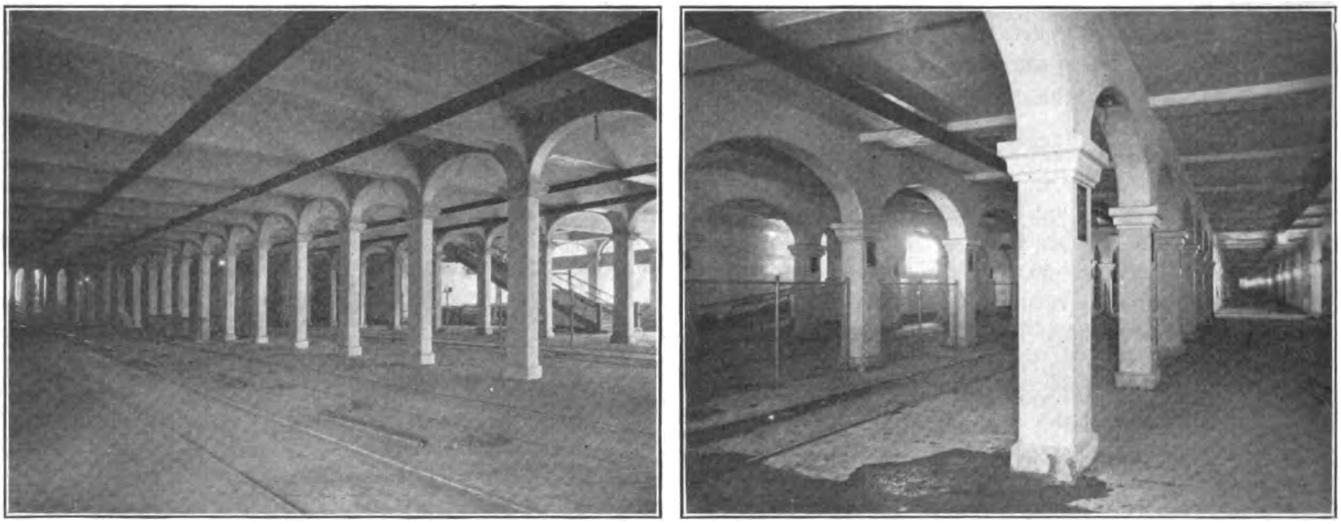
The companies are, very properly, going to be chary in sending delegates to the convention this year. The managers must "be shown" prospective results for every dollar of expenditure. In the case of section representatives it ought to be possible to show these results readily; if not, the section can furnish the "wherewithal" themselves. If section conferences demonstrate their effectiveness undoubtedly the association would eventually be willing to assist in financing these meetings. The American Institute of Electrical Engineers, which has only individual memberships, thinks so much of the presence of section delegates at its annual convention that it pays their traveling expenses, thus eliminating the geographical barrier to attendance. The substance of the whole matter, however, is: pick out the "live wire" in your section; charge him with the responsibility outlined above; get him to the convention, and, above all, apply his new ideas and enthusiasm when he gets home. If this line of thought appeals to any section, it should act at once.



APPROACH TO LOWER LEVEL, SHOWING TRACK UNDER CONSTRUCTION AND CONCRETED IN



VIEWS WITHIN THE BRIDGE—AT LEFT IN THE CONCRETE ARCHES; AT RIGHT IN THE STEEL ARCH



LOADING STATIONS—AT LEFT, SUPERIOR AVENUE END; AT RIGHT, DETROIT AVENUE END

Track and Overhead Construction on Cleveland's New High Level Bridge, which Connects the Eastern and Western Sections of the City

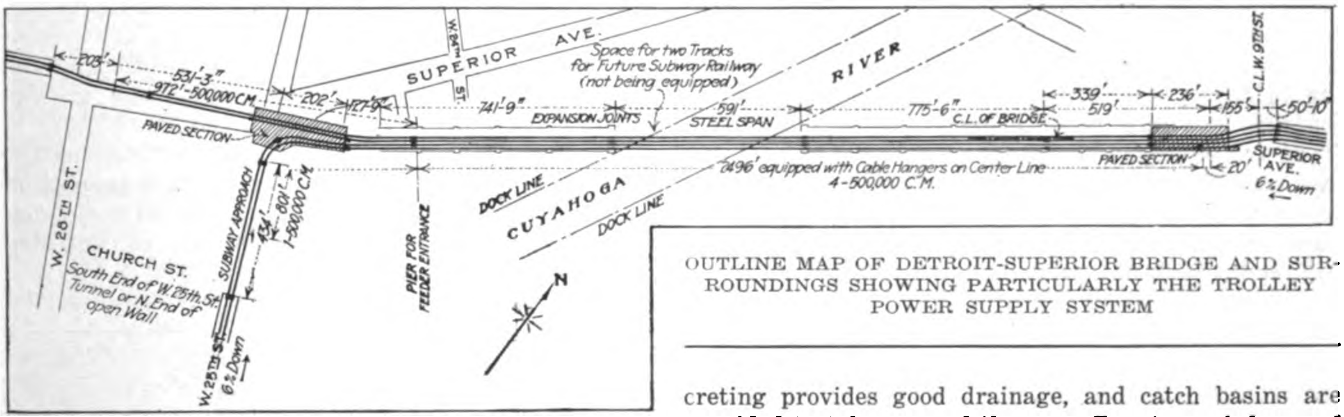
(The electric railway tracks, now four in number, are on the lower level, which is wide enough for two future subway tracks also.)

Electric Railway Construction on the Detroit-Superior Bridge

Cleveland, Ohio, Has Completed a Magnificent High Level Viaduct on which the Cleveland Railway Has Some Interesting Overhead and Track Work

TWENTY-FIFTH STREET ENTRANCE TO ELECTRIC RAILWAY LEVEL, DETROIT-SUPERIOR BRIDGE

THE famous concrete and steel bridge across the Cuyahoga River near the business center of Cleveland, Ohio, constructed by Cuyahoga County, is now complete and the cars of the Cleveland Railway are operating under full schedule on the four tracks of the lower deck. This bridge comprises a number of graceful reinforced concrete arches on the banks of the river, and a steel arch of 591 ft. span over the river itself. The total length of the viaduct is about one-half mile. The contractor for the bridge was the Hunkin-Conkey Construction Company, to whom we are indebted for the general view reproduced on page 146.


SUPERIOR AVE.
W. 24th ST.
Space for two Tracks for Future Subway Railway (not being equipped)
RIVER
203'
531'-3"
972'-500,000 C.M.
202'
127'9"
741'-9"
EXPANSION JOINTS
591' STEEL SPAN
775'-6"
C.L. OF BRIDGE
339'
519'
236'
155'
50'10"
C.L.W. 9th ST.
PAVED SECTION
PAVED SECTION
20'
SUPERIOR AVE. 6% Down
2496' equipped with Cable Hangers on Center Line 4-500,000 C.M.
DOCK LINE
CUYAHOGA
DOCK LINE
SUBWAY APPROACH
434'
801'
1-500,000 C.M.
PIER FOR FEEDER ENTRANCE
W. 25th ST.
CHURCH ST.
South End of W. 25th St. Tunnel or N. End of open Wall
W. 25th ST. 6% Down
N

OUTLINE MAP OF DETROIT-SUPERIOR BRIDGE AND SURROUNDINGS SHOWING PARTICULARLY THE TROLLEY POWER SUPPLY SYSTEM

For the purpose of examining the bridge with respect to the electric railway construction it may be divided into three parts: the track approaches from the street, the paved areas at the ends of the bridge proper together with the passenger entrances from the street, and the main viaduct including the big span. The accompanying photographs have been taken to show the nature of the construction in these several sections.

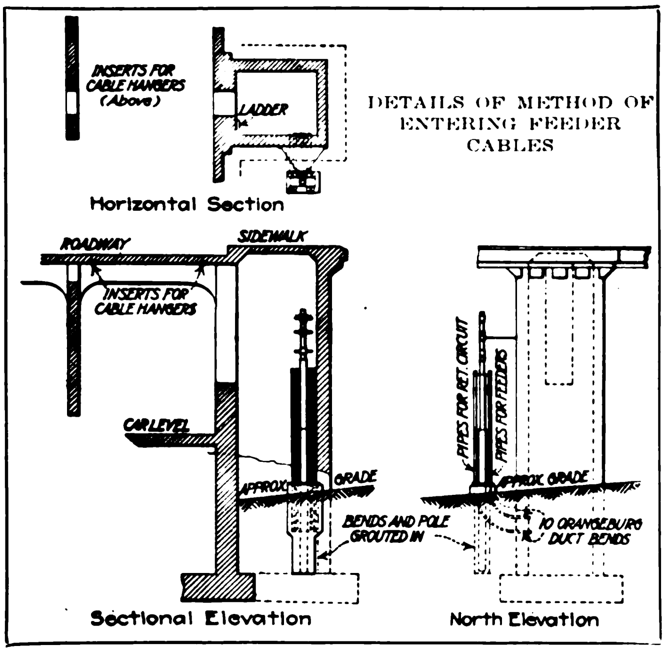
Electric railway interest centers in the track, the power supply system and the provision for handling passengers. These will be taken up in turn.

The track is laid with 100-lb. A. R. A. Type-A rail. In the open track between the paved areas, a distance of about 2500 ft., the rails are laid on white oak ties, 6 in. x 8 in. x 8 ft. in size. The rails on the steel span are laid on 7 in. x 9 in. x 9 ft. white oak ties with regular bridge tie construction. The track is ballasted with slag, of which there is a layer 6 in. thick below the ties.

On the approaches and in the paved station areas the track is laid on International steel ties, concreted in place. Two pictures have been reproduced to show the construction, before and after concreting. The concreting provides good drainage, and catch basins are provided to take care of the run-off water. A layer of 1:5 gravel concrete was placed under the ties. The steel ties were used to minimize the depth of the concrete layer and on account of their general adaptability to concrete track construction.

$125,000 SPENT ON OVERHEAD LINE MATERIAL

In designing its part of the viaduct work the overhead department of the railway was confronted with the task of supplying power to a possible bridge full of cars, a third or more of which would be on an up grade. It was necessary to be ready to furnish power up to a total



DETAILS OF METHOD OF ENTERING FEEDER CABLES

of 2500 amp. per track, which would be drawn if all of the cars should start at once.

Over each of the four tracks so far installed (there is space on the lower deck for two future subway tracks) is hung a No. 0000 grooved trolley wire, extra hard rolled. Each is paralleled for 2500 ft. in the center of the bridge with a 500,000-circ. mil feeder, tapped in at frequent intervals. A 1,000,000-circ. mil feeder cross-connects these auxiliary feeders and leads to the power plant near by. The feed wires are exposed and are strung on the cross beams of the bridge, being supported on G. E. rack-type switchboard insulators.

The trolley wire is mounted on spring-type Ohio Brass hangers spaced from 10 to 12 ft. apart. These clamp the wire loosely to permit the motion resulting from expansion and contraction. The troughs are of hardwood, securely bolted together and either clamped firmly against the concrete roof or suspended from the steel beams by means of special malleable-iron hangers. The latter can be discerned in the picture showing the construction within the steel span.

The outline map on page 145 shows the relation of the lines on the bridge to the surrounding streets and to Cuyahoga Creek. The Viaduct power house, from which the power supply is drawn, lies about 300 yd. north of the viaduct, just outside the field of the map.

One matter which the power department of the railway has been considering with particular care is a method for keeping the trolley wire taut in spite of expansion and contraction of the bridge. The plan for this has as yet not been fully worked out.

APPROACHES TO THE TRACK LEVEL

At each end of the bridge is a paved area large enough to accommodate several cars on each track, the floor being of stone blocks grouted with cement. The tracks of each line are separated by a light fencing, a diving alley providing access to the inside tracks.

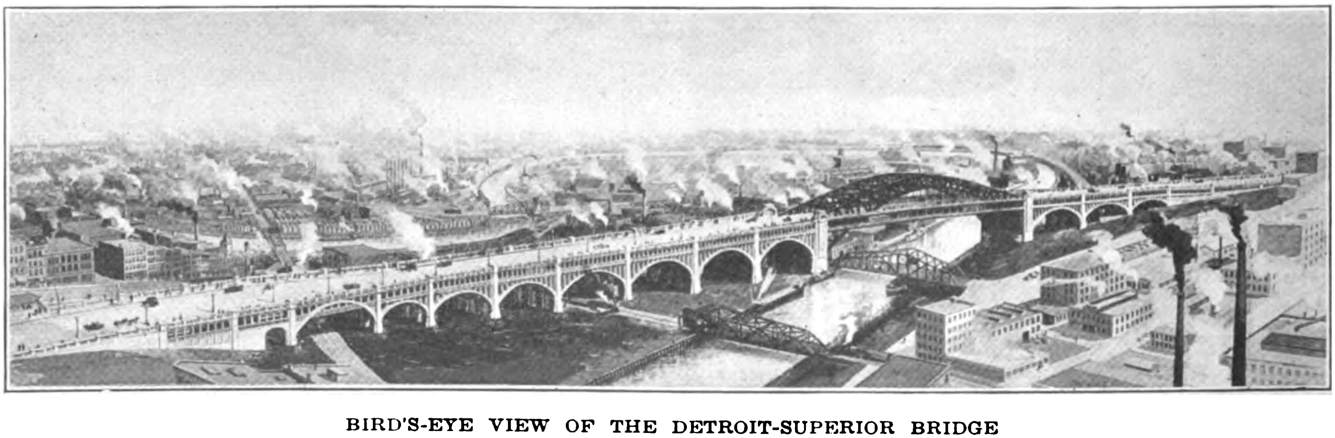
Long flights of easy steps lead from the street level to the track deck with attractive housings over the stairways at the street level. A view of the entrance at Twenty-fifth Street is shown on page 145 in the headpiece of this article.

The new viaduct will greatly facilitate transportation between the eastern and western sections of Cleveland, previously hampered by limited track facilities and by the operation of a draw in the Superior Avenue viaduct. Especially fortunate is the opportunity for loading and unloading cars away from the street level, which has been taken full advantage of in the manner indicated. The railway construction has been carried out by the railway company, the track work under the direction of Charles H. Clark, engineer maintenance of way, and the overhead under that of L. P. Crecelius, superintendent of power.

Car Meters for Instruction and Skip-Stop Studies

THE San Antonio (Tex.) Public Service Company recently purchased ten "Economy" watt-hour meters which it is putting to two interesting uses. One is to employ the readings of the meters as an object lesson to recruits in teaching them the principles of car operation. This is as far as the company can go at present in the use of energy-checking devices owing to the heavy problems presented by the absence of many department heads and trainmen in military service and the extraordinary pressure on its facilities due to war travel at San Antonio.

The second use now being made of "Economy" meters is to check the power requirements in proportion to the number and duration of stops to get some conception of the fuel saving possibilities of skip-stop service.



BIRD'S-EYE VIEW OF THE DETROIT-SUPERIOR BRIDGE

The Space-Grabbing Automobile

Automobile Use of Highway Space at Washington Only One-Twentieth as Efficient as Street Cars and Far More Dangerous—Regulation of Both Automobiles and Street Cars Essential

THE relation of general traffic to street car traffic is the subject of section nine of John A. Beeler's report on the traffic situation in Washington. He points that while Washington's streets are generally wide, it does not follow that they are safe, because a wide street invites speed and permits more streams of traffic. As proof, he notes that fifty-three lives were sacrificed in Washington's streets during the past year—one life per week and the rate is steadily increasing.

JAY-DRIVERS AS WELL AS JAY-WALKERS

When the automobile was apparently insignificant it was granted or usurped privileges that cannot be retained with the tremendous proportions it has now reached. These usurpations are unlimited parking, right-of-way over other traffic, and lack of observance of due caution in crossing intersecting streets, especially those with car tracks.

While most autoists show consideration for the rights of other drivers, nearly all display a contemptuous disregard of the rights of pedestrians. One of their most annoying and dangerous practices is to approach the street crossings at full speed regardless of the traffic signal, bearing down on the cross-walk full of pedestrians, and making a sudden stop directly across the walk, blocking the passage of those endeavoring to cross the streets. Should the brakes fail, a car skid or any one of a thousand things happen, serious accident or loss of life surely results. Continuing, Mr. Beeler says: "We hear a great deal about jay-walking, but I will venture to say that for every jay-walker there is a reckless driver. Until drivers are willing or are compelled to concede the rights of pedestrians to cross the streets in safety at the proper places, we can expect jay-walking, as it is frequently safer for the pedestrians."

CONGESTED CORNERS GREATLY RELIEVED BY PREVIOUS RECOMMENDATIONS

Mr. Beeler then gave some figures to show that his previous recommendations had greatly relieved congestion. An abstract follows: On Jan. 10, 1918, a count made at Fifteenth Street and New York Avenue showed 924 vehicles passing through this intersection between 4 and 5 p.m. On March 18 a similar count disclosed a total of 1135, an increase of 23 per cent.

The average time of passage (on March 18) of each vehicle was 10.34 seconds. The total time spent by all vehicles in the intersection during the hour observed therefore was 11,736 seconds. Hence there was an average of three and one-quarter vehicles in the intersection all the time. In addition, some 203 street cars had to pass the intersection, each averaging thirteen seconds to do so. Such a condition required skill in the traffic officer directing the flow and skill on the part of the motormen to get through without striking anything while running past the various cut-outs by momentum.

Observations showed that the 1135 vehicles mentioned carried 2144 persons, or an average of 1.89 persons, including drivers, while the 203 street cars conveyed 7541 passengers, or an average of 37.15. As each automobile averaged 10.34 seconds in the intersection and the street cars but thirteen seconds, the relative value of the car and the automobile as carriers is apparent. In other words, every passing automobile carries one person for every twenty on a street car, and for every street car held up to accommodate an automobilist, twenty people wait that one may pass. It takes less than three seconds longer in the intersection to pass a street car carrying nearly two score of persons than it does an automobile carrying less than two.

The new police regulations effective on June 1. controlling the vehicle traffic through this week have achieved marvelous results. A count made on June 20 showed the number of vehicles passing between 4 and 5 p.m. to be but 325, or a reduction from the 1135 observed on March 18 of 71 per cent. In other words, the new regulations have scattered the automobile traffic among many intersections instead of a few, much to the benefit of all.

CENTER PARKING AND ACCIDENTS

Further to increase the speed and track capacity at this point other action is necessary. For example: Automobiles are allowed to stand in the middle of Pennsylvania Avenue at right angles to and at either side of the car tracks. This results in many collisions. Automobiles are constantly going in and coming out of the parking space. Many run too close to the tracks. Others start up and run onto the tracks without first ascertaining if the way is clear. People walk between the vehicles parked in the middle of the block onto and across the tracks. Accidents are prevented only by the vigilance of the motormen.

It is interesting to note where accidents occurred along the Avenue from this cause during the period Jan. 5, 1916—May 1, 1918. A summary follows:

Location	Number of Collisions Between Street Cars and Automobiles Due to Center Parking
Pennsylvania Avenue:	
Ninth to Tenth Streets	20
Tenth to Eleventh Streets	12
Eleventh to Twelfth Streets	21
Twelfth to Thirteenth Streets	22
Thirteenth to Fourteenth Streets	19
Fourteenth to Fifteenth Streets	82
Total	176

Observations made of the traffic between Fourteenth and Fifteenth Streets on Pennsylvania Avenue show that each street car is, on an average, twenty-two seconds in the block when going west and forty-five seconds when going east. The time of eastbound cars includes stopping time at Fourteenth Street. Each automobile that crosses the tracks between these two streets consumes twenty seconds in maneuvering on the tracks. A total of 175 street cars has to operate here in both directions in a busy hour, from which it is readily seen that with a street car every twenty seconds and an automobile maneuvering on the tracks every thirty seconds (consuming twenty seconds in such maneuvering), that both danger and delay are produced for the street cars and their patrons.

Pennsylvania Avenue has a roadway 110 ft. wide. The street cars occupy less than one-fifth of it and carry a score of people for each one transported by automobile, so it seems only reasonable to assure them a safe, clear track between street intersections without such dangerous mid-block interference as is now going on. Yet May 23 and 24 show, not including machines crossing within 30 ft. of the ends of the block or at the alley near the middle of the block, seventy-six automobiles crossed the track between 4 and 5 p.m., and 122 between 10 and 11 a.m.

Many pedestrians also cross the tracks in this block and try to find a path between the parked automobiles, greatly to their own danger. During the periods of observation, 121 instances were noted in the morning hour, and 367 in the afternoon hour. It is a strain on the motorman constantly to watch out for people dodging in and out from between these machines and onto the tracks.

As center parking is desirable if it can be done in safety, a very simple way to minimize this danger is to establish a line of stanchions set in pockets sunk in the paving. Where parking is permitted, the same wire rope can be stretched to bar the automobiles from encroaching beyond their proper limits onto the car tracks. This would also prevent pedestrians from walking between the automobiles and across the tracks. On any occasion when their presence is undesirable, stanchions and wire rope can be removed on a few minutes' notice in the same manner as they are now removed from the curbing after a parade.

SAVING TIME AT TRAFFIC OFFICERS' POSTS

At present motormen frequently hesitate after receiving the "go" signal from the traffic officer. This may be due to a lack of proper instruction. The inevitable result is that the traffic officer reverses his signal and calls for traffic to proceed from some other direction. Meanwhile the waiting car is losing time and delaying the cars behind it. Motormen must keep their eyes upon the traffic man all the time while standing and waiting for a signal, and be prepared to get a quick start immediately upon the signal to proceed, unless their cars have not finished receiving and discharging passengers.

The control and direction of street traffic is in itself an occupation that demands the service of a capable and intelligent man. As has been shown, more than 1100 vehicles and 200 street cars will pass through a busy intersection in an hour. A traffic officer is a member of the police force, but his duties are as different from those of the other members as a fireman's duties are from those of a health inspector. although both are working in the interests of public safety. Unless the man at the intersection understands traffic work, the traffic will get through just as well or better without him. The fact that a man is good as a patrolman is about as much of a qualification for a traffic officer as it would be for an engineer in the fire department. Washington is especially fortunate in possessing some most competent men in this branch of the service.

Traffic control is so important and vital a factor upon which the comfort and safety of the public are largely dependent that the traffic squad should be under one direct and authoritative head to permit no division of responsibility. The members should be carefully selected from those having special aptitude along these lines, and they should be carefully drilled in their respective duties until they all become proficient in the art.

Precedence for street cars is a principle that merely recognizes the rights of the majority, if a passenger ratio of twenty to one may be termed by such a phrase. Perhaps it might be said to recognize the rights of the masses as against the classes, but in Washington the classes as well as the masses use the street cars. At any rate, the street cars only run on a comparatively few streets where their tracks have been laid. Automobiles can and should go elsewhere and not follow car tracks.

CHOICE OF NEAR-SIDE OR FAR-SIDE STOPS SHOULD NOT BE UNIVERSAL

No unanimity of practice or opinion on the relative merits of the near-side and far-side systems of stops exists in this country. In a number of cities where nearly every street contained tracks, street cars were making two stops, one before crossing the intersecting track for the purpose of getting the car under control and one after crossing to the far side to receive and discharge passengers. By adopting the near-side passenger stop, one stop was saved at each such street.

With the increase in automobile traffic, street accidents began to increase and a country-wide agitation was started to have street cars stop before crossing intersecting streets. The reaction set in later when communities realized that the needs of street car passengers should be paramount in matters affecting vehicular traffic. To-day, probably as many cities employ one plan as the other, and an increasing number are using a combination, depending upon the special requirements of each case.

Although some authorities take a stand in opposition to all far-side stops, the model street traffic regulations issued under the auspices of the National Safety Council and written by William Phelps Eno, whom the Council terms "probably the most expert adviser on such matters in the world," contain the following indorsement of far-side stops:

> Formerly cars stopped on the far side of the street (in the city of New York) except at fire, hospital and school stops, where they stopped at both sides. In 1904 the near-side ordinance was passed at the instigation of the author, but it was soon repealed. In 1914 this ordinance was re-enacted and has since been made to include buses. (Since changed back to far-side stops for buses.)
>
> The reasons given for the near-side stop were safety and reduction in the number of stops.
>
> As far as safety is concerned, the author after continued study now believes the far-side stop to be the safer, both for cars and for buses.
>
> * * * * * * * *
>
> All things considered, the author has reached the conclusion that the far-side stop has the balance of advantage and that the compulsory near-side stop should be discontinued at all streets, hospital and school streets included.

In Washington, where the near-side stop has been generally observed for a long time, Mr. Beeler's recommendations have, in order to avoid a disruption of long-established practices, followed the same plan except in those instances where some particular advantage was to be gained by using a far-side stop. Where traffic officers control and direct traffic, it makes but little difference as far as safety is concerned whether a near or far-side passenger stop is in vogue, since all traffic must receive the signal before crossing the street.

Where street cars make a near-side stop for the purpose of receiving and discharging passengers, all automobile traffic is delayed and blocks the roadway behind the car, as it cannot proceed until passengers are safely on or off. Where a far-side stop is used, however, the automobile in many instances can turn into the cross street without delay while the car is loading. The far-side stop can often be used to relieve accumulated congestion.

From the safety standpoint, the principal objection to the near-side stop is the uncertainty as to whether or not the car is going to stop to receive and discharge passengers. Under the assumption that it will stop, many drivers will spurt ahead and risk a collision in order to make the crossing ahead of the street car. Doubtless if every street car in the city were required to stop at the near side of every street, regardless of whether there were passengers to board or alight, the plan would meet the approval of those motorists whose least concern is the time it requires the car rider to reach his destination. In many foreign countries the opposite rule prevails, namely, that all vehicles are required to come to a full stop before crossing a street railway track. Which is the more sensible regulation? The street car must follow the tracks. Its course is not only self-evident but limited. It cannot go out of its way to run over pedestrians or collide with vehicles.

This brief discussion of the relative merits of each system of stops gives some explanation of the great divergence of opinion as to which is the better. With automobiles privileged to run without restriction across streets containing street car tracks, the question of whether near-side or far-side stops are better hinges on two points: (1) Is automobile traffic or street car traffic more important; (2) on the conditions surrounding each stopping place, such as volume of the various kinds of traffic, liability of congestion, previous practice in the community and convenience of the car patrons. Street car stops should not be located according to an inflexible rule requiring all stops to be near-side or far-side, but according to selections based entirely on the factors listed above, and clearly indicated by car-stop signs.

NO PARKING AT CAR STOPS OR PLOW PITS—EXCAVATION AND BUILDING PERMITS

No parking of vehicles should be permitted opposite any plow pit or between any plow pit and the curb line. In addition to the prohibition of any vehicles standing between any raised loading platform or safety zone and the curb, no vehicle should be permitted to stand within 15 ft. of any regular car-stop sign.

Before making excavations or openings of any character in the roadways within the congested district, the permits should have the approval of the Police Department (or the traffic division thereof). This will enable those in charge of the control of traffic to ascertain in advance when and where any important changes in the flow of traffic will occur and to provide against congestion or tie-ups by taking such measures as are necessary and desirable to prevent confusion and delay.

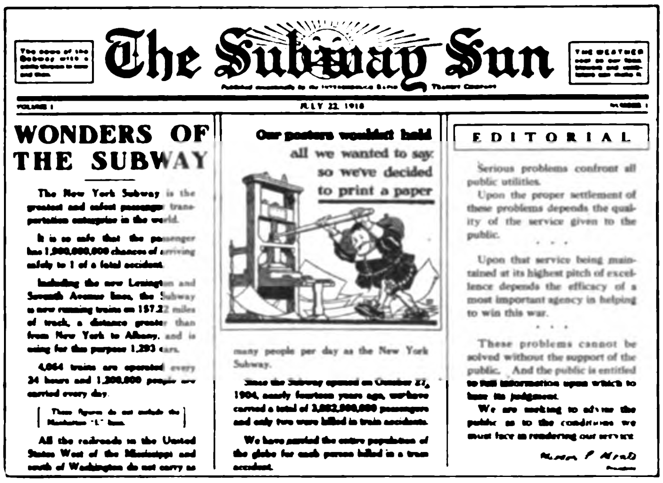
The regulation governing the use of building permits should be modified within the newly defined "congested district" to allow the builder to use during construction only the sidewalks of any street with car tracks on it, except that an allowance may be made for the erection of temporary sidewalks to allow pedestrians to pass the work in safety.

IN WASHINGTON RIGHT-OF-WAY FOR VEHICLES SHOULD BE FROM THE RIGHT

At present where the flow of traffic is not controlled by a traffic officer, vehicles moving north and south have the right-of-way over those going east and west. The "north and south" plan originated in New York. It is especially adapted to the necessities in that city, as practically all the main heavily traveled arteries there extend north and south.

Mr. Beeler believes that the plan of giving the right-of-way to the vehicle approaching from the right would be better adapted to conditions in Washington where the important thoroughfares extend in all directions. The right-hand rule is working admirably in many important cities. Its application at Washington would undoubtedly simplify vehicular traffic and prevent mix-ups, accidents and confusion, not only on the streets intersecting at right angles, but at the busy circles and on the diagonal thoroughfares, such as Pennsylvania, New York, Massachusetts and New Hampshire Avenues.

Novel Car Poster in New York



The Subway Sun

JULY 22, 1918

WONDERS OF THE SUBWAY

The New York Subway is the greatest and safest passenger transportation enterprise in the world.

It is so safe that the passenger has 1,900,000,000 chances of arriving safely to 1 of a fatal accident.

Including the new Lexington and Seventh Avenue lines, the Subway is now running trains on 157.22 miles of track, a distance greater than from New York to Albany, and is using for this purpose 1,293 cars.

4,064 trains are operated every 24 hours and 1,200,000 people are carried every day.

[These figures do not include the Manhattan "L" lines.]

All the railroads in the United States West of the Mississippi and south of Washington do not carry as

Our posters wouldn't hold all we wanted to say so we've decided to print a paper

many people per day as the New York Subway.

Since the Subway opened on October 27, 1904, nearly fourteen years ago, we have carried a total of 3,882,000,000 passengers and only two were killed in train accidents.

We have carried the entire population of the globe for each person killed in a train accident.

EDITORIAL

Serious problems confront all public utilities.

Upon the proper settlement of these problems depends the quality of the service given to the public.

. . .

Upon that service being maintained at its highest pitch of excellence depends the efficacy of a most important agency in helping to win this war.

. . .

These problems cannot be solved without the support of the public. And the public is entitled to full information upon which to base its judgment.

We are seeking to advise the public as to the conditions we must face in rendering our service.

THE "SUBWAY SUN," THE LATEST INTERBOROUGH CAR POSTER

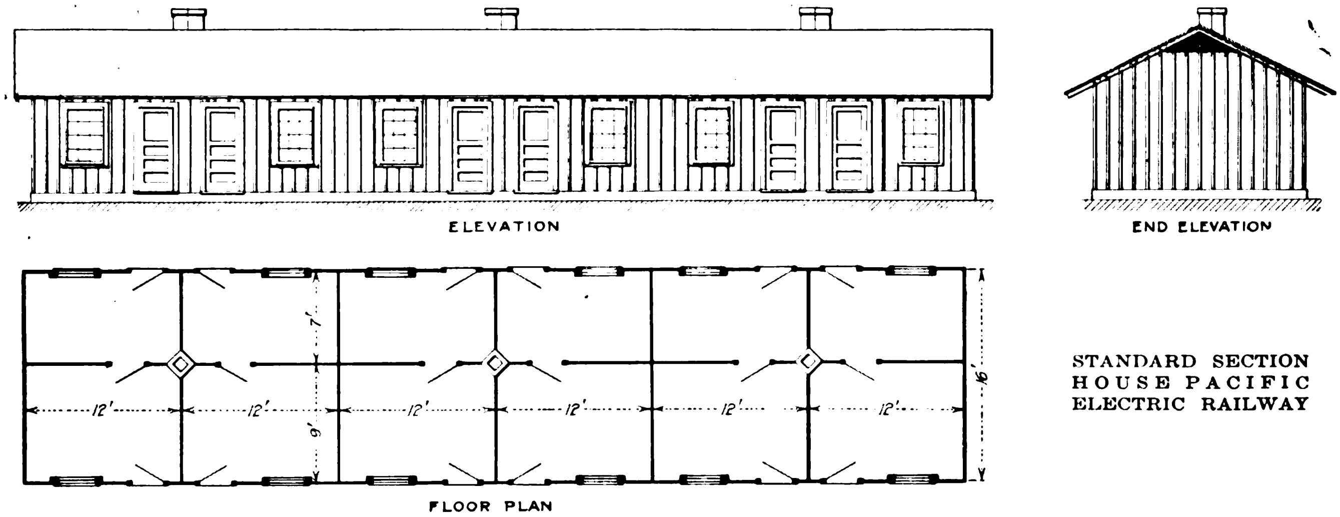
The latest subway poster is the *Subway Sun* which is reproduced herewith and was carried in cars on July 22. Its likeness to a newspaper gave the occasion of a number of jokes in the New York daily papers. The New York *Sun*, for instance, described the central engraving as "a full length portrait of Managing Editor Ivy Lee, turning the crank of the first unsuccessful newspaper press."

Home Attractions Keep Track Laborers Satisfied

Solving the Labor Problem by Providing Free Section Houses With All Conveniences, Land for Gardens and Chicken Raising as Well as Free Transportation to Amusement Places for Their Employees and Families

BY CLIFFORD A. ELLIOTT
Cost Engineer Maintenance of Way Department, Pacific Electric Railway,
Los Angeles, Cal.

THE present labor shortage has become a serious problem on electric interurban lines. The Pacific Electric Railway prides itself on its past and present efforts to meet the acute situation and retain laborers for maintaining its track. In southern California Mexicans have always been used for trackwork due to the reasonable wages for which they can be obtained. However, during the present war the supply has been badly depleted because the United States government established the literacy test, this barring from the country a large number of Mexicans who are anxious to enter the United States to engage in this work. Many Mexican laborers have also migrated from southern California into Washington, Oregon, Montana and other Western states. Here attractive wages are paid them by mining companies and numerous other industries. They take the places of Italians, Slavs and Greeks, who have returned to their own countries on account of the war.



STANDARD SECTION HOUSE PACIFIC ELECTRIC RAILWAY

The Mexican has even invaded Eastern states to take the places of other foreigners in track maintenance and freight handling on steam roads, and large numbers were taken to Alaska to work in the fish canneries. Furthermore, the vast acreage planted to sugar beets in southern California has demanded large quotas of Mexican laborers during the summer. The wages for beet harvesting are attractive, and the restless Mexican is inclined to enter this work for the temporary period required for handling the crops and to work hard for several months. Then he is content to remain unemployed for two or three months thereafter, until, in Indian fashion, he has squandered all of his earnings. All of these conditions tend to work a hardship on the railroads in holding men in service and in maintaining a desirable organization.

HUMAN NATURE STUDIED TO HOLD LABORERS IN SERVICE

The Pacific Electric has experienced these inroads into its maintenance organization so frequently that steps have been taken to hold it together by thoroughly studying the psychological and human nature side of the question. At the same time, modern and consistent wages are being paid to track laborers.

The Mexican is of a migratory nature, so that men with families have always been given preference over single men in employment. In addition, attractions have been provided constantly to hold them in service. The married Mexican is a lover of his home and its enviroment. Therefore, the Pacific Electric, a number of years ago, provided adequate and commodious section houses for living quarters free of charge in convenient section camp divisions, advantageously located for handling the maintenance work. These camps, where possible, are located near sidings or stations which may be easily reached by special cars to collect and distribute the track gangs. An accompanying plan shows the usual type of building erected for housing the men.

The standard type of section house is usually constructed with six units, lighted by electricity to avoid fire hazard. Additional units may be added as required. Stoves are installed in each section camp for cooking and heating, and adequate fire protection is provided to reduce insurance rates. Accompanying illustrations show the latest model camps provided at Culver City, the home of the large Triangle Film Corporation's plant, and at El Monte Station.

In the general view of the Culver City camp a steam heating and hot-water plant is seen on the extreme right. Immediately to the left of this is the room for the family washings, provided with hot and cold water, tables and benches. On the extreme left in the view are toilets separately maintained for men and women. Garbage cans can be seen conveniently located at the kitchen doors. The heating plant and hot-water system furnish hot water during the daytime for the women at the camp, thereby saving their energy and reducing the fire hazard.

PERGOLA AND PLAYGROUND EQUIPMENT AT EL MONTE STATION CAMP

Flower Gardens and Chicken Yards Are Provided

A further study of the Mexican's mode of living demonstrated that his home was incomplete without flowers and a few chickens and rabbits. The company therefore erected pergolas and chicken yards at each section house layout and planted flower gardens. The company's chief gardener and his staff give a portion of their time to maintaining the flower gardens at these camps.

When the food conservation wave swept over the United States last summer the Mexicans took exceptional interest in the company's plan to have them cultivate and plant gardens around the section camps and along the right-of-way. The company furnished free garden seed and the chief gardener and his men superintended the planting and gave the necessary instructions. Several prize gardens were developed by the Mexicans, and one raised enough to supply his own family and sold a few dollars' worth of vegetables besides.

A Garden Contest Produced Great Results

A garden contest was conducted by the company at the section camps as follows: Plots of ground of uniform size were set aside in front of the laborer's houses. These were planted to small vegetables, and a close watch was kept to determine which man produced the greatest results. At the side or rear of the main layout of section houses a large plot of ground was also assigned to the laborers who were housed at the camp, to be used for raising potatoes.

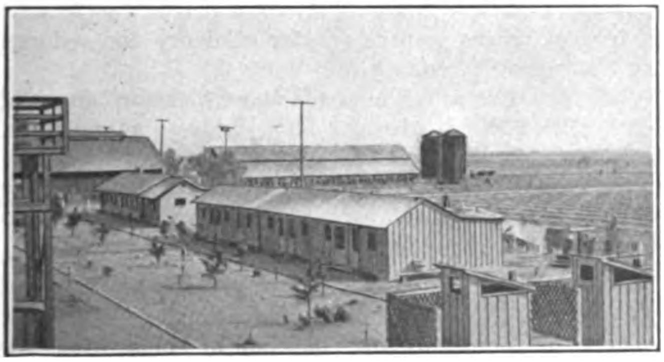
As this welfare work progressed, the company, on its own initiative, undertook to teach sanitation to the Mexican track laborers and their families, as it realized that sanitary camps meant an increase in intelligence and efficiency. More modern toilet facilities, less crowded quarters, fresh air privileges and shower baths were provided. Washrooms with concrete floors, drains, storm sewer and cesspool connections were installed.

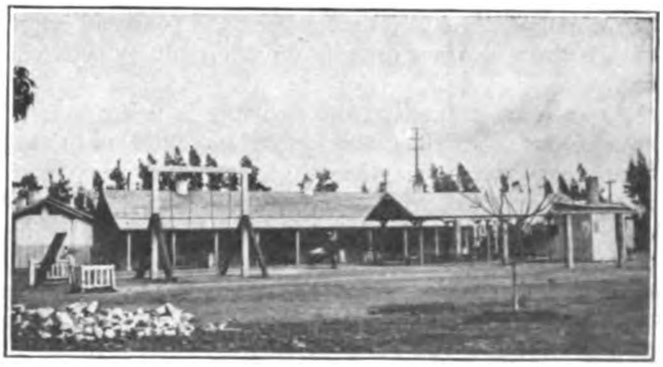
The houses were screened and a general sanitation program was carried out, which in time pleased the Mexicans and won the hearty approval of the State, County and city health authorities. The arrangements were strictly in accordance with the legal requirements of the California State Commission of Immigration and Housing. This latter body has given the services of its inspectors and sanitary experts to advise and assist the company in improving the status of the workmen. The company also supplied free fire wood to its laborers at the camp, utilizing discarded ties for this purpose. A contract has been made with an outside company to conduct a commissary department at each camp, and supplies are provided at reasonable rates approved each month by the railway company. The company protects the commissary department on its payrolls.

Prompt Action Prevents a Spread of Typhus

Recently the company experienced in one of the camps a "scare" regarding typhus, a type of fever in which the fatalities are high among Mexicans.

The disease was carried into the camp by a new employee. The promptness and success with which measures were taken to prevent its spread in spite of temporary opposition were highly creditable to the company's medical department. Since then the maintenance of way department has employed a competent nurse, who thoroughly understands the conditions. Her time is entirely devoted to the canvassing among the camps and teaching the Mexican women and their children the rudiments of hygiene.


SECTION HOUSES AT EL MONTE STATION, PACIFIC ELECTRIC RAILWAY


GENERAL VIEW OF SECTION HOUSES AT CULVER CITY CAMP—PACIFIC ELECTRIC RAILWAY

Further to promote camp sanitation the company has a force which visits and thoroughly cleans up the camps and grounds daily. Incinerators have been constructed to dispose of the waste materials and garbage, and metal garbage cans are maintained.

Since the United States entered the European war the labor situation has been decidedly acute. The higher wages offered by other corporations for the Mexican laborers has a tendency to draw the men away from the company. Therefore extraordinary efforts still further to attract the Mexicans for the railroad service were exerted. As the Mexican is a good worker when he knows his family is contented, the company constructed at its camps various playground and amusement features, such as swings, teeter-boards, handball courts, etc., that were attractive both to children and to the adults. Minor conveniences were provided about the houses, also, to favor the women. About 99 per cent of the Mexicans in the camps are ignorant, being unable to read and write. To meet the educational need the company established schools at its most important centralization camps, and the women are being taught English, reading, writing, domestic science, thrift, economy and marketing, etc. Suitable educational work is also being done for the children. The girls are taught sewing, cooking, while the boys have manual training, many of them taking up the carpenter trade course, with the expectation of entering the bridge and building department or the shops of the railway company.

FREE EXCURSIONS TO BEACHES PROVIDED BY THE RAILROAD

During the hot summer months the company arranged free excursions to the beaches for the women and children. In addition, at the end of each month the laborers and their families are furnished free transportation to points on the system which they may desire to visit. Usually these trips are taken on Sunday. The company provides continuous police protection in each camp to maintain good order and to keep out agitators, especially I. W. W. plotters who have a large following among the worthless class of Mexicans. These are always anxious to get into peaceful camps to stir up discord and discontent and to work against the selective draft of the government.

During the draft call the company vigorously trained its Mexican employees, through patriotic propaganda, not to avoid the draft, even if they were not citizens of this country. Excellent results were obtained. When the company purchased some $500,000 worth of Liberty Bonds and sold by the partial payment plan about $265,000 worth of these to its employees, the poor and ignorant Mexican laborers proudly did their bit by subscribing.

As an extra attraction the company is using a merit system, under which, if the women and children in each camp meet a certain standard of cleanliness each week they are rewarded with free passes to Los Angeles for shopping and pleasure trips. If they do not qualify for Class A-1, then this privilege is granted to them only every month. If they are careless about observing the rules they are disqualified from receiving any such free transportation. The families look forward joyously to these trips to the city and the contest has gained considerable favor.

How Economies Are Effected

Kansas City Railways at Rate Hearing by Public Service Commission Points Out the Methods It Has Used to Save Money

AT A RECENT hearing before the Missouri Public Service Commission on the application of the Kansas City Railways for permission to charge a higher fare, the company presented among its exhibits a list of methods used to effect economies in construction, maintenance and operation. This covered the various means taken to reduce operating expenses, in the effort to make them come within the revenue and provide for interest and the allowed dividends. The list follows:

WAY AND STRUCTURES

Cast-Iron Bound Special Work. This is used instead of solid manganese in special work repairs.

Arc Welding Process. This is for repairing special work and welding all defective joints in repairs, thus saving the installation of new steel.

Welded Joints. Seventy-eight per cent of all paved track now has welded joints, effecting a large saving in return current, electrolysis troubles and copper bonds.

Track Machinery. In all track work labor-saving devices are used, such as pneumatic tie tampers, pneumatic drills and riveters, electric drills, electric spike drivers for screw spikes, and pneumatic and electric rail benders.

Asphalt Plant. This is capable of handling all asphalt needed for company work and can be operated by five men in place of twenty-five by the old process. It is capable of instant conversion to a sand drying plant, in which all sand for the cars is dried.

A Portable Rock Crusher. This crushes old concrete and worn granite blocks to be again used as ballast.

Rail Grinders. These effect a saving in track repairs.

Pneumatic and Electric Tools. A complete line of the most modern pneumatic and electric tools for all purposes, together with a central storehouse and repair station where such tools are stored and kept in repair.

ELECTRICAL DISTRIBUTION DEPARTMENT

Distribution System and Automatic Substations. The electrical distribution system has been entirely rearranged and automatic substations have been installed. This has made possible a saving in copper wire alone estimated to be more than $100,000, and secures more reliable and constant service, effects great reduction in current losses and allows a reduction of the substation operating force.

Motor Trucks. The use of motor-driven repair and emergency trucks secures greater efficiency and reduces the emergency force.

Nitrogen Lamps. The replacing of cluster and arc lights with 200 volt nitrogen lamps reduces current and maintenance cost.

Automatic Signals. The installation of automatic signal systems at all dangerous crossings reduces accident hazard.

POWER HOUSE

Underfeed Stokers. The installation of underfeed stokers, by increasing the efficiency of combustion, secures an increased generating capacity and allows the burning of high ash coal.

Rehabilitation. A program of complete rehabilitation includes the use of every modern economy device at the power plant.

CAR EQUIPMENT

Light Weight Cars. The adoption of a standard double-truck car of light weight, reducing the weight per passenger carried, has effected a saving of from 24 to 37 per cent in power over the types preceding.

Folding Doors and Steps. The equipping of all cars with folding doors and steps has greatly reduced accidents.

Door Engines. Door engines to operate folding doors and steps are a time and labor saver.

Thermostat Heat Regulators. Thermostat heat regulators, in addition to maintaining an even temperature in the cars and conducing to the comfort of passengers, also effect a great saving in power consumption.

Fare Boxes. These effect a material saving in time and secure better fare collection.

Coasting Recorders. Coasting recorders and a special power saving department have been installed. The recorders have effected a saving of 10 per cent in the power formerly used and in addition are a material factor in reducing certain classes of accidents and in keeping down electrical equipment maintenance.

Slack Adjusters. A thorough trial of slack adjusters demonstrated that these will automatically keep the brakes tight, eliminating the constant adjusting of brakes at the barns.

Bearing Springs. The use of coiled springs in motor bearings permits the use of worn bearings, thus effecting a large saving in maintenance.

OPERATION

One Man Cars. These are used where possible on outlying lines.

Front End Collectors. These are employed at heavy transfer points, facilitating prompt loading.

Stop and Loading Signs and Safety Zones at All Corners. These speed up operation.

Traveling Train Instructors. Their duties are to instruct the men on the road and secure more efficient operation.

Emergency Transfers. These eliminate much transfer waste and save time.

Electric Switches. The increasing use of electric switches makes for speedier operation.

Dispatching System. A complete dispatching system, with dispatchers at all points of heavy traffic, prevents unevenness in schedules with resulting inconvenience to the public and thereby effects a saving in platform time.

Skip Stop. Kansas City was the first place in the United States to adopt the odd and even stops during rush hours. This skip-stop system will shortly be applied to the entire system and will effect a saving in power and speed up schedules.

Modern Traffic Department. Constant checking allows more flexible adjustment of the service to traffic conditions, has effected a very material decrease in car hours, has cut out dead mileage and, while making possible better service, has effected a great saving in platform expense. The following is a sample of what is being done constantly:

	April, 1917	April, 1918	Change
Maximum cars scheduled daily	629	649	+20
Car hours scheduled daily	8,072	7,522	—550
Car miles scheduled daily	74,468	67,403	—7,065

Car Barn Changes. The elimination of outlying car barns has effected a large saving in dead mileage. By this means equipment is concentrated, and by reducing fire hazard, insurance rates have been lowered.

SHOPS AND MAINTENANCE

Labor Saving Machinery. Every known labor-saving device, including the latest type of welding machinery, has been installed at the car shops.

Salvage. Salvage of material of all kinds is made possible by the use of the oxyacetylene welding process.

Painting. Enamel is used in painting cars, thus securing longer life and cutting down the initial expense.

Wheel Grinders. Wheel-grinding machines at the car houses allow the grinding of wheels without removal from cars.

Remodeling. The remodeling of equipment and the rebuilding of cars greatly add to the normal life of rolling stock.

MISCELLANEOUS

Safety Campaign. A continuous safety campaign has greatly reduced certain classes of accidents

New Ideas. In the last four years representatives of the company have visited every large system in the United States and have put the best ideas of each into practice.

Advance Purchases. A large saving was effected by the purchase of large quantities of materials before the sharp advance.

Organization. The organization has been completely rearranged from the top down to secure greater efficiency in operation and economies in every department.

Fare Increase Successful in Bradford, England

The increase of 50 per cent in the tram fares of Bradford, England, has so far been successful. The manager of the tramways department states that the receipts for the first nine days under the increased charges had been £13,099, as compared with £9,906 for the corresponding period of last year. This represented an increase of 32 per cent, whereas the official estimate was 30 per cent when the increase was decided upon. It is understood that the number of passengers had been considerably reduced, and the shorter queues have been very noticeable. The tramway committee of the city has decided to make a reduction in the number of stopping places on the various routes of the system.

Japan Trying Women Conductors

As an experiment a few women were put on the cars of the Mino Electric Company, Gifu Prefecture, Japan, a few weeks ago and if they prove satisfactory other women will be similarly employed. There is a shortage of labor in Japan due to the general activity in manufacturing, but the proverbial reserve of Japanese women renders their introduction into car platform service rather more difficult than in western countries.

High-Speed Circuit Breaker Prevents Flash-overs on Milwaukee Electrification

With This Apparatus the Energy Waste Resulting from the Installation of a Permanent Resistance or an Increased Length of Feeder Cable to Keduce High Current Values Is Avoided

WHEN the decision to use high-tension direct current was made by the Chicago, Milwaukee & St. Paul Railway it was recognized that some means would have to be taken to prevent the flashover of the direct-current generators in case of a short-circuit on the overhead line. One suggestion made was that the company install resistance in the substations in series with the trolley circuit to cut down the current to a safe value. However, it was found that the construction of a suitable permanent resistance would be difficult and expensive; that the resistance would take up a great deal of room; and finally, that the energy waste would be appreciable. The electrification department, through R. Beeuwkes, electrical engineer, therefore favored the trial of some simpler and more economical method. To this end, the General Electric Company developed a high-speed breaker which was tested out at Schenectady on a motor-generator set made for the Milwaukee electrification.

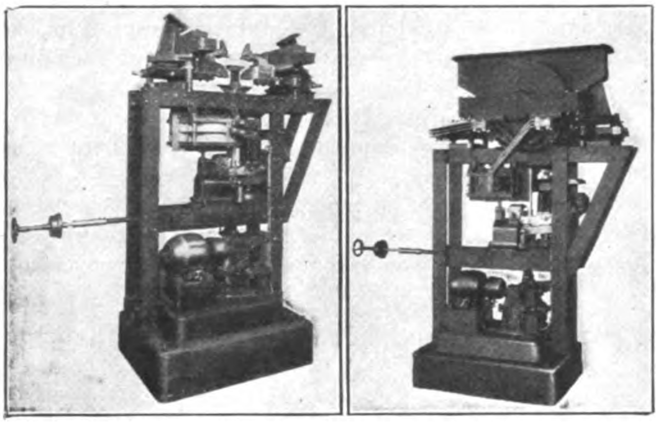


FIG. 1—HIGH-SPEED CIRCUIT BREAKER WITH ARC CHUTE REMOVED. FIG. 2—HIGH-SPEED CIRCUIT BREAKER WITH MAGNETIC BLOWOUT 3000 AMP., 3600 VOLTS

An auxiliary benefit of no mean value is the greater protection afforded to the company's telephone circuits which parallel the contact line. Since the installation of these breakers, the annoying acoustic shocks which previously occurred from short-circuits have disappeared. Notwithstanding the fact that this telephone line parallels both the 3000-volt direct-current contact line 40 ft. away and the 100,000-volt alternating-current transmission line 80 ft. away, the operation of the telephones is very satisfactory.

No attempt was made to eliminate inductive interference other than fully to transpose the weak-current circuits for varying lengths; to see that the insulation was in good condition; and finally, to install fuses in the circuits at the stations—both the Missoula and Rocky Mountain division—where telephone and telegraph circuits are located. There are no transpositions on the high-tension line.

FUNCTIONS AND OPERATION OF THE HIGH-SPEED CIRCUIT BREAKER

The function of the high-speed circuit breaker hereafter described is to operate with sufficient speed to check the rise in current caused by a short-circuit before damage can be done to the converting equipment. In order to meet this requirement, it is necessary that the rise in current be checked within a few thousandths of a second, and the circuit breaker described below meets these conditions in every respect. The rate of acceleration on the main and secondary contacts is approximately 8000 ft. per second and they are released in a time as short as 0.003 second or less from the beginning of a short-circuit. The time from the beginning of the rise in current caused by a short-circuit until the secondary contacts part has been shown by test to be of the order of 0.004 second. This compares with about 0.10 to 0.15 second, the speed of ordinary switchboard type breakers. The designers have thus succeeded in building a breaker which will in effect foresee the rise in current caused by a short-circuit and insert sufficient resistance to limit this rise to a safe value.

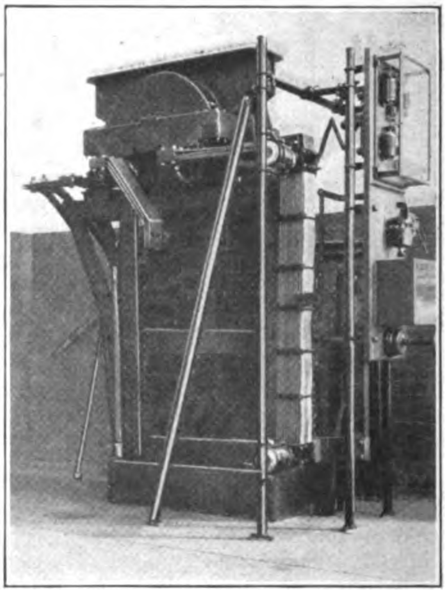


FIG. 3—HIGH-SPEED CIRCUIT BREAKER INSTALLED IN JANNEY SUBSTATION, CHICAGO, MILWAUKEE & ST. PAUL RAILWAY

It has been the practice on many railroads to install a certain amount of feeder as resistance between the substation and the tapping-in point usually by carrying out the feeders to some distance from the station before tapping in. It was evident, therefore, that if apparatus could be developed to protect the generators from flashover on severe short-circuits, it would permit of the feeders being tapped directly to the trolley at the substation, thus eliminating the losses due to feeder resistance.

Preliminary calculations in connection with the electrification of the Chicago, Milwaukee & St. Paul Railway showed that quite an appreciable amount of power could be saved each year by the elimination of this extra feeder resistance. Work was therefore initiated on the development of an air circuit breaker which would have such a high speed in opening that it could be used to insert resistance in the circuit soon enough to prevent the short-circuit current from reaching such a value as to cause the direct-current machinery to flash over. This design of breaker required a speed much faster than anything ever before attempted. Careful investigations demonstrated that the device must operate in a shorter time than is required for one commutator bar to pass from one brush to the next or less than one-half cycle for that particular machine.

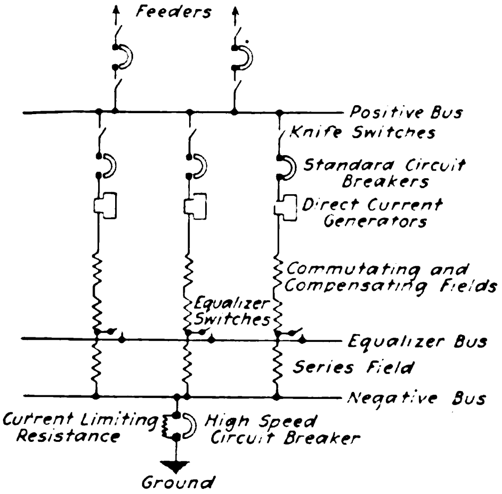

Feeders
Positive Bus
Knife Switches
Standard Circuit Breakers
Direct Current Generators
Commutating and Compensating Fields
Equalizer Switches
Equalizer Bus
Series Field
Negative Bus
Current Limiting Resistance
High Speed Circuit Breaker
Ground

FIG. 4—D.C. CONNECTIONS FOR SUBSTATIONS WITH THREE MOTOR-GENERATOR SETS PROTECTED BY HIGH-SPEED CIRCUIT BREAKER

One of these breakers is installed in each substation and connected into the negative return circuit between the ground and the negative bus, as shown in Fig. 4. This location affords the maximum protection, since the return circuit must pass through the limiting resistance in case of a flashover from the positive to ground, as all of the negative terminals, bus rigging, etc., are insulated for full generator voltage. To insure complete protection the high-speed breaker is so interlocked with the regular switchboard type of air circuit breaker that the high-speed breaker must always be closed before the switchboard breakers.

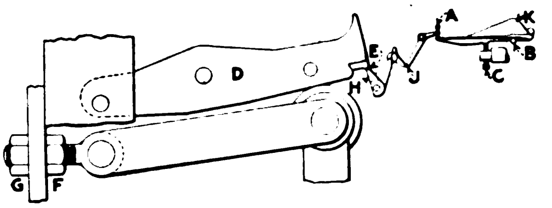


FIG. 5—DIAGRAM OF LEVERS FOR TRIPPING AND RESETTING THE TYPE MW CIRCUIT BREAKER

The fourteen 3000-volt direct-current substations on the Chicago, Milwaukee & St. Paul Railway are equipped with this new type of breaker, and the first units installed have been in operation since early in 1917 with very satisfactory results. All substation feeders are tapped to the overhead trolley system directly at the substation, eliminating the resistance losses occasioned by tapping at some distance away. Actual operation has demonstrated that it is entirely practicable to operate direct-current stations in this manner when protected by the high-speed circuit breaker, even though the voltage of the system (3000 volts) is the highest direct-current voltage used in commercial railway work.

Circuit Breaker Is Mounted on an Insulated Framework

The high-speed circuit breaker installed for the Chicago, Milwaukee & St. Paul Railway is of the single pole, magnetic blowout type rated 3600 volts, 3000 amp., direct current. The breaker and mechanism for a self-contained unit are mounted on a structural iron framework with cast-iron base. The base and framework are in turn mounted on an insulated base to insulate the circuit breaker from the station floor. The operating mechanism is so arranged that the breaker can be closed either by hand at the breaker or by a motor controlled from the station switchboard. The closing of the breaker by means of the motor is accomplished by a cam mechanism operated through gears. When closed by hand, a ratchet mechanism is used.

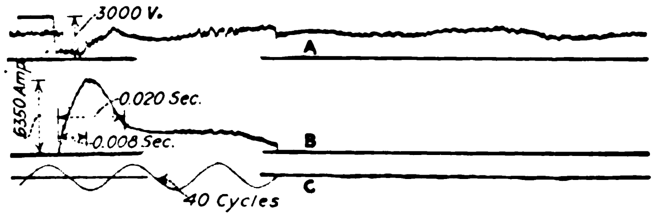


FIG. 6—OSCILLOGRAPH RECORD OF SHORT-CIRCUIT ON MOTOR-GENERATOR SET CHECKED BY HIGH-SPEED CIRCUIT BREAKER

Curve *A*—Voltage across generator terminals 1 mm. = 143 volts.
Curve *B*—Current positive terminal of generator 1 mm. = 174 amp.
Curve *C*—Timing wave 40 cycles.

The main contacts are of the well-known laminated brush type, the brushes forming the stationary contacts. The movable contact is a solid copper forging which is made as light as possible in order to reduce to a minimum the mass to be moved in operation. Secondary contacts are located above the main contacts and are of very ingenious design to insure their breaking after the main contacts in order to prevent any possibility of burning the current-carrying parts of the main contact. All of the contacts are located in a blowout chute of insulating material designed to withstand the burning incident to the arc. The blowout magnet is of laminated iron of large section. The blowout coils and trip coils are connected in series so that the blowout coils are excited at all times, as the usual arrangement of shunt blowout coils was found to give insufficient speed of blowout. The main and secondary contacts are carried on a lever and this lever is actuated by a nest of compression springs which exert a force of about 8000 lb. when the breaker is adjusted for operation. It was found that this pressure was required to give the rapid acceleration necessitated by the high-speed conditions under which this circuit breaker is required to operate.

The tripping is accomplished through a train of latches and levers actuated by a solenoid, the magnet frame and core of which is specially laminated to obtain a quick magnetic response to the short-circuit current. The object in using a series of several latches is to allow the mechanism to move the main latch through a distance of ⅛ in. or more by means of a solenoid. This solenoid, in order to act in the time required, is able to move only a distance of about 0.001 of an inch and can exert a force of only about 200 lb., while the main latch is subject to a pressure of about 4000 lb. transmitted through a lever from the compression spring above referred to.

In order to take care of the varying number of units in the several stations, the calibration is obtained by means of an adjustable tension spring directly opposing the pull of the solenoid. Referring to Fig. 5, the actual tripping takes place at *J*. The levers *A* and *K* are for multiplying the movement of the solenoid, which delivers its force at *B* so as to obtain a movement large enough to be entirely definite. The latches from *E* to *J* are special forms of levers which reduce the great pressure at *E* to a value which can be handled by a small bearing surface at *J*.

Upon the opening of the breaker contacts, the resistance becomes increasingly effective due to the resistance of the arc as the breaker completes its operation and after the lapse of about eight-thousandths of a second or less from the beginning of the short-circuit (see oscillograph record, Fig. 6), the resistance has increased to such a value that no further rise of current can take place.

This method of protection has given such satisfactory results that high-speed circuit breakers have been adopted by the General Electric Company as standard on all 3000-volt direct-current generating apparatus for steam road electrification. Actual service has demonstrated that the high-speed breaker will protect the generating apparatus from all short-circuits experienced, and not only will prevent damage to the brush rigging, commutator, etc., but will relieve the duty on the regular switchboard air circuit breakers.

The oscillograph record shown in Fig. 6 gives a good idea of the remarkably high operating speed of this circuit breaker and the resulting protection against damage to equipment. It may also be noted that this oscillogram shows the maximum current rise of less than ten times normal which is quickly reduced to well within the commutating capacity of the machine. With this method of protection, none of the effects of the direct-current short-circuits is transmitted through the set to the alternating-current side, thereby preventing such disturbances from affecting in any way the alternating-current supply system.

Modern Cars Speed Up Car Loading

THE value of a well-designed car from the standpoint of ability to load quickly and, therefore, to maintain a high schedule speed, or conversely, to operate a greater number of car-miles for a given platform expense, is well shown by some tests made recently by C. D. Smith, superintendent of transportation Mahoning & Shenango Railway & Light Company, Youngstown, Ohio. The loading times expressed in seconds per passenger were found to be as follows: Peter Witt car, 0.9 second; standard-type car with doors at both ends, 1.35 second, and high-floor center-entrance car, 1.5 second.

These cars are roughly of the same seating capacity. The Peter Witt cars were of the lot of thirteen delivered to the company last September. The data were taken at the Public Square in Youngstown, from which point all cars start their runs. During the rush-hour period the passenger interchange at this point is very heavy.

Safety Education Reduces Accidents

The Worcester Meeting of the American Society of Mechanical Engineers Was Devoted to a Discussion of the Safety Movement

IN VIEW of the draft made on the gross earnings of electric railways by accident claims, some of the discussions presented at the Safety Education Session of the American Society of Mechanical Engineers at its recent Worcester meeting should be of interest to electric railway men. In a paper by L. A. DeBlois, safety engineer E. I. du Pont de Nemours & Company, Wilmington, Del., it was brought out that safety engineering is more than merely a matter of safeguarding and advertising. An analysis of industrial accidents shows that from 15 per cent to 25 per cent are of the so-called "unavoidable" class.

Of the remainder, or avoidable accidents, between 10 per cent and 20 per cent are caused by unsafe mechanical or structural conditions and are therefore possible of correction. From 80 per cent to 90 per cent are attributable to human defects, that is, to ignorance, carelessness, irresponsibility, indifference, disobedience, recklessness, horse play and inexperience, and to defects of system, such as lack of proper supervision, discipline, etc., in the organization. The remarkable thing about the above figures are that they seem to apply equally well to all industries, being practically the same for such industries as explosives manufacturing, cement making, mining, railroading, and others in which it is usually considered that the life hazards are widely different.

So far as the structures with which the railway industry is concerned it was pointed out that stairs, handrails and narrow aisles are common causes of accidents. In the shop, insufficient headroom making machines, valves, etc., difficult to get at for repairs and manipulation are also fruitful accident producers. In connection with machinery it was pointed out that no machine can be made absolutely foolproof even in its regular operation and that conditions occur during adjustment, oiling, cleaning, repairs, etc., under which even the best safeguards may be either absolutely useless or introduce hazards of their own.

As the human element offers the greatest opportunity in the way of accident reduction the stress evidently should be placed upon the education and training of the individual workers in the matter of safe practices and the conditions which constitute hazardous operation. The organization of a safety department with a capable safety engineer or inspector was advocated. The men in charge of this safety work should be more than mere workmen transferred to a new job and should have the full backing of the higher executive officers.

Labor Main Topic at C.E.R.A. Summer Meeting

Automatic Substations, Duties of the Claim Agent and Fundamentals of Railway Advertising Were Also Considered at Outing and Conference Held at Cedar Point, Ohio, on July 17 and 18—Program Was Largely Impromptu, Due to War-Time Conditions

SUPPLEMENTING the telegraphic report of the summer meeting of the Central Electric Railway Association given in last week's issue of this paper there are printed this week abstracts of the only formal paper read, that by H. A. Nicholl, and of the informal papers and discussion. The meeting was held at "The Breakers," Cedar Point, and was attended by approximately 225 members and guests. F. W. Coen, vice-president and general manager Lake Shore Electric Railway, president of the association, presided.

The entertainment was of the simplest character, appropriate to the times, the natural and artificial attractions of the place furnishing ample opportunities for recreation. A beach-ball game was played on Thursday, between a "supplymen's" team, and a "railwaymen's" team under the general direction of S. D. Hutchins and H. A. Nicholl respectively. The supplymen won.

The discussion of Mr. Nicholl's paper, which is abstracted in another column, showed that the members realize the gravity of the situation confronting the electric railways. The abnormal upward tendency of labor costs, and with this the impracticability of competing with war manufacturing industries for labor on a per-hour basis, formed the topics of most earnest discussion. The railway managers expressed themselves as in sympathy with the desire of the men for wages commensurate with rising living costs, but did not see how they could meet by proportionate increases the competition which has been forced upon them. The railways must increase their efforts along lines of making the work as attractive as possible to the men as well as by granting reasonable increases. The discussion brought out some of the results of efforts to do this. The working of the inexorable "law of supply and demand" was seen to be particularly hard on electric railways at this time.

THE AUTOMATIC SUBSTATION AS A PARTIAL SOLUTION OF THE LABOR PROBLEM

The Thursday program was "shot to pieces" by the prevailing conditions, so that an impromptu one was substituted. With practically no preparation three speakers briefly but effectively presented "snap shots" of vital matters in their respective line of work. The first speaker was C. Dorticos, of the General Electric Company, who took up the automatic substation. Before doing this, however, he gave a graphic account, with sketches, of the battles of the Marne and Verdun.

Mr. Dorticos started by saying that the automatic substation has proved its reliability, and that it is here to stay. It began, in this field, with a request made by Bion J. Arnold addressed to the General Electric engineers at Chicago that they furnish him with an equipment for railway work somewhat along the same lines as the Edison Illuminating Company, of Detroit, had been using in remotely controlling a substation. At Detroit control wires were used between the substation and the power plant, but by utilizing the variation in direct-current voltage the General Electric engineers were able to dispense with any control connection with the power plant. A sample outfit was constructed at the Chicago repair shop, using largely direct-current control. The Schenectady staff was called into consultation when Mr. Arnold wanted more control outfits. The control was then transferred to the alternating-current side of the station with the exception, of course, that the direct-current voltage remained the source of ultimate control through the operation of the contact-making voltmeter. This work was done in 1914.

Soon after this pioneer work it happened that the Des Moines City Railway had agreed with the municipal authorities that, with the going into operation of a new franchise, certain rehabilitation of the property would be put through. An important part of this consisted in extensive power supply improvements. F. C. Chambers, electrical engineer of the railway, was convinced that money could be saved by liberal use of the automatic substation principle in city work. It will be remembered that Mr. Arnold's was an interurban proposition. Mr. Chambers actually was able to take down many thousands of dollars worth of aluminum feeders, at a time when it commanded an unusually high price. He used "automatics" not only on the city lines but on the Inter Urban Railway as well, until now the lines are almost completely so equipped.

The "automatics" at Des Moines have proved particularly helpful on the line furnishing service to Camp Dodge, which produces enormous traffic. Substations much smaller than could be used with manual operation are handling the business successfully. An article printed in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 13, 1917, page 66, gives details of this installation. There are now thirteen automatics in operation or on order on this property, all but one within the city limits having automatic control. That one will be equipped soon.

Mr. Dorticos said that the flash barrier (see issue of this paper for July 6, page 9) is one of the greatest of recent improvements in the rotary converter for automatic substation. He also referred to a special case of automatic control; but in a railway installation, in which a synchronous condenser, that is, a synchronous motor with heavily overexcited fields, is automatically cut into and out of a circuit to maintain a high power factor. In this case the control is by the variation in power factor.

Following the outline of the "automatic" situation in general Mr. Dorticos answered a number of questions as to details. Among the most interesting points were these: At Minneapolis the Twin City Rapid Transit Company is installing the largest automatic control to date, on a 1500-kw. machine. The line resistors for this large unit are to be made of steel rails embedded in concrete. At present prices an average control equipment costs about $4,000 or $5,000. Lightning has not proved troublesome in the automatic substations so far equipped and there is no more reason that it should do so here than in a manual substation. The aluminum cell arresters appear to furnish ample protection. Daily inspections of substations are desirable, but the amount of attention required is very small, and the labor saving is correspondingly great.

Asked as to the possibility of adapting automatic control to rotaries with induction-motor starters, Mr. Dorticos said that there is no insuperable difficulty in doing this, but during the war he thought that it would not be possible to give the problem the necessary attention. Deliveries of automatic equipment are necessarily slow, even for the standardized apparatus. A suggestion was made as to the use of shunt-wound rotaries in automatic stations and in manual stations subject to overload, with the idea that the drooping voltage characteristics could furnish protection against overload. Mr. Dorticos said that the plan has had favorable consideration and that the action is similar to the operation of the resistance which is cut into the circuit in the automatic substation.

GETTING RESULTS IN THE CLAIMS DEPARTMENT

Following Mr. Dorticos, Harry Rimelspach, claim agent Lake Shore Electric Railway, was called upon for some ideas from the claim department. He began by asking how one could tell when this department is producing results. The answer is given in two ways: First by the testimony of the operating expense report; second, by the conviction that the department is exerting itself to the limit in discharging its duties.

Mr. Rimelspach devoted attention principally to the details of the "real" investigation. Such an investigation is much more extensive than is sometimes supposed. It is not enough merely to get the reports of the crews with lists of witnesses. There is almost no limit to the range of facts which may have a bearing on an accident. The claimant himself is an important source of information.

To illustrate his point the speaker showed how important it is to know the characteristics of the claimant. For example, a claimant may be habitually careless, and it is essential to bring out this point, which may be done without difficulty. A claimant may impute careless habits to a motorman, and it is desirable to learn of the characteristics of the motorman in this way. But it is possible to convince such a claimant that perhaps he, as well as the motorman, may not be free from fault in this connection. While testimony regarding events not related to the accident have no real status, discussion of the accident with the claimant privately may greatly modify his claim.

To make real investigation of accidents and to go into the related questions which have bearing upon them require an ample staff. Obviously an overworked departmen is obliged to make analyses which are more superficial than is desirable, and in the end this is expensive because what is saved in salaries is lost in excessive awards for claims.

Another point is that the full educational value of claims work should be utilized. When an accident occurs the motorman or conductor responsible should be told of similar accidents that have occurred in the past and what was learned from those accidents. If the accident is a common one he should be told this in the hope that he will endeavor to assist in keeping down the number of repetitions. He should also be told what have been the rulings of the courts in case the accidents have resulted in claims.

Mr. Rimelspach mentioned the fact that, as the testimony of some witnesses is worth much more than that of others, it is essential to impress on crews the importance of noting upon their reports any circumstances which may tend to assist the claims department in utilizing such witnesses. For example, the fact that Mr. Jones sat upon the front seat near the motorman's compartment and was heard to remark, "Well, that certainly wasn't the motorman's fault," may mean much to the claim agent if the motorman will simply jot down a memorandum covering it.

The final point made by the speaker was the necessity for close association between the members of the claim department and the platform men. A knowledge of the characteristics of the latter will help greatly in preventing accidents and in adjusting claims resulting therefrom. This again furnishes an argument for an ample staff in the claims department, for such close association is impossible in an overworked department.

After covering the topic assigned to him Mr. Rimelspach spoke fervently regarding the patriotism of electric railways. He thought it especially important that the railways take an active part in all public movements such as War Savings Stamps campaign, Red Cross work, sale of Liberty Bonds, etc. The patriotism of the railway organization is unquestioned. The present crisis affords an opportunity for an outward manifestation of this. The result will be improved public relations.

ELECTRIC RAILWAYS MUST ADVERTISE

"Every man believes in advertising," said E. R. Kelsey, publicity agent Toledo Railways & Light Company, in beginning his remarks on railway advertising. This is shown in the display of signs over store doorways, and even the wearing of a necktie by a man is advertising in that he wants to make a good impression on the public. This war was "sold" to Great Britain by advertising, and thrift is being sold to this country in the same way. From a country having a dread of "Wall Street" and its doings we now have one made up of bond holders.

The best advertising assets of the electric railway are its own employees, especially those who come into contact with the public. The telephone operator or the platform man has a splendid opportunity as a continual advertisement. Next in value is the space in the cars. People when riding are, as a rule, in a receptive mood; they are not in a hurry as at other times. Hence in the comparative leisure of the car ride there is a chance for advertising to "sink in." Especially valuable for posters is the end window space in cars with bulkheads, or in the front windows in other cars.

As an example of what advertising will do for a utility Mr. Kelsey mentioned a recent campaign in Toledo in connection with a prospective increase on heating rates. The advertising was begun early enough to permit householders to put in other heating facilities if they so desired. The situation was also explained to the newspaper men. The result was very satisfactory indeed.

There is great need for advertising now for public good-will and for the rate raising that will be necessary both now and also after the war. A part of the public has the notion that an institution is bad because it is big, and that all rich men are crooks. This notion must be controverted by advertising. There is plenty of fine material available for use in advertising if the men who can use it will only look for it. And an important element in this work is utilizing the psychology of suggestion.

What suggestion is able to do was illustrated by Mr. Kelsey by referring to the work which is being done for disabled soldiers in Canada. Men whose nerves have been ruined apparently and who have come to believe that they cannot move their muscles again are taught to perform their normal functions by means of suggestion. If this is possible, how much easier it should be to convince the public of facts through the use of judicious advertising.

Mr. Kelsey discouraged the notion that advertising can be expected to produce results immediately. Sometimes a railway has a special propaganda to put out and expects to get results from, say, a three-week campaign. This is impossible. Building up good public relations is a slow process, as the work of years cannot be undone in a moment. The safety movement is a great help in this direction, as it furnishes a good excuse for putting real "news stories" in the papers. And they must be new stories to be worth while, or, in fact, to get into the papers. Advertising in the guise of news must never be used, but there is a plenty of good news on any live railway property. For example, in Toledo there are a dozen good stories every day.

Furthermore, good advertising material can be produced by any good salesman (and every successful manager must of necessity be a good salesman) if he will write himself into his copy. An illustration of this was furnished by the controversy between Henry L. Doherty and the City of Toledo. Mr. Doherty prepared a series of advertisements which reflected his personality. As a result when the Toledoans had an opportunity to ride free, 69 per cent voluntarily paid the full 5-cent fare.

In concluding his remarks Mr. Kelsey "made a hit" with his audience by commending the spirit of the meeting, stating that after all it is personal association that is necessary in lubricating the wheels of business. Even if no papers were read, a meeting would be a success if those in attendance got to know each other better. Correspondence is facilitated by personal acquaintance. This meeting was successful even with the program altogether disarranged through circumstances beyond anyone's control, as each one present was willing to do his part. At this point a suggestion was made that future programs be made impromptu in order that the association be brought closer together as had been done at this Thursday session.

After Mr. Kelsey's talk the meeting adjourned to meet at Indianapolis on Thursday, Nov. 21.

Aspects of the Labor Situation

Labor Is Uneasy and Higher Wages Are Necessary—Non-Essential Work Should Be Discarded—Committee Work Is Needed

By H. A. Nicholl
General Manager Union Traction Company of Indiana, Anderson, Ind.

THE labor question confronting the electric railway industry is perplexing and difficult even under ordinary circumstances, but in these strenuous and trying times it is a most difficult matter to handle, and about as important as any other problem. The situation should be considered with reference to the following points: (1) Restlessness of labor due to the unusual activities produced by the war. (2) Necessity of higher wages on account of the increased cost of living. (3) Shortage of man-power on account of the great demand for men in the Army, Navy and manufacturing establishments producing war materials. (4) How can this situation be met satisfactorily to both employer and employee in the electric railway field?

LABOR IS RESTLESS

During the growth of the present industrial activity the demand for labor, both skilled and unskilled, has been tremendous. To fill the necessary requirements, extensive advertising campaigns in many forms have been inaugurated, offering large pay, good living and improved working conditions. This propaganda has been carried on by the government, by large and small corporations, by private individuals and by agricultural interests, until a state of uneasiness in all classes of labor exists in most of our communities. It is with considerable difficulty that men in the electric railway industry are persuaded to stick to their present positions. Companies located in the great manufacturing districts and in places where large government work is being carried on are no doubt most seriously affected. Higher wages look good to the men, even though in many cases they may prove not to be (in the long run) so productive of net results as is their present employment.

Whenever the wage is large, the working conditions are generally arduous and the living expenses high. In general, the farther East one goes, the higher the wages paid and the more attractive seem to be the opportunities for employment. This is accounted for no doubt by the fact that more war munitions and supplies are made in that locality. As the war progresses, however, we may look for a gradual increase, extending to the West, somewhat in proportion to the distribution of munition and government supply orders.

Whenever the Central district loses a man to an Eastern or distant industry, we have to employ another in his place. If this process is carried on to any great extent, a shortage may be produced in our vicinity not easy to overcome with the man-power available in that community. This condition, if aggravated, is likely to encourage proselyting, thus increasing the uneasiness of labor.

Nothing seems so unnecessary and unfair as for one company to send representatives into other sections of the country, either far or near, to induce those already employed, through offers of higher pay or better working conditions, to leave their present places. It is difficult enough to protect our men from labor agitators and other local industry sharks, without having to fight labor procurers from friendly and associated properties. We should aid one another to create a feeling of contentment among our men that will make it practically impossible for outside inducements to have any appreciable influence on them.

LIVING COSTS HAVE GONE UP

The cost of living no doubt has advanced. Clothing, foodstuffs, medicines and nearly everything used by man has gone up in price. This advance has been most pronounced in the congested centers and in the East, on account of the extensive manufacturing and the inaccessibility of those localities to the great farming and food-producing sections of the country. On account of loss of men and families to the Army, Navy and governmental work, our house rents have not advanced to the same extent, although in some localities in our territory they are considerably higher than heretofore.

To meet this higher cost of living it is but right that higher wages be paid. How much higher is the great question. We should treat this matter with all fairness to the employees and to the properties. In some places higher wages can be paid than in others. Higher wages should be given voluntarily whenever possible, and in all cases the financial condition of the properties must be fully considered.

To be forced to pay higher wages through governmental agencies, without the opportunity to compensate in sufficient amount through raise in fares, would be manifestly inequitable and unjust. Representatives of labor argue that, regardless of the financial ability of the property to pay its obligations, labor should receive higher wages. To me this seems about as unfair as any demand ever made by labor, no thought whatever being given to the future of the properties or the rights of the owners, who may be more in need of protection than the laborers themselves.

To be compelled in any event to standardize the wages in our industry—split up into small units and scattered in all sections of the country—does not seem to be desirable and should not, through any channel of authority, be forced upon us.

MAN-POWER IS SHORT

Half the American nation will be actively engaged in war in another year if the administration sends 2,500,000 or more soldiers to Europe. A like number will also be needed at home for the defense of America, for use in the outlying possessions and in process of training. Approximately ten workers are needed to keep each soldier armed, fed and clothed. This would mean 50,000,000 men, women and children working to supply the army of 5,000,000,000. On the basis of 110,000,000 population—that's half the nation. And the other half will also be indirectly engaged in war work.

There will not be enough men to go around, and the condition will get worse as long as the war continues. Therefore it is necessary to conserve the supply.

After Aug. 1 the United States Employment Service will undertake to be the medium through which employers obtain their unskilled labor. Although the government may be of some service to electric railways in providing such labor, it will not be of much help unless the companies exhaust every effort to obtain labor and are actually down and out. Even then it appears that if we secure the labor we need, regardless of our ability to pay the price, we will be forced to pay as high a rate as any establishment in our community, notwithstanding the fact that lucrative government orders may be enjoyed by the companies which have established the high wage scale. Furthermore, through this method of securing labor it will only be a question of a short time until it will automatically make certain a standard price for labor.

As patriots we shall have to accept the inevitable and co-operate for the successful operation of this scheme, but it may prove to the electric railway industry an expensive proposition, even if not attended by absolute financial disaster. Increases in fares guarantee more earnings per passenger for a given ride, but they do not guarantee that any number of people will ride. We are somewhat different from other industries in that we may reach a point in production cost that is greater than that which the traffic will bear.

The shortage of labor will cause the quality to decrease until the efficiency will be very greatly lessened through the employment of men above the age of strength and men under age who are frivolous and reckless. Many women will have to be employed in positions not suitable to their natural characteristics. Women, however, can be nicely used as ticket takers, clerks, substation operators, conductors, oilers in power houses, car cleaners, armature winders, etc. In most all of these places they perform their tasks about as well as men do, and in some instances they excel.

WHAT COMPANIES SHOULD DO

We can discard all the non-essentials and reduce the work to be done as much as possible. This does not mean that we should not keep our properties in good operating condition, but we should discard only the frills such as fancy painting on cars, flower beds adjacent to stations, operation of special trains, etc. We should discontinue the operation of two-men cars and replace them with one-man cars wherever possible. We should rearrange our schedules, cut out early and late passenger trips, use machinery instead of men, watch the scrap pile and use old materials whenever it is possible so to do. We should also instill in our men the idea that they should use their heads and thus save their feet. In this way many man-hours can be saved.

We should also assist in the enforcement of General Crowder's "work or fight" order, and see to it that anyone who is capable of fighting does fight or is put to work. The jitney is unnecessary, and the action of the Electric Railway War Board in directing the attention of the government to the duplication of the service through this instrumentality is commendable.

We should do all we consistently can to make our present employees as satisfied and as comfortable as we can so that they will remain in their present places. How are we to make our men satisfied? By giving them a living wage, commensurate with local conditions and finances, and thoroughly fair treatment. They must have

(Continued on page 161)

The Interesting "Flop" of the New Jersey Utility Commission

The Railway Decision of Last Week Represents a Point of View Entirely Opposed to That Expressed in the Earlier Gas Decision of the Same Commission—Opposition in a State to a Fair Return to Capital Will Discourage Investment There

By W. W. HARRIS
Of Lee, Harris & Lee, New York

IT TOOK four months and five days for the Board of Public Utility Commissioners of New Jersey to come to a decision upon the "emergency application" of the Public Service Railway Company for an increase in rates sufficient to meet an estimated deficit of $3,980,112. The commission granted only $860,000 (estimated), to be obtained by a 1-cent charge for transfers.

The petition was filed on March 5. The commission's report and order were dated July 10. To state this is not to accuse the commission of dilatoriness. It is, however, one more instance in a very long list which supports the position insisted upon in the ELECTRIC RAILWAY JOURNAL, that the present system of public utility regulation is altogether too ponderous.

True, the Public Service Railway is a very large corporation, one of the largest of its kind in the United States. It serves 146 municipalities in the State of New Jersey. True, again, without pretending to point out wherein the blame lies, the Public Service Railway has had to meet a most formidable public opposition.

It seems likely that the heat of the campaign for a seat in the United States Senate now raging in New Jersey has not made for less strife, particularly since one of the leading counsel in opposition to an increase in rates, George L. Record, is a candidate for the Senate on the government ownership and operation platform.

The circumstances which have surrounded the adjudication of this case may properly be pointed out because the ultimate decision of the commission in refusing the major part of the requested relief can, it would seem, be understood only in the light of the complete picture.

The finding of the commission contains one paragraph of extreme importance. This paragraph to the lay reader of the East is in such striking contrast with the paragraph upon the same subject—the right of stockholders in public utilities to dividends—in a prior decision of the commission as to indicate a reaction upon the commission of the active and at times bitter public opposition to the petitioning corporation, an opposition which, in the heat of the political campaign now in progress, has not been overlooked by aspiring candidates.

Throughout the country there has come a public opinion more generally appreciative of the truth that included in the "cost of service" is the item of dividends. This has been recognized repeatedly in official utterances of commissions. Ex-President Taft, commenting upon the report of the Railroads' Securities Commission, noted the necessity of a reasonable return to the owners of capital invested in public utilities. He said "a reasonable return is one which, under an honest accounting and responsible management, will attract the amount of investors' money needed for the development of facilities. * * * Less than this means a check to railroad construction and to the development of traffic."

Now note the two points of view of the New Jersey Commission. In a report made on Feb. 27, 1918, in the emergency petition of the Public Service Electric Company for an increase in rates, are these words:

> In the present financial situation, the public has a vital interest in maintaining the fund available for dividends on the stock of the company. * * * *A material decrease in dividends would not only result in preventing the free flow of new capital, but would materially depreciate the*

(Continued from page 160)

constant and agreeable work and be supervised by men who can recognize the performance of faithful service and treat employees accordingly. The greater the ability in the supervision, the more efficient will be the work and the better satisfied will be the men.

One way to interest employees is by organizing safety or efficiency committees. The plan should be the means of exciting a spirit of rivalry, loyalty, self-interest and co-operation. The membership of each committee should include employees of all departments. Committee membership should be changed frequently by rotation or some other method, so as to permit as many employees as possible to serve for a reasonable time.

It is of course desirable to have certain permanent members on the committees, who may be sub-heads of departments, division superintendents, etc., these men to be used for the instruction and guidance of other members in their work. In making individual appointments, it is desirable not only to appoint men who are already interested in their work, but also to appoint some employees whose interest is lukewarm, in the hope of securing greater co-operation.

The work of these committees should consist largely in handling and acting upon suggestions from their own members and from other employees. The committees should report, through their representatives, to a managing board composed of heads of departments and officers of the company. This is desirable in order that suggestions of a general nature, coming from the committees, may be handled without autocratic settlement by the management.

The appointment of committees of this kind tends to democratize the operation of the property and furthers the co-operative management idea. This is not an undesirable condition, in these days when the value of democracy to the world is being so prominently placed before us.

> *market value of outstanding securities.* This possible shrinkage in the value and marketability of such securities would tend to undermine confidence and render unstable security markets. Such a condition would have direct influence upon the securing of money by the national government for war purposes. The required funds for these purposes must be yielded by operating revenues. In the broad view, the public interest requires it. [The italics are those of the writer.]

The contrast between that thought and the principle enunciated in the report upon the Public Service Railway application is even startling. The company in its application said that it ought to be restored at least to its financial condition of 1916, at which time it was paying some, but not complete, dividends. The commission replies:

> We must * * * maintain our declared policy of disallowing rates in war times for purposes of increasing dividends. Stockholders in such corporations must share the burdens and hardships resulting from financial changes due to the war and cannot expect to wholly escape therefrom. * * *

In this statement there is no distinction whatever between war profits and fair return, no recognition of the fact that electric railway companies have "shared the burden" more than almost any other form of business, even to the point, in many cases, of absolute bankruptcy.

The board, after explaining that a formal rate case was for the determination of rates which would give "a fair return upon the fair value of the property used and useful in the public service," said that such a valuation in an "emergency case" was unnecessary. All that was needed was to meet a temporary emergency. Such an emergency it defined as follows:

> An emergency for which a carrier is entitled to relief by a temporary emergency rate exists where, by reason of general conditions not affecting the applicant utility alone, operating revenues are insufficient to operate and maintain its property and to pay rentals and interest on such of its securities, a default in the payment of which would jeopardize the solvency of the company.

In short, the commission to all intents and purposes plants itself firmly upon the proposition that, in war time, the basic principle of "fair return" upon which the public service commission law is written, *is suspended.*

CAPITAL CANNOT BE COERCED

It is not the purpose here to argue the soundness or unsoundness of this conclusion. We merely call attention to the contrast of ideas in the two reports. It is pertinent as bearing upon the future willingness of capital to help develop the public utilities in the State of New Jersey. For while it is possible to deprive the investor of returns upon capital which has already been put into business, it is not possible to force him to take another chance of the same sort. Capital must be attracted, it cannot be coerced.

One of the major risks which an investor in public utilities must take into calculation is the risk of disregard by commissions of the immutable laws affecting the flow of capital.

True, the New Jersey Commission announced that any issuance of securities by this company was not immediately pending, as though a public utility in a growing community ever attained its full growth. Whether or not this implied that they might have to come to a definite conclusion, were such an issue to be immediately desirable, can only be conjectured. But there can be no doubt whatever that capital will take into its calculations the factor of the state of mind of any commission which announces its policy in such unmistakable terms.

VIEWS NOT SO INIMICAL IN OTHER STATES

Meantime, if one may come to a fair judgment of the real state of mind of New Jersey toward the street railways and public utilities generally from the quotations from the press, that State is fallow ground for the seeds of education through intelligent publicity. New Jersey seems to be in an attitude of opposition, not to say animosity, toward public utilities. It seems to regard any added burden which can be put upon the utility, either by increase of taxation or by reduction of revenue, as "a victory for the people."

The real value of the service rendered by the public utility does not seem to be the uppermost thought. The thought that the hampering of service and reduction of its quality may be the necessary result of a general corporation baiting has not been strikingly apparent in the columns of the Jersey press.

The Grand Rapids *Press* recently said, "We may not love the utilities, but we need them, and to allow them to suspend their usual function would be fatal." One might remark, "New Jersey papers please copy."

New Jersey seems to be in that stage of its education in relation to the utilities which Massachusetts has only just passed through. In Massachusetts, however, a general sanity of view has succeeded the period of hysteria. As an instance, the Boston Elevated Railway, which is now in charge of State trustees appointed by the Governor as representatives of the people, has long met an unreasoning popular opposition to any proposition to raise the 5-cent fare, even though it was perfectly apparent that the Boston Elevated Railway was in the last financial throes.

Now the State trustees have announced that the 5-cent fare will not meet the bills. First it was declared that the fare probably would have to be raised to 7 cents. Now it is announced that the needs of the elevated railway indicate a fare of 8 cents before many weeks. This announcement has been received without any public protest whatever.

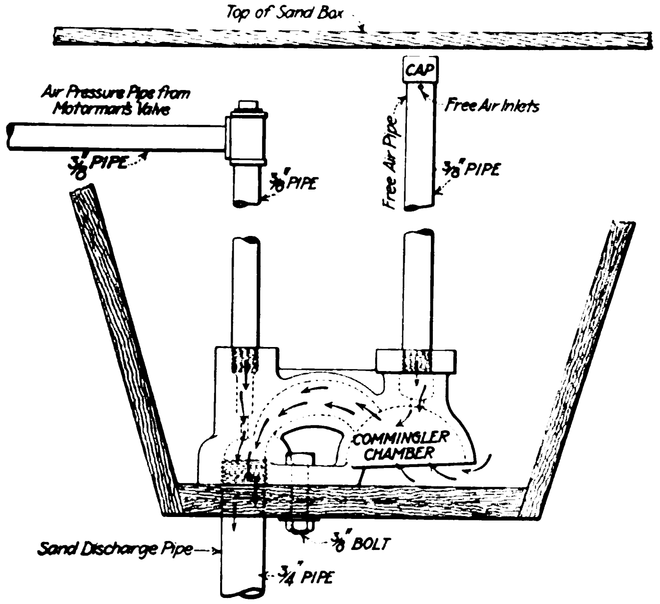
Commenting upon this prospect, the Boston *Record* says: "The public would prefer an 8-cent fare if that would guarantee good service to a 6 or even a 7-cent fare with service not materially better than that now given."

The *Transcript* says: "The public needs to remember that an 8-cent fare is the toll that it will be shortly called upon to pay, because here in Boston the general care is to set up for our street-car system a reign of justice and common sense which does not seek to pour money out of the system's treasury until none remains and at the same time refuse to pour in new money. Other American cities still cling to this strange mode of procedure and *they are in a fair way to witness a complete crash of their electric railway companies.*"

In short, the future of public utilities in New Jersey will be just as interesting and as important as the immediate past. In that future a widespread and intelligent publicity, that seems in the main to have been neglected, can play a most important part in arriving at a situation of sanity and common sense.

Pneumatic Sander Readily Applicable to Existing Sand Boxes

A NEW FORM of pneumatic track sander for use on electric cars has been placed on the market by the National Railway Appliance Company, New York. The accompanying illustration shows this sander applied to the sand box of an electric car. The design permits of such an application without changing the usual type of sand box used.


Top of Sand Box
CAP
Air Pressure Pipe from Motorman's Valve
Free Air Inlets
Free Air Pipe
3/8" PIPE
3/8" PIPE
3/8" PIPE
COMMINGLER CHAMBER
Sand Discharge Pipe
3/8" BOLT
3/4" PIPE

PITT PNEUMATIC TRACK SANDER AS APPLIED TO THE SAND BOX OF AN ELECTRIC CAR

All of the working parts of the sander are included in one casting which is bolted to the bottom of the sand box. Three outlets are provided in the casting for connecting the necessary piping. The air pressure pipe is connected to the top left-hand side, as shown in the illustration, and runs to the main air supply. This can be connected either to the emergency brake pipe at the motorman's valve, so that air will be supplied for operating the sander whenever the brake handle is thrown to emergency position, or the connection can be made through a sander valve to be operated by the motorman as desired. A combination of these two methods is recommended.

The connection for sand discharge is made at the bottom left-hand side. This pipe is run through the bottom of the sand box to a point as close to the truck center pin as possible. A flexible hose connects this with the discharge pipe which conducts the sand to the front of the wheel. A free-air intake pipe is connected to the casting at the top right-hand side. This pipe should be of sufficient length to reach to the top of the sand box and is provided with a cap and holes drilled just below it to admit free air.

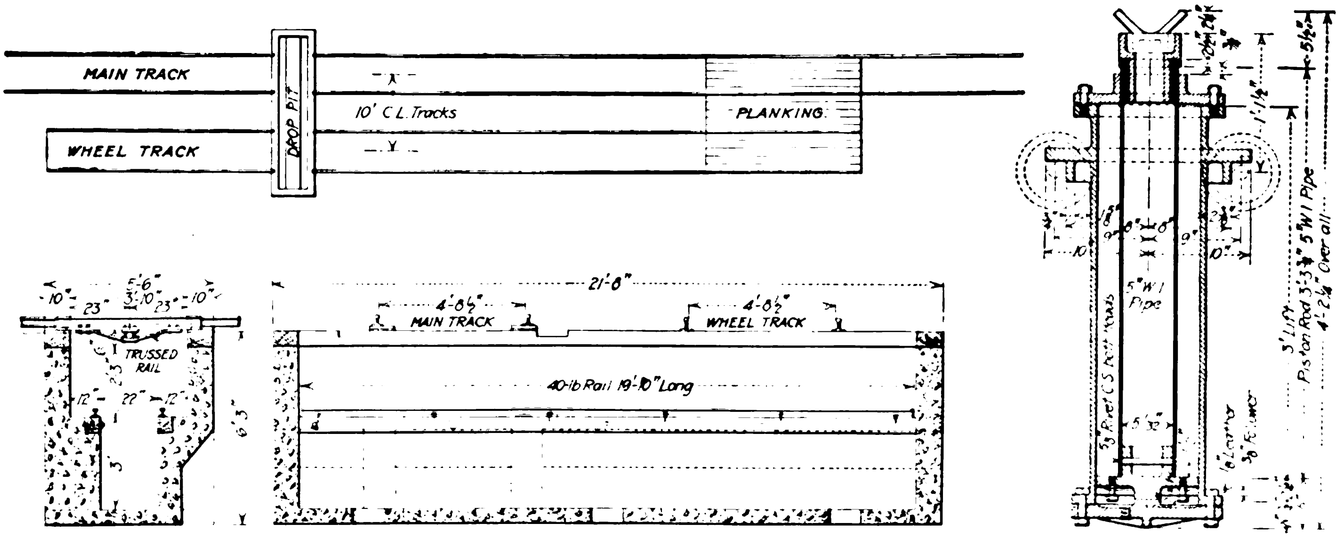
The operation of the sander consists of admitting air under pressure through the intake pipe. This passes through a nozzle or reducing discharge port into the larger sand discharge pipe leading to the rails. The expansion of the air as it leaves the reduced orifice causes a suction of air through the passage from the comminglег chamber of the casting. The sand enters this commingler chamber through a passage provided at the bottom, and when air is being drawn out a circulation of air occurs through the free air pipe. This air passes over the top of the sand, lifting the grains individually, and its action thus prevents clogging should the sand be wet. The openings through the casting are so proportioned that any large pebbles which may be in the sand cannot enter the commingler chamber, and small pebbles are carried through by the action of the air.

Car Wheel Drop Pit Saves Time and Expense

By F. G. Lister

Mechanical Engineer, El Paso & Southwestern System

THE car wheel drop pit shown in the accompanying illustration has been in use at the various terminals of the El Paso & Southwestern System for about three years. It has proved to be a means of saving much time and expense in removing and replacing car wheels, as it does away with the necessity for jacking up the car and trucks when wheels are to be changed. Sufficient details are given so that a similar drop pit can be constructed by electric roads where desired. The particular construction shown, being for steam road use, may be somewhat heavier


MAIN TRACK
WHEEL TRACK
DROP PIT
10' C L Tracks
PLANKING
X
Y
5'-6"
10"
23"
3'-10"
23"
10"
TRUSSED RAIL
12"
22"
12"
6'3"
21'-6"
4'-8½"
MAIN TRACK
4'-8½"
WHEEL TRACK
40-lb Rail 19'-10" Long
5" W I Pipe
5" W I Pipe
1'-1½"
5½"
Piston Rod 3'-3"
4'-2¼" Over all
3' Lift
10"
10"
9"
9"

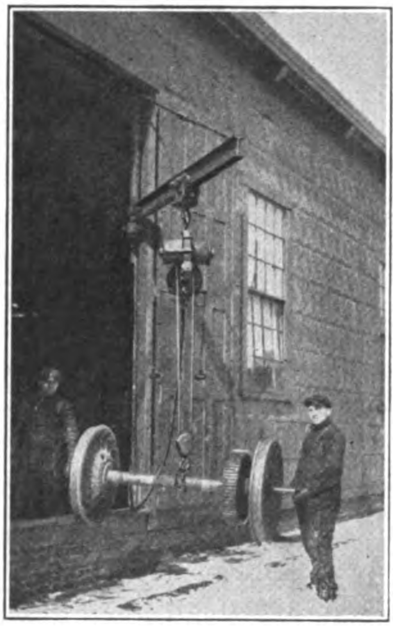
ARRANGEMENT OF DROP PIT FOR REMOVING WHEELS AT THE TERMINAL OF THE EL PASO & SOUTHWESTERN SYSTEM, AND STANDARD 10 x 36-IN. DROP PIT JACK USED FOR REMOVING CAR WHEELS than would be necessary for the average small electric road but this can be arranged to suit conditions.

The essential features of the construction consist of a pit 3 ft. 10 in. wide by 2 ft. 9 in. deep which is bridged by two trussed rails in the track. A wheel track to facilitate the bringing of wheels to the pit and removing them for repair is located alongside the main track and the pit connects these two.

At the bottom of the pit and extending across these two tracks is another narrow-gage track. A jack provided with wheels to support it and to facilitate its movement runs on this track. To remove a pair of wheels from a car it is only necessary to run the car across the pit until the wheels which it is desired to remove rest on the center of the trussed rails. The jack is then run underneath the car and raised to support the wheels and lift them slightly so that the trussed rails can be removed. The jack is then lowered with the wheels and run along its track until in line with the wheel track where it is again raised, and by applying the trussed rails to the wheel track the wheels can be rolled out of the way. The jack is operated by compressed air.

Mounting an Air Hoist in the Door Jamb

CONVENIENCE in handling wheels in an old electric railway repair shop is obtained by the 1-ton Imperial air hoist shown herewith, the hoist being mounted on an 8-ft. I-beam boom and arranged to swing from a center-bearing bolted to the door jamb. The I-beam is 6 in. deep, and a 3-in. vertical rod ties the brackets together at the top and bottom of the suspension. The I-beam is reinforced by a 1-in. rod with turnbuckle adjustment in the middle, and the door jamb was reinforced by 1-in. planking where the bolts were carried through the wall. The hoist is provided with a double drum equipped with ¼-in. stranded steel cable, air being supplied through a ¾-in. hose. With this equipment a pair of wheels can be removed from a truck outside the carhouse and swung into place on the pit track inside the building within a comparatively few seconds, and when not in service between the inside and outside of the building the door can be closed without interference with the interior use of the equipment. A similar mounting for a hoist at the door of a shop supply car will be found of great convenience in handling material which can be picked up alongside the track and readily swung into the car.



AIR HOIST HANDLING WHEELS THROUGH DOOR OPENING

LOCK ATTACHED TO SWITCH ON INTERURBAN TRACK

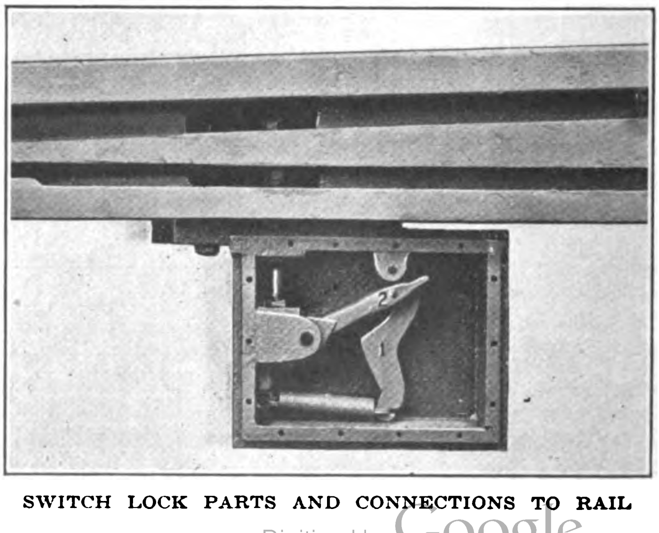
Switch Lock Prevents Derailments

THE Weiss switch lock, which is being used by a large number of electric railways, has been adopted by the Illinois Traction System, Peoria, Ill., for all necessary replacements and new installations.

The device, which is shown in the accompanying illustrations, locks the switch positively both right and left and thus prevents splitting of switches. It is claimed that this switch lock is absolutely waterproof, nonfreezable, dirt and sand proof. On the Illinois Traction System it is used both in paved city streets and on open interurban track. It requires no attention and stands up well under the most severe conditions.

The simplicity of the device is readily apparent from the illustrations. When the switch is thrown arm 2 shifts from left to right or *vice versa*, and it is held firmly in position by arm 1 and the spring. The only breakable part is the spring, and this can be readily renewed. When the spring is broken the switch remains in good working order minus the locking feature.

The box is filled with oil and the inner lid rests on a gasket and is secured by bolts. Where the connecting rod to the switch passes out of the box, a stuffing-box is provided. Thus the box is rendered absolutely tight and the loss of oil and the entrance of water or dirt are prevented. A thick casting fits snugly over the inner lid and prevents damage from traffic. These locks can be made to fit any switch by changing the position of the fastening casting on the side to correspond with the position of the bolt holes in the rails. All parts in the lock thus remain standard for the various sizes. This lock is made by the Weiss Switch-lock Company, Springfield, Ill.



SWITCH LOCK PARTS AND CONNECTIONS TO RAIL

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Short Strike in Atlanta

Men Resume Work on Understanding that Matters Shall Go Before War Labor Board

The Atlanta strike has been settled by an agreement between the employees of the Georgia Railway & Power Company and P. S. Arkwright, the president, reached late on the night of July 19. The regular schedule of cars was resumed early the next morning.

SERVICE SUSPENDED FOUR DAYS

For four days the entire railway and interurban system of the company was tied up, with the exception of cars between Camp Gordon, Fort McPherson, and Camp Jesup. These cars were operated by employees who had not struck.

At first the strikers contended that they had walked out because Mr. Arkwright would not reinstate and employ men who in 1916 had stopped work or who had participated with the disturbing element in dynamiting and other depredations. Later the strikers contended they wanted higher wages and better working conditions. Although these last-named reasons were entirely different from the ones first announced, Mr. Arkwright agreed to include them for arbitration before the War Labor Board.

During the strike, the men were urged to return to work by a representative of the War Labor Board, but this request was ignored. After Major Peck of the United States Army addressed the men, the executive committee agreed to a conference with Governor Dorsey and Mr. Arkwright. This conference finally culminated in an agreement drawn up by Governor Dorsey, Mr. Arkwright and Major Peck. The main points of this agreement follow:

RIGHT TO ORGANIZE CONCEDED

"We agree that said controversy shall be submitted to the National War Labor Board for adjudication.

"All matters in dispute, which shall include among other things hours of labor, wages and working conditions, reinstatement of former employees and any and all points offered for consideration by either side, shall be decided by the National War Labor Board and both parties to this agreement will abide by said board's decision, with the following exceptions:

"1. The organization of a union known as Local No. 732 is recognized, a number of the employees of the company having affiliated with that union.

"2. The right of the employees to join this union and to affiliate with same is conceded.

"3. The right of the Georgia Railway & Power Company to maintain an open shop, to retain its non-union employees and to employ men in the future who are not union men is conceded.

"All other matters now in dispute or differences which may arise in the future are to be adjudicated by the National War Labor Board, and the board's decision shall be binding upon both parties for the duration of the war.

"Upon the signing of this agreement by both parties to the controversy, it is agreed that the employees of the company shall return to work in the positions they held when they struck, and with the same rights, pending the decision of the War Labor Board."

While both sides are apparently satisfied, opinion prevails that the company has won its point, in not treating with the representative of the Amalgamated or other heads of allied trade unions, as the final agreement was executed by Mr. Arkwright and employees of the company, a point for which he had held out from the beginning.

President McCarter's Comment

The decision of the Board of Public Utility Commissioners of New Jersey in the fare case of the Public Service Railway has resulted in a lively passage at arms between President Thomas N. McCarter of the company, the members of the board and the Governor of the State. In an interview with two daily newspaper reporters, Mr. McCarter was said to have used the term "political horse thieves" in referring to the commission. The Governor in a reply deplored the tendency, which he said was growing, on the part of losing litigants, to abuse the judge, and said that "the decision undoubtedly represents its best judgment." It developed later that Mr. McCarter did not expect or intend that his remarks be quoted.

On July 24 during the hearing on the application of the Public Service Railroad, a separate proceeding from that of the Public Service Railway, for an increase in fares, while making it plain that he desired to apologize for the attack on the commissioners, Mr. McCarter declared that he did not desire to retract his criticism of the report of the commission. He declared the decision was not in accord with the evidence submitted at the hearings and practically ruined the credit of the company. He asked permission to file the statement as part of the board's records, which was granted.

In accepting the apology, Mr. Slocum, president of the board, said:

"This board expects to be criticised. It occupies a very difficult position, but it does hope for and always expects to receive fair and constructive criticism."

Promoting Patriotism

Local Safety Council at Kansas City Reaches Workers—Ed. Kelsey, Toledo, Does His Bit

The question of how industrial workers can be inspired to loyal service during the war the way that business men are inspired in their many war meetings was answered by the Local Safety Council in Kansas City, Mo., by a meeting in Convention Hall, admission being by tickets distributed only to employees of industrial plants. Speakers on war subjects delivered patriotic addresses, and a noted speaker on safety coupled these war talks with the obligation of men and women to keep the wheels moving.

MANY PROMINENT MEN SPEAK

The local Safety Council took advantage of the International Rotary Convention, in Kansas City that week, to hold the meeting on June 26. The Rotarians arranged for three speakers, who readily agreed to take part. These were Frank Hering, editor of the magazine of the Eagles' organization; E. R. Kelsey, advertising manager of the Toledo Railways & Light Company, Toledo, Ohio, and Andrew Home-Morton, past-president of the British Association of Rotary Clubs. Mr. Hering has been devoting nearly all his time to war work. Mr. Kelsey has been "loaned" by the Toledo utility almost continuously during the past year for Liberty Bond, Red Cross, and War Chest activities in that city, and has been largely responsible, through his organization talent and his ability as a speaker, for the success of those campaigns. Mr. Home-Morton is in the thick of similar work, besides assisting in industrial arrangements, in Great Britain.

The Safety Council secured Isaiah Hale, commissioner of safety of the Santa Fé Railroad, to make the direct appeal to the employees to stick faithfully to their jobs as a means of quickly ending the war.

5000 IN ATTENDANCE

Convention Hall was engaged for the event. More than 5000 men, women and children are estimated to have been present at the meeting. Boy Scouts assisted fifty representatives of the various plants in ushering. The purpose of the meeting was to arouse the interest of the several local branches of national projects such as the Americanization movement, the American Protective League, the educational division of the federal department of labor, the conference committee on national preparedness. The event was considered highly successful.

Mayor Hanson More Moderate

Seattle's Chief Executive Inclined to Discard Unbending Policy for One More Reasonable

As a preliminary move toward an amicable agreement between the city of Seattle, Wash., and the Puget Sound Traction, Light & Power Company, looking toward the improvement of railway service in the city, the company recently paid to the city $145,141, or 2 per cent of the gross earnings of the company for 1916 and 1917, together with interest. In making the payment, the company waives its right of appeal to the Supreme Court of the United States.

OUTLINE OF TENTATIVE AGREEMENT

In return, Mayor Hanson has sent to A. W. Leonard, president of the company, a communication outlining points in a tentative agreement and making concessions in the way of relieving the company of certain franchise obligations. Both actions are the result of the conferences lasting over a week between city officials and officers of the railway. The principal points outlined in the Mayor's letter, covering concessions the city is willing to grant, are as follows:

Skip stops on the various lines of the company.

Elimination of automobile parking on First, Second, Third and Fourth Avenues and on Pike and Pine Streets, where necessary to facilitate railway service.

Common-user privileges on the Fifteenth Avenue North Bridge in exchange for common-user rights of the company's tracks at other points.

Universal transfers on a fifty-fifty basis.

Use of idle cars in return for similar privilege.

Interchange of electric power in time of emergency.

Better arrangement for school and shopping hours.

Discontinuance of service on lines now operated solely to preserve franchise rights.

Relief from paving obligations, except where necessary for safety, during the period of the war.

Relief from $100,000 of construction obligations.

CONCESSIONS BY THE COMPANY

In return for these concessions, the city asks the following of the company:

Increased wages of employees to meet wage scale of municipal lines.

Payment of 2 per cent gross tax without protest (which has now been done).

Employment of sufficient men to operate all cars.

Purchase of more cars if necessary to give efficient service.

Agreement to divide equally between employees and company all profits in excess of 4 per cent on its own valuation figures of $15,000,000.

In his letter to the Mayor, A. W. Leonard, president of the company, agrees to the payment of gross earnings tax without protest; to paving between tracks where the city deems it necessary; universal transfers, provided a proper aggregate fare is charged; mutual use of idle equipment; common-user privileges, with the provision that the values of the common-user privileges granted by either party shall be substantially equivalent, and that the owner of the tracks in each case will have a prior right to use whenever traffic conditions warrant it.

The company requests that the matter of increased fares and of increased wages to trainmen be referred to the National War Labor Board for settlement, and that both parties agree to abide by the board's decision. President Leonard states if the company pays the city scale of wages to its employees, the sum of $600,000 a year would be added to the payroll when all the company's cars are put in service. Mr. Leonard also states that the proposed charge of 1 cent for transfers would add not to exceed $150,000 to the company's annual earnings. Mayor Hanson estimates the increased payroll would amount to $430,000 yearly, based on the company's payroll for May. The city committee, headed by Mayor Hanson, figures that skip stops would save the company $200,000 a year; elimination of automobile parking at certain corners another $100,000, while the paving obligations from which the company would be relieved will amount to $30,000.

WAGE DEMAND A PROBLEM

The most important obstacle in the way of an agreement on the railway question in Seattle is the demand for wage increases ranging from 33⅓ to 50 per cent for trainmen, shopmen, barnmen and other employees. The proposed new working agreement has been presented to President Leonard. In addition to increases in wages in every branch of the railway service, the proposed agreement provides for a small reduction in the working day.

In a conference in the Council chambers on July 11 it was decided to appoint two accountants to check the books of the company for the last four years. The findings of the accountants will be the basis of a decision in regard to increased fares for the company and additional wages for the trainmen. If an agreement cannot be reached between the city and the company on these two matters, the entire question will be referred to the National War Labor Board.

The city has announced that it will grant such increase in revenue as is necessary to give the company the same percentage of earnings as shown in 1913, 1914, 1915, 1916 and 1917. All other questions under consideration have been agreed to by both parties. Mayor Hanson has urged the Council to agree to some plan whereby the present controversy may be settled without any action on the part of the government.

A new twist to the railway situation in the city developed when the employees of the municipal system presented a demand to Mayor Hanson for a new wage scale, calling for a 10 to 50 per cent increase. The present city scale is a flat 50 cents an hour for eight hours' work. The new scale asked for fixes the rate at from 55 to 75 cents an hour. There are less than seventy-five municipal line employees. As the negotiations during the last two weeks between city and railway officials have had as one of their objects the fixing of a wage scale for traction company employees equal to that of municipal line employees, the new feature of the controversy may have an important bearing on the general railway situation.

Adjournment Deferred

Chicago Council Will Not Quit Until Report Is Made on Pending Railway Merger Ordinance

Members of the City Council of Chicago voted on July 17 to defer adjournment until a report is received from the local transportation committee on the pending ordinance for the merger of the surface and elevated lines. This gave new hope of getting action on the measure, and the committee has been holding frequent sessions. It is likely that a completed draft will be recommended about Aug. 1.

The Fisher plan for operation of the combined system by a public trustee corporation has found many supporters, and most of the newspapers are urging a settlement along this line. Leonard A. Busby, president of the Chicago City Railway, said he realized that a trustee plan would result in greater public confidence, and if an ordinance could be worked out with assurance of protection for the investors he would not oppose it. The principal debate has been on the rate of return to be guaranteed. The Traction & Subway Commission in 1916 recommended a return of 6.95 per cent. The Council committee cut this down to 6.35 per cent, which was finally accepted by the companies. The Fisher plan proposes an average guarantee of 5 per cent on bonds and 7 per cent on capital stock (one-third of the total securities), making an average of 5.6 per cent. The companies insisted that the investors would not consider this proposition, and conferences are being held in the hope of getting a higher rate on the securities.

A public hearing was held on July 20 at which requests were made for various extensions of the rapid transit lines. Advocates of municipal ownership also argued for a settlement involving this theory, and giving second choice to the trustee plan of public operation.

As Mr. Mahon Sees It

Amalgamated Association President Shows How Fares and Wages Are One and Inseparable

William D. Mahon, president of the Amalgamated Association of Street & Electric Railway Employees of America, was interviewed by John J. Leary, Jr., for the New York *Tribune* of July 21 on the electric railway labor and fare problems. Mr. Mahon was quoted in part as follows:

STRIKES NOT A REMEDY

"Looked at from any angle, the position of the traction companies from one end of the country to the other is serious. They have got to get more money. The only way they can get it is through permission to charge higher fares. It is not a question of paying dividends; it is a question of keeping the companies going and paying the necessary operating costs. It is not a question of caring for the stockholders; it is a question of protecting the public.

"It is no longer with us a question of striking to get more wages for our men. The big question has been to get the men to stay in traction work. In some of the larger cities railway men with twenty years' service have left in droves to work in other lines. It is not a question of choice with them; it is a question of getting enough to live on. The best that we have been able to do is to refer all the cases as they come up to the War Labor Board. Otherwise there would have been strikes all over the country.

"When we ask more money for the men, the companies come back at us and say they have not got the money—that they are not getting the revenues. In the majority of cases we know this to be true. The question, What are they going to do about it? comes up.

"We can call strikes or permit the men to strike—yes. That will not remedy the situation. We can allow the men to drift into other lines of work. That will not remedy the situation. Well, then, what are you going to do? If you dig into the situation you find that the companies, paying more for fuel and all that they use, are actually cramped for money. They are in the same position as the men—their cost of living has increased enormously. They ask for more money, for permission to charge higher fares, and there they stop.

THE BUFFALO FIASCO

"Take the case in Buffalo as an example. There the Council sent the question of increased fares to the Public Service Commission. The Public Service Commission passed the buck back to the Council, and now the court has held that the question must be decided by a referendum vote. Can you imagine people voting to pay more car fare? If, however, they want to ride they will have to. Whether or not these properties are forced into the hands of receivers, in the end the higher rates will have to be granted.

"My primary interest in the matter is that of the men. But we have got to be fair with the owners of these properties. They are entitled to some consideration. We have got to look out for the public interest. The public needs the services of the electric railway companies.

"Whatever our relations with the companies have been in the past, we find ourselves to-day in the position where we must, as a matter of justice and fair play, support their demands for higher rates. You can't get blood out of a turnip and you can't get money out of a company that has not got it. There is a limit.

"These companies have got to get more money, just as the government has found it necessary to give more money to the steam roads. It is the same proposition, exactly. The same elements which enter into the rising cost of steam transportation enter into the case of the traction companies. The cases are on all fours.

HIGHER RATES MUST COME

"And if they don't the result will be the breaking down of the traction service of the country. But that result won't come. It cannot be allowed to come. The service of these companies is a matter of public necessity, of war necessity, if you please, and as a matter of public necessity, of public policy, higher rates will have to be allowed sooner or later. The sooner they are allowed the better it will be for everybody."

Wage Increase in Baltimore

For the sixth time in as many years the United Railways & Electric Company, Baltimore, on July 11 raised the scale of wages of its motormen and conductors, shopmen and employees in certain other branches of the service. This increase, like each of those that preceded it, was voluntary on the part of the company. The percentage of increase in the pay of the employees under the new scale is from 10 to 20 per cent above the rate paid prior to July 11, and is the greatest increase ever made in railway men's wages in the city of Baltimore.

Officials of the company were prompted to make the raise at this time through consideration of the high cost of living and the desire of the management to enable its faithful employees to keep abreast as near as possible with the steadily advancing prices of everything under the influence of war.

The new schedule of wages per hour for conductors and motormen is as follows: Thirty-five cents, first year; 36 cents, second year; 37 cents, third year; 38 cents, fourth year; 39 cents, fifth year; 40 cents, sixth year.

In wages the operating expenses of the United Railways & Electric Company have increased more than $1,500,000 per annum over 1915.

Wage Award Expected Soon

Hearings Are Understood to Be Nearing Completion in Cases Affecting Electric Railway Employees

Hearings in the wage cases of the Chicago surface and elevated lines were concluded on July 22 before William H. Taft and Frank P. Walsh, joint chairmen of the War Labor Board. Later the chairmen heard arguments in the case of the Public Service Corporation of New Jersey. On July 23 arguments in the cases of the companies in Boston and Providence were heard by alternates appointed by Messrs. Taft and Walsh. Decisions in most of the pending cases were expected on July 22, but it was announced that none probably would be handed down before July 29.

FORTY-CENT MINIMUM

The War Board of the American Electric Railway Association has issued a pamphlet giving a summary of decisions handed down to July 12 in various industrial cases. The basic awards were a 40-cent minimum wage and an eight-hour day, with time and a half for overtime and double time for Sundays and holidays. The wage question was ruled upon in industrial cases in Waynesboro, Pa., and that of working hours in East Cambridge, Mass., and Buffalo, N. Y., controversies.

In connection with the Waynesboro award the board announces that it has under consideration the matter of determining the living wage, which under its principles must be the minimum wage for the worker and family to subsist in reasonable health and comfort.

Oscar Straus, chairman of the Public Service Commission for the First District of New York, sent a telegram on July 23 to Messrs. Taft and Walsh, in part, as follows:

STRAUS OPPOSES FEDERAL RATE RELIEF

"This commission has adopted a policy of granting public utilities such relief for the war period as may be necessary to conserve the usual corporate income, and request that we be promptly advised of any recommendations by your board affecting the wages of employees on or the rates chargeable by lines and companies within the city of New York. We believe that a policy of recommendations by your board to the proper State and municipal authorities will prove effective wherever the facts require rate increases."

The fare on surface, subway and elevated lines in New York City is not directly involved in any proceeding before the War Labor Board. Moreover, the commission's "policy" of granting war relief to utilities has not been followed in connection with metropolitan electric railways, for under the existing regulatory law the commission is powerless to change franchise fares. Its counsel, however, has submitted to the War Labor Board a brief declaring that Congress has not conferred on the President the power to regulate the rates of intraurban and intrastate electric railways operated for non-military purposes, but saying the presidential or federal recommendations would doubtless be heeded by State and municipal authorities.

News Notes

City Would Lease Line.—The City Council of Portland, Ore., has decided to ask the Hill railroad interests to fix a valuation on the old United Railways line to Linnton, which will be used as a basis either for purchase or lease of the line by the city. The Council favors the lease of the line, with an option to purchase.

P. R. T. to Open Hog Island Line.—Emergency Fleet Corporation transportation officials are working night and day in an effort to have ready for full operation the new extension of the Philadelphia (Pa.) Rapid Transit Company to the Hog Island Shipyard by the time of the first launching. This event is now scheduled for Aug. 4 and it is planned to accompany it with rather elaborate ceremonies.

Henderson Company Resumes Service.—The differences between the City Council of Henderson, Ky., and the officials of the Henderson Traction Company, have been adjusted, and railway service was resumed on July 20. The company agreed to confess to judgment for oil taxes due and give notes in payment of same. The city ordered current shut off on July 1 because of a disagreement with the company over the matter of paying the oiling tax amounting to $3,000.

State Passes Ownership Bill.—A bill has passed both Houses of the Louisiana Legislature authorizing cities, towns and villages in the State to co-operate with each other for the purpose of building, owning and operating electric interurban railways and also to build the necessary electric plants to run them. The purpose, it is said, is to give opportunity to furnish cheap and fast transportation facilities all over Louisiana.

New York Commission Moves.—The last of the many bureaus of the Public Service Commission for the First District of New York were moved on July 15 from the commission's old headquarter's at 120 Broadway to 49 Lafayette Street, New York City. The new building is twelve stories high, and the commissioners have taken the top floor for themselves, their secretaries and stenographers. Other secretaries and the more important clerks occupy the eleventh floor, while the floors below are used by the various bureaus and engineers.

Haig Honors Canadian Railway Man.—Among those included in a recent list of officers mentioned in dispatches by Sir Douglas Haig for conspicuous work in France was Lieut. C. E. Knox, son of R. R. Knox, traffic superintendent of the Winnipeg (Man.) Electric Railway. Lieutenant Knox has been in France for the last two years, having left with the 101st Battalion. His entire platoon was made up of conductors and motormen. Before going overseas Lieutenant Knox was in the employ of the Winnipeg Electric Railway as chief clerk to his father.

Portland Wage Contract Ratified.—At a recent special meeting the local branch of the Amalgamated Association at Portland, Ore., ratified the proposed new contract with the Portland Railway, Light & Power Company, and upon the declaration of Franklin T. Griffith, president, that the company would be unable to grant the proposed wage increases without additional revenue, it was mutually agreed that the entire issue be passed to the National War Labor Board for adjudication. If the War Board approves the tentative wage schedule, it is considered probable that fares in Portland will be raised to 7 or even 8 cents.

Campaign for Help Obtains Results.—The labor problem is a difficult one at present with the electric railways operating in the great industrial districts centered in the upper part of the Ohio River Valley. As a means of increasing its available labor supply, the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, shortly after the promulgation of General Crowder's "work or fight" order ran a series of advertisements in the local press calling attention to the essential nature of electric railway work. As a result of this advertising campaign the company received a number of applications for employment.

Pacific Electric Injunction Sustained.—The United States District Court at Los Angeles, Cal., has sustained the temporary injunction restraining officials of the Brotherhood of Railway Trainmen and Brotherhood of Locomotive Engineers from interfering with the operation of the Pacific Electric Railway. In handing down the decision, Judge Bledsoe classed the union organizers as third parties attempting to interfere with a fixed policy of the railway in dealing with its men. It is understood that this will have the effect of permanently restraining attempts to force recognition of the union or the use of intimidation in inducing employees to join in a walkout.

Artillery Officers' School for Technical Men.—A field artillery officers' training school has been established at Camp Zachary Taylor, near Louisville, Ky., and an opportunity is offered there for men with engineering training to become officers in this branch of the service. The camp is designed for civilians between twenty years and eight months and forty years of age as well as for enlisted men in the army. The period of enlistment is for the duration of the war. The commission given to those who graduate is second lieutenant, then promotion is by selection and should be rapid for men of ability. Further particulars can be obtained by addressing the school direct.

Akron's New Terminal Nearly Completed.—The splendid new terminal building of the Northern Ohio Traction & Electric Company at Akron, Ohio, is nearing completion. Except for a few minor details, the main structure is finished and is now being occupied by the company official force. Scarcity of labor and slow delivery of materials have delayed the completion of the structure, but company officials hope to have the train shed completed by Aug. 15. The shed contains eight loading tracks and has room for twenty-four cars. The terminal adds greatly to the facilities offered by the company for handling the heavy traffic in this great industrial district. A brief description of this building, with illustrations showing the floor plans, was published in the ELECTRIC RAILWAY JOURNAL for March 9, 1918, page 465.

Forty-Cent Minimum Is Vancouver Award.—Findings of the board of conciliation in the dispute between the British Columbia Electric Railway, Vancouver, B. C., and its motormen and conductors were handed down on July 6 by Mr. Jüstice MacDonald. The eight-hour day principle is conceded with the recommendation that its application be postponed till after the war. A minimum wage rate for motormen and conductors of 40 cents an hour is recommended, being an increase of one-third over the present scale. The maximum wage is placed at 47 cents, an increase of 16½ per cent. Overtime, the board finds, should be paid for after nine hours' work. The period of the new agreement is fixed at one year and it is recommended that the men have a voice in preparation of the running sheets. The employees had asked for a wage scale ranging from 40 to 51 cents with an eight-hour day. The company accepted the board's findings.

Monongahela Valley Wages Adjusted.—At meetings held in both Clarksburg and Fairmont, W. Va., on July 13 employees of the Monongahela Valley Traction Company accepted a compromise wage increase offered by the company in response to their demand for higher wages. It is understood that the employees of the Parkersburg and Marietta division are in conference with company officials, and that in a few days they, too, will have reached an agreement. The power house men have come to an agreement with the company and are now awaiting the signing of their contract. The linemen and carhouse men are still in conference over their increase. The scale of wages agreed upon follow: City men in the employ less than one year 38 cents an hour; second and third year, 39 cents; fourth and fifth year, 41 cents; in service five years or longer, 43 cents. Men employed on the interurban lines will be paid 2 cents more an hour than the city men.

Financial and Corporate

Issue of Notes Approved

Interborough Rapid Transit Company Authorized to Offer $39,416,000 of Notes

The Public Service Commission for the First District of New York on July 23 gave the Interborough Rapid Transit Company permission to issue $39,416,000 face value of 7 per cent notes dated July 1, 1918, and maturing July 21, 1921. On maturity the notes are convertible into 5 per cent bonds of the company at 87½ per cent of their face value. It is expected that this will immediately relieve the company of the embarrassment created by its failure to dispose of its bonds at the minimum price of 93½ fixed by the commission. The condition of the money market due to war conditions made it impossible for the company to find a market for the bonds at this price.

It is expected that the War Finance Corporation will take approximately 30 per cent of the notes, or about $11,000,000 of them, and it will therefore be necessary for the company to deposit as security $61,596,500 in 5 per cent bonds under its first and refunding mortgage of 1913, because the corporation demands collateral equal to 125 per cent of the amount of its loans. The order of the commission stipulates that the notes must be sold so as to net the Interborough company not less than 95½ per cent of their face value. Of the amount raised by the note issue not more than $1,773,720 must be spent to meet the total expense of the sale. The remainder of the money is to be used by the company for these purposes:

For the equipment of new subways, including improvement, reconstruction or modification of existing power houses, substations or other electrical equipment	$20,229,762
To pay the actual cost of plant and structure and equipment of third or additional tracks upon the elevated railroads	11,771,387
To pay the actual cost of plant and structure, and for equipment of the extensions of elevated railroads	5,250,131
To pay the cost of the improvements, reconstruction or changes to the power house, substations, transmission lines, etc., for the operation of the extensions and additional tracks, including certain replacements	2,391,000

The order of the commission authorizing the sale provides that all of the notes must be amortised out of the income of the Interborough company previous to the maturity of the bonds deposited as collateral.

The action of the commission followed an opinion written by Public Service Commissioner Hubbell, who found that the requirements of the company were urgent, and that the terms proposed under the prevailing wartime conditions were reasonable and as favorable as it was possible to procure.

These conclusions were justified, it was said, by a letter on the subject written by Charles A. Peabody, president of the Mutual Life Insurance Company, who described the proposed terms as fair and reasonable. Testimony of a similar character was given by Charles H. Sabin, president of the Guaranty Trust Company; Clarence H. Kelsey, president of the Title Guarantee & Trust Company; James Speyer of Speyer & Company; Jacob H. Schiff of Kuhn, Loeb & Company, and Frederick H. Shipman, treasurer of the New York Life Insurance Company.

A statement by the commission says that $953,235 of the $1,773,720 set aside to pay the expenses of the sale is allotted under the subway bond issue, and $820,485 is allotted under the elevated railway part of the bond issue.

Many Minnetonka Bonds Extended

William A. Read & Company, New York, N. Y., announce that a very large proportion of the $5,000,000 of Minneapolis, Lyndale & Minnetonka Railway, first mortgage 5 per cent bonds due on Jan. 15, 1919, has been extended by the present holders, who had until July 15 to accept the privilege of extension at a 7 per cent rate from July 15, 1918, to Jan. 15, 1922. The remainder of the 7 per cent bonds not extended by holders of the maturing 5 per cent bonds, have been sold by the bankers. The road is included in the system of the Twin City Rapid Transit Company.

The terms of the extension of the bonds were reviewed in the issue of the ELECTRIC RAILWAY JOURNAL for June 29, page 1251.

Crosstown Line Sold July 25

The New York Railways on July 25 bid in the Central Crosstown Railroad and the lease of the old Christopher & Tenth Street Railroad at auction under foreclosure proceedings brought by the Guaranty Trust Company, as trustee, acting for bondholders. The New York Railways has been operating the crosstown line since the reorganization of the old Metropolitan Street Railway.

The Public Service Commission for the First District of New York recently approved the application of the New York Railways for authority to purchase and acquire the Central Crosstown Railroad.

The commission stipulates that its approval does not prejudice its right to inquire at any future time into the value of the property to be so acquired, in any proceedings involving the rate to be charged or securities to be issued.

$29,553,380 Maturities

Total for Last Five Months of 1918 Includes $18,259,880 for Railway and Miscellaneous Issues

As most of the public utility issues falling due the balance of this year are for relatively small amounts, the War Finance Corporation will be called upon for little aid by public utility companies for refunding purposes compared with the large and numerous applications it received from this class of corporations in the first two months of its existence.

According to the *Wall Street Journal*, the total amount of public utility securities maturing for the last five months of the year is only $29,553,330, as against $81,015,000 maturing in July, and $210,500,000 for the entire year. The bulk of the maturities consists of short-term notes, which have run from one to five years.

The maturities of issues of more than $200,000 for the electric railways, arranged by months, as contained in the list follow:

Issues:	Rate	Amount
AUGUST		
West End St. Ry. ser. debentures	5	$1,581,000
Hudson Cos. secured notes	6	1,500,000
Columbus Ry, P & Lt 1-year notes	6	1,000,000
Missouri Elec R. R. pur money	5	700,000
Newport & Fall River St. Ry	5	240,000
Carolina Pwr. & Light notes	5	202,500
People's St. Ry. of Luzerne Co.	6	200,000
Miscellaneous		722,400
Railway total		$6,145,900
Total all classes		$12,045,900
SEPTEMBER		
Appalachian Power Co. notes	7	$2,170,700
Chicago & West Towns Ry. 1st.	6	690,000
Ohio Traction Co. notes	6	300,000
Miscellaneous		775,500
Railway total		$3,936,200
Total all classes		$4,236,200
OCTOBER		
Cleve., P. & E. R. R. 1st con.	5	$1,131,000
Cleve., P. & E. R. R. 1st ext.	5	500,000
Phil. & West Chester Traction 1st.	5	400,000
Quincy Horse Ry. & Car Co. 1st	5	400,000
Christopher & 10th St. R. R. 1st	4	210,000
Miscellaneous		1,303,500
Railway total		$3,944,500
Total all classes		$7,305,000
NOVEMBER		
Springfield Ry. & Lt. 2-yr. notes	5	250,000
Miscellaneous		382,750
Railway total		$632,750
Total all classes		$2,365,750
DECEMBER		
Toronto Ry. 1-yr. notes	6	$750,000
Eastern Texas Electric Notes	6	500,000
Toronto Ry. gold notes	6	500,000
Wyandotte & Detroit River Ry.	5	425,000
Bay State St. Ry. notes	6	357,000
Pan Handle Traction notes	6	309,530
Easton, P & Bethlehem St. Ry.	5	200,000
Miscellaneous		559,000
Railway total		$3,600,530
Railway and miscellaneous total five months		$18,259,880
Total all classes five months		$29,553,380

The railway and miscellaneous securities maturing during the remaining five months of 1918 thus total $18,259,880.

Not "Depreciation"—but "Retirement"

Electric Railway Representatives at Hearing on New York Second District Classification of Accounts Suggest Change of Terms

A second conference on the proposed new uniform system of accounts for electric railways under the supervision of the Public Service Commission for the Second District of New York was recently held at the office of the commission in Albany. The discussion turned principally on the use of the term "depreciation" and on certain portions of the instructions pertaining to depreciation accounting.

In general, however, no objections were made to the adoption of the classification as a whole, except for a letter from W. H. Williams, vice-president United Traction Company, in which the point was made that the new classification would force companies without accumulated adequate reserves to charge against operating expenses losses incident to retirements instead of charging such losses to surplus as heretofore. The result of this requirement, the letter stated, would be a financial statement that would appear superficially less favorable to such companies and would injuriously affect their credit. Mr. Williams suggested that the adoption of the new classification be postponed at least until after the war.

Proposed Depreciation Requirements

H. C. Hasbrouck, chief of the division of statistics and accounts, described the changes in the wording of the tentative classification made as a result of the discussion at the earlier conference in May. He stated that in view of the decision of the Court of Appeals in the New York Railways case, the language of the instructions with reference to accounting for depreciation had been modified so as to do away with the mandate that charges must be made to depreciation accounts, but that special accounts would be retained in operating expenses to which such amounts should be charged as might be determined to be proper for the purpose of taking care of the losses due to wear and tear, obsolescence and inadequacy. The recommendation was retained that under normal operating conditions the annual charge to these accounts should be between 2 and 5 per cent of the cost of way and structures and between 2 and 10 per cent of the cost of equipment.

The commission's proposed attitude on depreciation is set forth in detail as follows:

> Depreciation accounts in which to include charges to cover depreciation of way and structures, equipment, power plant buildings and power plant equipment are provided in order that carriers may, through the creation of adequate reserves, equalize from year to year, as nearly as is practicable, the losses incident to important retirements of buildings, bridges, trestles, etc., or of large sections of continuous structures like track or electric line, or of definite units of equipment. "Losses" as used above means in each case the difference between the original cost to the accounting corporation of the property retired and its salvage value at the time of its retirement.
>
> There may be an occasional exception to the literal meaning here given. For example, a corporation prior to the establishing of required uniform accounting may have pursued the policy of recognizing depreciation by writing down its assets instead of setting up a reserve. In this case the "loss incident to the retirement" would be the so far unrecognized loss—that is, the difference between the ledger value and the salvage value of the property retired.
>
> The cost of replacing minor parts which is not recorded by any entries in the road and equipment accounts and which is commonly called the cost of "repairs" or "maintenance" as distinguished from the cost of "replacements" of large units need not be provided for through depreciation charges.
>
> The amounts charged to depreciation accounts should be upon a basis determined to be equitable according to the carriers' experience and best sources of information and should, in all cases, be sufficient to provide, during a period of years, a reserve against which can be written off all losses sustained upon the retirement of property either when its natural life has expired or when it has become obsolete or otherwise inadequate for efficient service.
>
> A statement of the rule used by the carrier for computing these charges shall be included in its annual report to the commission. If the carrier so desires, it may file with the commission a verified copy of its rule for determining depreciation accruals, and refer to such rule in its annual report in place of repeating it in full each year.
>
> While each corporation may determine for itself the amount to be reserved annually for depreciation as above defined, the commission will necessarily, in deciding rate and other cases, have to pass upon the adequacy or inadequacy of such charges. As an indication of its policy in this respect, therefore, the suggestion is made, based upon the commission's experience in the regulation of electric railways, that a depreciation charge amounting to not less than 2 per cent or more than 5 per cent per annum on the average total cost of all ways and structures, or to not less than 2 per cent or more than 10 per cent per annum on the average total cost of all equipment, will, under normal operating conditions, be generally less open to question than rates which fall above or below these limits. It is also suggested that depreciation rates should preferably be stated in terms of a percentage of the cost of depreciable property, because it is believed that that form of statement is, on the whole, the clearest and simplest way of expressing the normal depreciation charge and furnishes the readiest basis for comparison between companies.

Mr. Hasbrouck explained as follows the reasons for keeping the word "depreciation" in the title of the accounts provided for the purposes above described: first, the desirability of conforming as nearly as possible to the Interstate Commerce Commission's classification of accounts for electric railways; second, the lack of a better alternative term; and third, the fact that the word "depreciation" had come to be so extensively used that an attempt to discard it entirely would only give rise to more difficulties and misunderstandings than it would eliminate. He also mentioned a rephrasing of the general instructions pertaining to depreciation accounting to make it clear there is no implication that a separate depreciation reserve must be maintained for each individual unit of property.

"Retirement" Should Be the Term

J. C. Collins, as chairman of the accounting committee of the New York Electric Railway Association, read a memorandum embodying the views of that body. The memorandum set forth that the inclusion of charges for so-called "depreciation" in the operating expenses of an electric railway is unnecessary provided the plant and the equipment are properly maintained. If it should become necessary to make such charges, however, they should be based on the judgment of an engineer or operating manager, with respect to a definite program of replacements in a particular case, and not on any general accounting or statistical theory of standard depreciation rates. The operating expense account to which such charges are made should be called a "retirement" account rather than a "depreciation" account, and the reserve created through such charges should be called a "retirement" and not a "depreciation" reserve.

Electric Association Favors Change

H. M. Brundage, for the committee of the Empire State Gas & Electric Association, also suggested the use of "retirement expense" and "retirement reserve" as substitute titles, without otherwise changing the language of the instructions relating to these accounts. He objected to basing the amount of the annual charge on any estimate of theoretical life in service for different classes of plant and equipment.

The new classification, when finally adopted, will be effective on Jan. 1, 1919. It will be printed as soon as possible and will then be formally served on all electric railways in the Second District.

Indiana Line Defaults Interest

George C. Van Tuyl, Jr., president of the Metropolitan Trust Company, New York, N. Y.; L. H. Gethoefer, president of the Pittsburgh (Pa.) Trust Company; David Taylor, vice-president of the Coal & Iron National Bank, New York, N. Y.; William H. Pritchard, president of the North Adams (Mass.) National Bank, and Frank Coenen, New York, at the request of a number of holders of the first mortgage 5 per cent thirty-year gold bonds of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., upon notification by the company that it would default in the payment of the coupons due on July 1, 1918, and that a plan of reorganization of the company was under consideration, have consented to act as a committee for the protection of the interests of the first mortgage 5 per cent thirty-year gold bonds. Holders of such bonds are asked to deposit their bonds, with coupons attached, including the coupon due on July 1, 1918, with the Metropolitan Trust Company, New York, the depositary of the committee, under a deposit agreement to be dated July 17, which is being prepared.

The Chicago, South Bend & Northern Indiana Railway operates 123 miles of electric railway, connecting South Bend with Mishawaka, Elkhart, Goshen, La Porte and Michigan City.

Electric Railway Statistics

Operating Ratio Continues to Rise, According to April Returns—Slight Improvement in the West

A comparison of electric railway statistics for the month of April, 1918, with figures for the corresponding month of 1917, made by the Information Bureau of the American Electric Railway Association, indicates a slowing up of the downward tendency of net earnings and operating income. This is particularly noticeable in the Western District, which actually shows a slight improvement over last year.

Operating Expenses Still Climbing

Operating expenses continue to rise at an increasing rate in all districts, but revenues have also taken a spurt this month, and although they are not keeping pace with the expenses, the increase is marked enough to retard the downward trend of the net earnings and operating income, which has been the consistent feature of recent operating statements.

Data for April, representing 6706 miles of line of companies scattered throughout the country, figured on the per mile of line basis, indicate an increase in operating revenues of 6.56 per cent, in operating expenses of 12.03 per cent, and a decrease in net earnings of 3.44 per cent. Data representing approximately 70 per cent of the above mileage indicate an increase in the amount of taxes paid of 8 per cent and a decrease in operating income of 5.72 per cent.

Usual Geographic Grouping Followed

The returns from the city and interurban electric railway companies, as shown in detail in the appended table, have been classified according to the following geographic grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Of the three groups shown in the accompanying table, returns for the Eastern, representing 4290 miles of line, indicate an increase in operating revenues of 5.54 per cent, in operating expenses of 12.38 per cent and a decrease in net earnings of 7.48 per cent. Taxes paid by companies representing approximately 67 per cent of the above mileage increased 7.14 per cent, while the operating income of these companies decreased 12.09 per cent.

Returns from the Southern and Western Districts indicate that both have been affected by the rising cost of operation and increased taxes, the Western district in particular showing the greatest increase in taxes. But this district also had the greatest increase in operating revenues with the result that it was able to improve its condition only slightly with an increase of 1.50 per cent in operating income.

Operating Ratio 67.97 Per Cent

The operating ratio for the country as a whole has increased from 64.66 in 1917 to 67.97 in 1918. The operating ratio of the Eastern district has increased from 65.55 in 1917 to 69.80 in 1918. The operating ratios of the Southern and Western districts have also risen, the Western showing the smallest increase, from 65.05 in 1917 to 66.47 in 1918. In the Southern district, however, the operating ratio, while increasing faster than the Western, is still the most favorable, rising from 57.54 in 1917 to 60.60 in 1918.

Decision in Favor of City

Judge Chatfield of the United States District Court, Brooklyn, N. Y., has dismissed the complaint in an action brought by Receiver A. C. Hume on behalf of the South Shore Traction Company, New York, against the City of New York to recover $1,750,000 damages.

Statement of Capitalization

President Shonts, of the New York Railways, Does Not Hesitate to Grasp the Thistle Firmly

It will be recalled that in the spring of 1917 the New York Railways petitioned the Public Service Commission for the right to make a charge for transfers. After the Court of Appeals of New York State decided that public service commissions had no power to increase rates of fare stipulated in franchises, the Public Service Commission for the First District concluded it had no power to grant a charge for transfers until the permission of the Board of Estimate of New York City had first been obtained. Meantime, the increase of expenses, beyond the figures existing when the petition was made, had become so pressing that it was necessary for the company to have greater income than a charge for transfers would procure; hence, the company has now a petition before the Board of Estimate for an increase of the basic fare.

The New York *Herald* recently published an editorial paragraph in which it was charged that the difficulties of the company were due to previous financial sins and over-issues of watered stock. Mr. Shonts, president of the company, immediately sent to the editor of the *Herald* a letter upon this subject. The company is also pressing the point home in other publicity matter.

Review of Finances

Mr. Shonts, in his communications to the *Herald* and to civic bodies, seized the thistle firmly, stating the position of the company to the following effect:

> The New York Railways was organized on Dec. 29, 1911. Hence it has always been under Public Service Commission regulation. The company's stock represents actual value and there is no water in its capitalization. The company arose from the ruins of the Metropolitan Street Railway and the New York City Railway, which had been in the hands of receivers. A joint com-

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS APRIL, 1918 AND 1917

Account	United States				Eastern District				Southern District				Western District			
	Amount, April, 1918	Per Mile of Line			Amount, April, 1918	Per Mile of Line			Amount, April, 1918	Per Mile of Line			Amount, April, 1918	Per Mile of Line		
		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917
Operating revenues......	$13,508,276	$2,014	$1,890	6 56	$8,253,736	$1,924	$1,823	5 54	$1,258,908	$1,533	$1,446	6 02	$3,995,632	$2,505	$2,283	9 72
Operating expenses......	9,178,697	1,369	1,222	12 03	5,761,096	1,343	1,195	12 38	762,679	929	832	11 66	2,654,922	1,665	1,485	12 12
Net earnings...........	4,329,579	645	668	†3.44	2,492,640	581	628	†7 48	496,229	604	614	†1 63	1,340,710	840	798	5 26
Operating ratio, per cent.	1918, 67 97; 1917, 64 66				1918, 69 80; 1917, 65 55				1918, 60 60; 1917, 57 54				1918, 66 47; 1917, 65 05			
Av. No. miles represented	1918, 6,706; 1917, 6,625				1918, 4,290; 1917, 4,274				1918, 821; 1917, 765				1918, 1,595; 1917, 1,586			

COMPANIES REPORTING TAXES

Operating revenues......	$9,091,397	$1,950	$1,837	6.15	$4,884,505	$1,685	$1,614	4.40	$589,831	$1,735	$1,627	6 64	$3,617,061	$2,540	$2,342	8 45
Operating expenses......	6,287,383	1,370	1,240	10 48	3,610,051	1,245	1,138	9 40	355,234	1,045	905	15.47	2,422,098	1,701	1,528	11 32
Net earnings..........	2,704,014	580	597	†2 85	1,274,454	440	476	†7 56	234,597	690	722	†4 43	1,194,963	839	814	3 07
Taxes..............	627,993	135	125	8 00	347,984	120	112	7 14	49,463	145	138	5 07	230,546	162	147	10 20
Operating income.......	2,076,021	445	472	†5.72	926,470	320	364	†12.09	185,134	545	584	6 68	964,417	677	667	1.50
Operating ratio, per cent.	1918, 70.26; 1917, 67.50				1918, 73.89; 1917, 70 51				1918, 60 23; 1917, 55 62				1918, 66.97; 1917, 65 24			
Av. No. miles represented	1918, 4,663; 1917, 4,634				1918, 2,899; 1917, 2,885				1918, 340; 1917, 334				1918, 1,424; 1917, 1,415			

† Decrease.

mittee, representing interests in both companies, made a plan for reorganization and the establishment of this company.

That reorganization plan reduced the capital $41,883,894.50, and the Public Service Commission, specifically basing its action upon a decision by the Court of Appeals, approved the capitalization as then fixed.

The capitalization of the company is less than the value of its property. The sum total of stock, bonds and convertible scrip, underlying bonds or other mortgage indebtedness, is $76,018,087.19. (This not only excludes any value for any of the franchises, although these alone are taxed by the State on the value of $13,000,000, but it also excludes any "going value.")

At normal average prices, the value of the company's property used in the public service (exclusive of franchise and good-will value) is, at a low estimate, $92,000,000.

At the time of the reorganization, the Public Service Commission fixed a valuation of the company's property, for the issuance of securities, at $85,801,000. This did not include franchise or "going value," either of which would have brought this value up to more than $100,000,000. And more than $3,199,000 has since been expended in additions and betterments.

Some of the company's opponents, while admitting that the company has paid no dividends, have declared that the situation of the New York Railways is due to excessive rentals, which it pays for leased and controlled lines. In reference to this, Mr. Shonts speaks to the following effect:

As to dividends and rentals: the shareholders of the New York Railways have never received any dividends on the company's stock.

The company is paying certain rentals—in the form of dividends or interest—to the owners of securities of some of the companies in the system, and some of these securities are owned by the company. This matter has been the subject of much misunderstanding, but the following facts are to be noted:

1. The securities do represent real value, a value which justifies the rentals. The value of these securities has been authenticated by the public authority which fixes the company's taxes. Taking their valuation (which includes both real estate and franchises) as a basis, the total return actually paid to security holders of leased and controlled lines is less than 6½ per cent on the valuation. This includes payments on securities owned by the company.

2. The total of these securities is less than a quarter of the total capitalization.

3. The total rentals now paid ($1,620,713) constitute a return of only 7.49 per cent on the par value of the outstanding securities ($21,612,144), the only part of the system that has ever had anything like a fair return.

Much emphasis is laid on the fact that every line leased was necessary to a complete system that, with transfers, could give the best and cheapest service.

Without discussing whether the terms of any or all of the leases are too high or too low, the important consideration, as it affects the public, is stated to be: The rentals have no effect on the fare. High or low, they must come out of the statutory "fair return" on the value of the property in the system as a whole.

Having made these points, the company then develops the importance of the transfer system and points out that a receivership would put the continued existence of the transfer system in peril and that the loss of transfers would cost the public in dollars and cents more than the additional fare.

The company, in short, not only appeals to the fairness of the public, but it shows that the public does have a dollars and cents interest itself in the company's appeal for increased fare.

Financial News Notes

Holyoke Dividend Put Over.—The Holyoke (Mass.) Street Railway has omitted its usual dividend payable at this time, due, it is said, to increased expenses. It is understood that the stockholders have in mind a service-at-cost plan as provided at the last session of the Massachusetts Legislature. In January of this year a dividend of 1½ per cent was declared and in July, 1917, a like amount.

Babylon Railroad Suspends.—The Babylon Railroad, operating between Amityville and Babylon, Long Island, N. Y., and from the main street of Babylon down to Great South Bay, has suspended service, its power having been shut off by the Long Island Lighting Company. The management of the lighting company says that the railroad owes the company about $7,000.

Changes in Personnel of Ohio Road.—The officers of the Cincinnati & Dayton Traction Company, the successor to the Cincinnati, Dayton & Toledo Traction Company, the property of which was recently sold under foreclosure to the representatives of the bondholders, are as follows: J. M. Hutton, president; Otto Armleader, first vice-president; Claude Ashbrook, secretary; Leo Van Lahr, treasurer; The Warren Bicknell Company, operating managers; M. Ackerman, resident manager and purchasing agent; C. A. Hamilton, superintendent; J. M. Brick, general freight and passenger agent; J. P. Davis, chief engineer power station, and M. Schoenhals, master mechanic.

Decrease in Passengers in St. Louis.—The quarterly report of the United Railways, St. Louis, Mo., filed on July 15 with City Register Cuendet, shows that in the three months ended June 30, which included one month of 6-cent fares, the company carried 1,000,000 fewer passengers than in the corresponding three months last year, but received $148,622 more revenue because of the 6-cent fare. In the last three months the cars transported 19,626,961 passengers at a 6-cent fare, 41,640,680 at a 5-cent fare and 977,407 children at half-fare. The cars made a total of 1,533,880 trips and traveled 10,064,977 miles. The average number of cars on week days was 1293, and on Saturdays 1171. An average of 772 cars were run on Sundays. In the same three months last year, the cars hauled 62,155,641 passengers for a 5-cent fare and 1,107,288 children for half fare. An average of 1278 cars were operated on week days, 1184 on Saturdays and 808 on Sundays, the report shows.

Commission Opposes Delay.—At the direction of the Public Service Commission for the First District of New York a letter has been sent to Pierre Jay, chairman of the district committee on capital issues in reference to the application of the New York & Queens County Railway, Long Island City, for approval by this financial committee of an issue of bonds amounting to $281,000 for construction work ordered by the commission in Flushing Avenue, Borough of Queens. The commission's letter states that while the company's application, in form, asks approval of the bond issue, in actuality the petition is a request to the committee to refuse its approval and to disapprove and bar for the period of the war, the construction work in question. The commission asks the committee not to give the railroad the benefit of an adverse decision upon its application on the ground that the construction work has been ordered by the commission and is a necessary and important public improvement.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$14,865	$12,151	$2,714	$517	$2,197
1m., Jnue, '17	16,495	11,634	4,861	430	4,431

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$176,189	*$141,073	$35,116	$35,975	†$859
1m., May, '17	178,494	*134,555	43,939	35,706	8,233
5m., May, '18	772,536	*690,117	82,419	179,267	†96,848
5m., May, '17	811,757	*604,076	207,681	178,795	28,886

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$1,808,929	$38,393	$1,770,536	$5,750	$1,764,785
1m., June, '17	1,388,560	29,785	1,358,775	233	1,358,542
12m., June, '18	20,907,945	398,630	20,509,315	13,815	20,495,500
12m., June, '17	15,865,984	300,303	15,565,681	13,999	15,551,628

* Includes taxes. † Deficit. ‡ Includes non-operating income.

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$46,226	*$30,633	$15,593	$11,512	$4,080
1m., May, '17	43,746	*29,011	14,735	12,176	2,559
5m., May, '18	206,022	*140,888	65,134	57,144	7,990
5m., May, '17	195,889	*120,928	74,961	58,953	16,008

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$161,528	*$118,466	$43,062	$36,001	$7,060
1m., May, '17	141,530	*97,997	43,533	34,253	9,280
5m., May, '18	772,168	*585,297	186,871	181,005	5,866
5m., May, '17	659,925	*465,053	194,872	171,837	23,035

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$449,349	*$313,081	$136,268	$100,833	‡$43,646
1m., June, '17	375,345	*254,386	120,959	80,514	‡44,747
12m., June, '18	5,467,589	*3,832,521	1,635,068	1,111,278	‡614,943
12m., June, '17	4,283,069	*2,688,203	1,594,265	907,876	‡719,560

Traffic and Transportation

New Fare in Effect

Kansas City, Mo., Goes to a Six-Cent Fare Without Any Undue Complications

The Kansas City (Mo.) Railways on July 15 put into effect the 6-cent fare authorized and ordered by the Public Service Commission of Missouri. Each conductor was supplied with several dollars in pennies, but there was little need for making penny change. Many of the passengers had pennies ready, but in some cases the penny was proffered with dimes, quarters and half dollars, the change to be made being the same as in case of a 5-cent fare.

175,000 METAL TICKETS SOLD

The company had issued about 50,000 metal tickets several weeks ago for which 5 cents each had been paid. Fully 40,000 of these, it has been estimated, had been retained by purchasers, and are now being used to pay 6-cent fares. The company issued 125,000 metal checks of a new lot, many going out a day or so before the higher fare went into effect, for which purchasers paid 6 cents. These were mostly bought by county and city officials and deputies, in large lots, and for similar purposes by institutions which provide car fare to representatives. The company is expecting 125,000 more of the metal checks, delay having occurred at the factory.

A few passengers proffered $2 bills—a Missouri law existing under which a conductor must pass up a passenger whose $2 bill he cannot change, the law giving the privilege of ejecting the passenger who proffers a $5 or larger bill that cannot be changed.

The 6-cent fare applies only in Missouri. Passengers boarding cars in Kansas City, Rosedale and other parts of the company's lines in Kansas, pay only 5 cents. The cars entering Missouri are stopped at the State line, where collectors from the inspection department of the company go through the cars and take up an additional cent for the ride into Missouri. On the morning the new fare went into effect collections were made in an average time of a minute and a half, most of the passengers having their pennies ready. Eighty-six per cent of the business of the company is in Missouri, so that the temporary necessity of operating at a 5-cent fare in Kansas does not impose a serious loss on the company.

SLIGHT DECREASE IN TRAFFIC

There was occasional controversy with passengers asked to pay the extra cent, due chiefly to local agitation against the increased fare.

Attorneys for the city and the city commissioners in Kansas City, Kan., are seeking methods of preventing the collection of the penny from interstate passengers. The appeal of the Public Utilities Commission to the Supreme Court, in the case of the injunction issued by the County Court against the holding of a hearing by the commission on the company's application for increased fare in Kansas, is still pending.

SLIGHT DECREASE IN TRAFFIC

The revenue of the railway on the first day of the increased fare, ran about 17 per cent ahead of the usual Monday revenue. Average traffic on that day, with the additional 1 cent from all passengers, would of course have increased the revenues a full 20 per cent.

Attacks Michigan Two-Cent Law

The Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., has filed suit in the United States District Court in Grand Rapids to "test the validity and enjoin the enforcement of the statute of the State of Michigan fixing the maximum fare for railroads at 2 cents a mile."

The company alleges that it is operating at a loss, and that to continue to force the railway to conform to the 2-cent fare is practically the confiscation of its property for public use, without just compensation and due process of law, and in violation of the constitution of the United States and the constitution of the State of Michigan.

District Judge Sessions set July 23 for the defendants to show cause why a temporary injunction should not be issued in favor of the company.

The company in its bill prays:

"That Act No. 54 of the public acts of the Legislature of the State of Michigan of the year 1907, approved April 18, 1907, and effective Sept. 29, 1907, as amended by the Public Acts No. 276 of the year 1911, be adjudged and decreed null and void and of no force and effect so far as the complainant railway, its officers, agents or representatives are concerned, as in violation of the constitution of the United States and the constitution of the State of Michigan.

"That a temporary injunction be issued pending the trial and final decree in this section, according to the course and practice and out of and under the seal of this honorable court, strictly enjoining and restraining the defendant, Alexander J. Grosbeck, as Attorney General for the State of Michigan, from enforcing or attempting to enforce in any manner whatsoever, Act. No. 54 of the public acts of the Legislature of the State of Michigan, etc.

"That a temporary writ of injunction be issued pending the trial and final decree in this action."

Rights of Cities Denied

Pennsylvania Commission Holds Power Over Rates Belongs to People, Not to Municipalities

The Public Service Commission of Pennsylvania ruled on July 21 that it is within the power of the commission to increase or lower electric railway rates as the evidence justifies, notwithstanding that a specific rate was fixed by municipal ordinances.

The decision was rendered in the case of the borough of Wilkinsburg vs. the Pittsburgh Railways, wherein it was argued by the borough that the corporation could not increase its fares because it had accepted the terms of a franchise ordinance limiting the fare to 5 cents. The commission says:

"The ability of the company (Pittsburgh Railways) to make extensions and improvements is so dependent upon the return it is entitled to receive that the regulation of each must be placed in one body; and the Legislature has designated the Public Service Commission as this body. The power of the commission to regulate rates will also result in eliminating discriminations bound to exist where rates are fixed by a number of municipalities, all served by one street railway system."

The opinion recognizes the validity of the conditions contained in the municipal consents, but holds that these contracts were entered into, or conditions were accepted, subject to the continuing right of the people, through the Legislature, to exercise police power, even if such exercises result in wiping out the terms agreed upon.

WHERE REGULATION IS LODGED

The report of the commission says:

"It was conceded at the argument and is settled by judicial authority that municipalities have not been invested either by the constitution or by the Legislature with rate-regulating authority. If the regulation of rates and service of utilities is a proper exercise of the police power of the commonwealth and cannot be abridged, and if the municipality has no power to regulate rates of street railways, it would follow, if the complainants' position is sustained, that that power, in this respect, at least, cannot be exercised by any body or authority within such municipalities, and therefore the constitutional mandate, generally conceded to be one of highest importance to the inarticulate citizenry, is nullified or suspended. If such a position is to be sustained, it ought to be sustained upon very clear authority and supported by cogent and impelling reasons."

Commissioner Ryan dissented.

The opinion by the Public Service Commission does not grant the rate increases. It merely says the commission has the right to grant increases or compel decreases. The next step in the case of the borough of Wilkinsburg and the dozens of other municipalities protesting rate increases will be the calling of hearings, in which the railways will present their claims for an increase.

Seven-Cent Fare for Boston on Aug. 1

Recently Appointed State Trustees See in This Move Only Means of Preventing Financial Disaster

A 7-cent fare will be established on the entire system of the Boston (Mass.) Elevated Railway beginning on Aug. 1, according to a statement of the trustees of the company issued on July 24. The new fare will be in force until further notice and the existing 5-cent fare will be abolished, as will the use of 8-cent checks on certain lines.

FIVE TICKETS FOR THIRTY-FIVE CENTS

Beginning on July 29, tickets will be sold in strips of five for 35 cents at all prepayment stations and by collectors, ticket sellers and conductors. Tickets will also be sold at many important stores and industrial concerns, and the public is urged to supply themselves with tickets previous to Aug. 1.

It is hoped to speed up the service materially by the use of tickets. Cash will not be accepted at prepayment stations, except at ticket windows. While cash will be accepted by conductors, it is to be the policy of the company to encourage the use of tickets to the maximum. The same ticket will be accepted at all stations and on all cars, and the tickets will be transferable. Transfers will be issued along present lines, without extra charge, for travel in the same general direction, and the existing system of free bodily transfers will be continued.

After Aug. 1 the 5-cent tickets now in the possession of passengers will not be honored by the company, but the treasurer will refund their value upon presentation.

STATEMENT BY TRUSTEES

The statement issued by the trustees on July 25 follows:

"Commencing on Aug. 1, at 4 a. m., and continuing until further notice, the rate of fare in all cases on the lines of the Boston Elevated Railway where the unit is now 5 cents will be 7 cents. The use of 8-cent checks will be discontinued.

"This increase in fare is made by the trustees in performance of the duty expressly imposed upon them by law (Chap. 159 of Special Acts of 1918) to 'fix and put in operation rates of fare which in their judgment will produce sufficient income to meet the cost of service' including operating expenses, interest, taxes, rentals, depreciation and the dividends specified by the statute.

"After making a careful study of the finances of the company and taking into consideration the known increase in various elements of its expense in the near future, according to the most conservative estimate it will be necessary to procure during the year ending July 1, 1919, additional revenue of about $6,150,000. It seems reasonable to believe that this amount will be produced by the 2-cent increase in the fare rate. If, however, this result is not brought about, other expedients will have to be tried.

"The difficulties of operating surface, subway and elevated lines preclude the introduction of a zone system or an elaborate change in the transfer privileges at this time.

250 CARS ORDERED

"For the purpose of making much needed improvements in service 250 new cars and other equipment have recently been ordered by the trustees. War conditions familiar to all will make it impossible to secure a speedy delivery of this new equipment, and such conditions also handicap the road in procuring and keeping competent employees and in obtaining coal and other necessary supplies. Nevertheless, the trustees will bend every energy to give the public the best service that can be supplied under the circumstances.

"It is possible that further consideration and study by the trustees will result in modifications of the fare which is established at this time, but to-day, confronted as the trustees are by the serious emergency arising from the tremendous monthly deficit in the company's revenue, and the necessity under the law of protecting the Commonwealth from paying the company's bills, the trustees have no alternative but to increase the unit of fare.

PUBLIC CO-OPERATION ASKED

"The trustees ask that the public be patient in the unavoidable difficulties that now confront the road, and that may under the pressure of war conditions become still more burdensome, and give the trustees sincere co-operation in their effort to conduct the business of the company with the highest degree of efficiency obtainable under existing conditions."

Advertises Car Service

Lynn Merchant Explains Why Publicity Is Needed to Secure Traffic During Off-Peak Hours

The Lynn papers recently carried large display advertisements of the tickets which are good between 9 a.m. and 4.30 p.m. and are sold at six for 25 cents by the Bay State Street Railway. The advertisements were inserted by Ralph S. Bauer, large dealer in furniture in Lynn, who during the recent hearings before the commission had advocated this reduced off-peak rate. Mr. Bauer explains his reason for the publication of these advertisements in a letter to Wallace B. Donham, receiver of the company. After saying that he had made a canvas of 120 Lynn people who are frequent riders on the road to find that only twelve knew of the reduced rate, he continued:

"The only commodity the Bay State Street Railway has to sell is car rides. The investigation I personally made last week, as to the number of people who knew about the tickets to be used during the non-peak-load hours was such a revelation to me that I am sure, as a merchant who has bought newspaper publicity for more than twenty years, and previous to that time who sold newspaper publicity for fifteen years, there is a tremendous need of newspaper publicity to educate the people as to the different kinds of fares and rides under which the Bay State Street Railway now operates. I hope you will take up the matter from this point and exploit it in a way as to bring returns to your company.

SELL CAR RIDES LIKE MERCHANDISE

"I believe it is possible to get thousands of new riders in your district on this proposition if you go after them as a merchant goes after customers for a line of goods he wishes to dispose of. On the other hand, if you do not merchandise the only commodity you have to sell in what appears to be the modern, efficient way—newspaper publicity—it is very doubtful whether the full measure of success will result from any action your railway may take. An educational campaign also ties the people closer to you because they believe you are making an effort intelligently to help them understand your public service."

Baltimore Wants More

The United Railways & Electric Company, Baltimore, has filed a petition with the Public Service Commission for an increased rate of fare. The company asks the approval of the commission of "a uniform cash fare of 6 cents in lieu of all cash fares now collected except in the case of children between the ages of four and twelve years, and in the case of such children and also in case of all those riders now using commutation tickets a uniform increase of 1 cent."

T. A. Cross, president of the company, on July 20, addressed the following letter to all employees:

"In to-day's papers you will find an announcement over my signature regarding the 'United's' inability to continue its service for a 5-cent car fare.

"This announcement will be followed by a series of others pointing out exactly what the problems are that confront the company.

"It is your duty to read and become thoroughly familiar with all the facts brought out.

"You can't prosper unless the company prospers. Therefore, you should make it your business to be able to talk intelligently about the road's condition and needs whenever the opportunity presents itself.

"I will appreciate your hearty cooperation, and I am going to take it for granted that you are going to do all that you can possibly do to prove to the public that what we are asking of them is fair, reasonable and absolutely necessary.

"In anticipation of your help and cooperation, I am, with best wishes."

Six Cents in Saginaw

The Saginaw-Bay City Railway, Saginaw, Mich., has obtained permission to charge a 6-cent fare in Saginaw, in which city it operates under a franchise granted twenty-five years ago, at rates of fare as follows: Single cash fares, 5 cents; regular tickets, six for 25 cents; labor tickets, eight for 25 cents; school tickets, eight for 25 cents.

Some time ago the company petitioned the City Council to pass an amendment to its franchise granting it authority to charge 6 cents straight for all passengers carried. The City Council considered the matter carefully and then engaged the services of Prof. M. E. Cooley of the University of Michigan to appraise the property and report to the City Council whether the company's request was justified. The report of Professor Cooley stated clearly and emphatically that the request of the company was fully justified. The City Council, therefore, on July 2 passed an amendment authorizing the increased rate of fare. The ordinance became effective on July 16.

All special rate tickets have been abolished and the fare is now 6 cents straight with five tickets for 30 cents, as a matter of convenience.

During the negotiations of the company with the City Council, the railway conducted an educational campaign in the newspapers, explaining its position. After this compaign had been closed the railway reproduced the newspaper articles in pamphlet form and distributed them by means of small "Take One" boxes placed in all the cars. The company also displayed posters on its cars.

Vancouver Jitneys Eliminated

The City Council of Vancouver, B. C., on June 21 passed a by-law prohibiting jitney operation in Vancouver and on the interurban line between Vancouver and New Westminster. This action was taken in accordance with the report of Dr. Adam Shortt made last November and with the agreement made with the city in June, 1917, to carry out Dr. Shortt's recommendations. The jitneys were to go from the streets on June 30. The by-law recites that after July 1, no person was to drive or operate any motor vehicle coming within designations set out in the measure as Class "A" or "B."

The city jitney was eliminated by Class "A" and the interurban jitney by Class "C." The latter operated on a 25-cent fare between Vancouver and New Westminster. This clause prescribes that the fare for any distance greater than 2 miles outside the city limits shall be at least 50 cents. It was agreeable to the company that the jitney line running between Vancouver and Woodward's Landing should continue to operate since it did not compete with any of the lines of this company.

The New Westminster jitney service has been in the hands of the Blue Funnel Motor line, composed of a number of independent owners operating one or more cars under the same name. It is possible that the representatives of the jitney interests may contest the by-law in the court.

Despite the order ruling the jitneys out on July 1 the vehicles were continued in operation upon advice of their attorneys. They raised the fare to 10 cents. Steps are being taken by the jitney attorneys to quash the by-law calling for the elimination of the automobiles.

Kansas Rates in Court

Judge E. L. Fisher, of the District Court of Wyandotte County, Kansas, has issued an injunction against the Public Utilities Commission of Kansas considering the matter of rates of the Kansas City (Mo.) Railways in Kansas City, Kan. The attorney for the Public Utilities Commission has appealed to the Supreme Court. Judge Fisher's decision carries two points: one was that he had jurisdiction to consider the application of the City Commissioners of Kansas City, Kan., for the injunction against the Utilities Commission; the other that the Utilities Commission had no authority to interfere in the rates, which were entirely a matter of contract between the city and the company and therefore should be handled by the City Commissioners.

The Supreme Court had previously refused a writ of mandamus asked for by the attorney for the Utilities Commission, following the filing of the petition for the injunction and the granting of the temporary restraining order by Judge Fisher. It is understood, however, that it is possible that federal participation in the subject may obviate the necessity for final adjudication of the State Commission's authority over fares.

The War Labor Board will probably soon take up the matter of wages of the employees of the Kansas City Railways in Kansas and may then bring about an increase in fares in order that wages be raised.

Company Publication Enlarged

With the July number the *Puget Sound Electric Journal* will become the house organ for the district, covering the news of the various companies under Stone & Webster management in the Pacific Northwest. The paper is now in its eighth year as the company publication of the Seattle division. The principal features of the enlarged paper will consist of a department of intimate talks to readers from the executive offices, which will reflect the attitude of district officials toward the problems of the several communities included within the district and also a discussion of the problems of the companies themselves. The purpose is in short to give the employees of all of the companies under the management of Stone & Webster in the Pacific Northwest territory an enlarged knowledge of the affairs of the management in the district.

Hull Fare Increase Allowed

The Board of Railway Commissioners has authorized the Hull (Que.) Electric Company to increase passenger and freight rates on its line to Aylmer. Judgment by the commission was made on June 26, but announcement of the decision by the board was not made until July 9.

The company is authorized to increase its standard passenger rates from a basis of 2½ cents per mile, to a basis of 2.875 cents per mile, which figures out as a 15 per cent increase. One of the most noticeable increases in the freight business will be on coal. In the past, a charge of 50 cents per ton has been made on coal from Hull to Aylmer. On this commodity the board has allowed an increase of 15 cents.

With regard to the claims of the company, the board finds in part as follows:

"The increases in cost, and especially in wage cost, are clear and unmistakable. There is nothing before the board to warrant an assumption that there will, under existing conditions, be such an increase of traffic as to take up these increased costs and in addition give a reasonable return on the investment. Nor is there anything established by way of showing that there are any economies or efficiencies neglected, which economies or efficiencies, if utilized, might take care of existing costs."

The judgment then goes on to say that a case for an increase has been made by the railway company, not only as concerns the standard rates but also for special rates.

New Jersey Decision Accepted

The Public Service Railway, Newark, N. J., on July 23 filed with the Board of Public Utility Commissioners its acceptance of the conditions upon which the company recently was authorized to put into effect an increase of 1 cent on all transfers issued. In filing its acceptance the company through its counsel made the following statement to the commission:

"If the commission please, the Public Service Railway has filed its acceptance of the three conditions mentioned in the order of July 10 made in the fare increase matter.

"One of those conditions requires the company to submit a plan for an equitable zoning system by Jan. 1 next. The testimony of the witnesses for the company at the hearing showed that such a plan, if possible to be prepared at all, would require much longer than five months. However, the company will proceed in good faith to prepare the best plan it can as rapidly as practicable and submit it for consideration in the best form possible by the first of January."

The decision of the commission in this case was reviewed in the ELECTRIC RAILWAY JOURNAL for July 20, page 113.

Transportation News Notes

War Emergency Fare Agreement.—The Council of Milwaukee, Wis., has finally passed an ordinance permitting the Milwaukee Northern Electric Railway to sell six instead of eight city fare tickets for 25 cents and twenty-five for $1. This is to give the company financial relief during the war, and by it neither the city nor the company will waive rights under the 1907 franchise.

Formal Twin City Plea Made.—Horace Lowry, president of the Twin City Rapid Transit Company, appearing before the City Council of St. Paul, Minn., on July 10 intimated the company faced bankruptcy because of increased cost of operation and pleaded for increased fares. He did not ask for any fixed rate, rather leaving the measure of relief to the company to be decided after the presentation of the evidence. The Council appointed a committee to confer with the Minneapolis Aldermen and arrange a joint session at which Mr. Lowry will present details for both cities.

Fare Increase in Laurel.—The difficulties attending the operation of the railway lines of the Laurel Light & Railway Company, Laurel, Miss., have been very satisfactorily adjusted. The employees of the railway recently demanded an increase in wages. The management of the company agreed with the men, that they were entitled to an increase if it were possible for the company to obtain higher rates. A petition was presented to the city and for a period of about two weeks the line ceased operating, pending a public election to be held for the approval of the company's fare demand. At this election, held on July 12, it was voted to grant the 6-cent fare. Railway service was immediately resumed.

Los Angeles Jitneys Recalled.—By a unanimous vote the Board of Public Utility Commissioners of New Jersey has requested the city attorney to draw a resolution to the effect that on Aug. 1 all existing licenses covering buses paralleling electric railway lines shall become void. It was explained that where public convenience and necessity require the board will grant licenses covering the operation of jitneys on other routes. The board's action will wipe out the sixteen jitney buses operating on the Main and Moneta Avenue line and the thirteen operating on the Central Avenue line. According to Assistant Engineer Anderson of the utilities department, the total revenue of these lines is about $74,160 annually.

Youngstown-Alliance Freight Service.—Harry Rhodehouse, manager of the traffic bureau of the Chamber of Commerce at Youngstown Ohio, announced on June 19 that a daily six-hour freight service between Youngstown and Alliance had been started over the lines of the Mahoning & Shenango Railway & Light Company and the Alliance & Mahoning Valley Railway. This, it is said, will relieve congestion on the steam roads and give shippers a service that is superior to anything they have had heretofore. Plans are also being worked out for a service connecting Cleveland, Akron, Canton and Youngstown, with intermediate points, in connection with the Northern Ohio Traction & Light Company's lines. The starting of this service will depend upon the success of the Youngstown-Alliance line.

Would Use One-Man Cars in Galesburg.—The Galesburg Railway, Light & Power Company, Galesburg, Ill., included in the system of the Illinois Traction Company, has asked the City Council for permission to use one-man cars. In its petition the company said: "As the gross receipts are not enough to pay the expenses of the company because of the high cost of fuel, material and up-keep and operating expenses and the decrease in the traffic because of thinning of population and increasing automobiles and also because the employees have asked an increase in wages, the company feels that it is justified in asking for permission to use the one-man cars, and it will so alter and equip the present cars to meet the approval of the Public Utilities Commission." The matter has been referred to the City Attorney and to the Public Utilities Commission.

Interurban Rates Modified.—A rate of 1½ cents a mile has been ordered on the Kansas City-Western Railway, the Leavenworth line, by the Public Utilities Commission of Kansas when patrons pay in advance for forty rides a month between specified points on the road. The tickets are not transferable, and cannot be used beyond the thirty-day period indicated thereon when purchased. When forty-ride books are not used, patrons pay 2 cents a mile. A charge of 10 cents is made in addition, when a patron boards a car, without a ticket, at a station where tickets are sold. The commission had previously established the fare between Kansas City and Leavenworth at 50 cents, with no reduction for round-trip tickets. Formerly, the company sold round-trip tickets for 75 cents, and also sold commutation tickets as low as 44 cents for the round trip. The zone system of fares was in effect previously. Under it in some cases the rates were around 1 cent.

New Chicago-Joliet Rates Filed.—Increased fares on city and interurban lines will become effective on or about Aug. 12, if a petition to that effect, presented to the Utilities Commission of Illinois by the Chicago & Joliet Electric Railway, Joliet, Ill., is favorably acted upon. The petition embodies a request for authority to increase the passenger fare rates on Joliet city lines from the present charge of 5 cents to 7 cents. Also to increase the passenger rate on the line between Chicago and Joliet from the 1.87 cents per mile for one-way tickets to a straight 2 cents per mile. Round-trip fares will be changed to the sum of two single fares in the place of the present rate of 1.75 cents per mile. Individual commutation tickets will be changed from the present rate of 1 cent per mile to 1.5 cents per mile. Cash fares paid from points where passengers could have secured a ticket will be raised from 2.5 to 3 cents per mile, and special excursion rates will be changed from 1 to 1.5 cents per mile.

I. C. C. Hearing at Louisville.—Hearings were held in Louisville, Ky., on July 15 and 16 before an examiner for the Interstate Commerce Commission on the applications for increased fares made by the Louisville & Southern Indiana Traction Company, operating to Jeffersonville, and the Louisville & Northern Indiana Railway & Light Company, operating to New Albany. The Public Service Commission of Indiana has already allowed an increase from 5 cents to 10 cents for the interurban ride from New Albany to Jeffersonville, both of which cities are in Indiana. Olaf Erickson, Chicago, was examined first. It was largely on the strength of the investigation and report made by him to the owners of the properties that the application for the increases was based. At the request of Col. C. L. Jewett, representing the legal department of the city of New Albany, it was agreed that oral arguments would be made in Washington before the commission at a date convenient for the commission. Briefs may be filed as late as Aug. 16.

Albany Fare Brief Filed.—The United Traction Company, Albany, N. Y., on July 12 filed its brief with the Public Service Commission for the Second District of New York in connection with its plea to that body for a 6-cent fare. The company complains that in the "general acquiescence" of localities served by its lines, the only objection comes from the Albany zone. The company says: "Certain officers of the city and members of a commercial organization have so far misapprehended the condition as to convince themselves that if Albany could be isolated from the balance of the company's system, its railway business would be found to be profitable at the present rate of wages and fares. The facts refute the suggestion. The sole question in this case is whether the United Traction Company shall be allowed a living wage. It is pleading for its life in this proceeding, and unless relief is obtained, its continued existence as an efficient agency for public service inevitably must cease. Enforced restriction of rates to the present level would confiscate not only the equity of the stockholders, but the security of the bondholders." An extension of time for one week has been granted to the city for filing its brief.

Personal Mention

Mr. Shoup, Vice-President

Head of Pacific Electric Railway Made Southern Pacific Vice-President After Many Years' Service

Paul Shoup, president of the Pacific Electric Railway, Los Angeles, Cal., since 1912, was signally honored on July 11 when he was elected a director, vice-president and assistant to the president of the Southern Pacific Company. While his election makes him one of the highest officials of the Southern Pacific, Mr. Shoup will not sever his connections with the Pacific Electric Railway. He will be the executive representative of the Southern Pacific Company on the Pacific Coast with headquarters in San Francisco. He will continue to have general supervision over the Pacific Electric Railway and will succeed William Sproule in connection with the various corporations in which the Southern Pacific Company is interested. The railroad governing body also elected Julius Kruttschnitt president of the company, succeeding William Sproule, who resigned to become the federal district director of the United States Railway Administration. Mr. Shoup succeeds W. R. Scott, who resigned as director and vice-president of the Southern Pacific Company to resume his position as federal manager of the Southern Pacific and Western Pacific lines in the Central Western region.

PAUL SHOUP

As president of the Pacific Electric Railway since 1912, in which year he succeeded William F. Herrin with that company, Mr. Shoup has been responsible for the management and operation of one of the largest systems of city and interurban lines in the United States. The properties embrace 1060 miles of road, with very diversified service. They are known particularly for their high-grade service and for their excellent personnel. Prior to 1912 Mr. Shoup was vice-president of the lines. Before becoming connected with the Pacific Electric Railway he was assistant general passenger agent of the Southern Pacific Company. He entered the service of the Southern Pacific Company in 1891 as a clerk in the office at San Bernardino. When the narrow-gage railroad between Riverside and San Bernardino went into the hands of a receiver Mr. Shoup was practically in charge, and he is said to have been largely responsible for converting the road into a paying investment. Mr. Shoup next entered the passenger department of the Southern Pacific Company. Soon thereafter he went to San Jose as district freight and passenger agent of the company. He went to Portland, Ore., later and reorganized the freight department of the Southern Pacific Company in that city. From December, 1908, until April, 1910, Mr. Shoup gave his time to the interests of the late E. H. Harriman in California not related to the Southern Pacific Company. Prior to his election as vice-president of the Pacific Electric Railway Mr. Shoup was assistant general manager of the Southern Pacific Company, in charge of its electric lines in California, which included the Los Angeles-Pacific Company and Peninsula Railway, San Jose.

Journal Men in Service

Members of the Staff of This Paper in Many Branches of the Federal War Service

A card recently received by the editorial staff of the ELECTRIC RAILWAY JOURNAL announced the safe arrival in France of L. E. Stibbe, formerly editorial representative for this paper.

Mr. Stibbe enlisted in the engineering branch of the service and was recently promoted to the rank of sergeant. His arrival in France swells the ELECTRIC RAILWAY JOURNAL total at the front to three, viz.: Lieut. Frank Kingsley, Ordnance; Lieut. Harold W. McGraw, Infantry; Sergt. L. E. Stibbe, Engineers. Other former ELECTRIC RAILWAY JOURNAL men now in the service are A. C. Davison, Infantry, and Harold Rudd, Aviation. The normal staff, editorial and business, at the New York office of the JOURNAL consists of about twelve men.

Lieutenant Kingsley was in one of the first contingents to be sent abroad and has seen continuous service there since last November.

In addition to the home office representation, Harry L. Brown, who was Western Editorial representative of the ELECTRIC RAILWAY JOURNAL until he entered the Signal Reserve Corps of the United States Army last January, has been promoted from first lieutenant to captain. Since he entered the military service he has been stationed at Washington in the Radio Division and later the Training Division of the office of the Chief Signal Officer.

Mr. House in Northern States

Technical-Business Executive Returns to Northern States Power Company as Manager at St. Paul

Garrett O. House, the superintendent of the St. Paul (Minn.) City Railway, Twin City Lines, has been appointed to succeed the late P. T. Glidden as manager of the Northern States Power Company, St. Paul, Minn. Mr. House is a native of New York State. For fifteen years previous to 1904, when he came to St. Paul, he was engaged in civil engineering work, municipal, state and railroad. He acted as city engineer of Poughkeepsie, N. Y., for several years and was an assistant engineer under the State engineer of New York State engaged in the enlargment of the Erie Canal and State highways. He was identified with the location and construction of the Troy & Sand Lake Electric Railway and also with the change in motive power on the Poughkeepsie City Railway from horses to electricity. In 1904 Mr. House went to St. Paul as the representative of Eastern capitalists promoting the public utility corporation now known as the Northern States Power Company. He helped to obtain the necessary franchises and directed the installation of steam and electric equipment. In 1909 Mr. House performed special work, directing the installation of large, electrically operated coal docks for the North Western Fuel Company at Superior, Wis., including 13,000-volt trolley lines and all auxiliary equipment. In 1912 Mr. House became general superintendent of the St. Paul Water Department. He reorganized and readjusted the business methods and equipment of the department. His administration gained the confidence and approval of the general public in St. Paul, demonstrated his ability as a technical-

G. O. HOUSE

business executive and indirectly resulted in his appointment a few months ago to the Twin City Rapid Transit Company. He knows well the problems of the Northern States Power Company through his previous long connection with the company at the time of the inception of the enterprise.

F. J. Larsh has been appointed auditor of the Atchison Railway, Light & Power Company, with headquarters at Topeka, Kan., to succeed W. C. Glover.

W. C. Stockman, formerly chief inspector of the Mobile Light & Railroad Company, Mobile, Ala., has been appointed superintendent of transportation.

J. F. Beard has been appointed superintendent of lines of the Birmingham Railway, Light & Power Company, Birmingham, Ala., to succeed B. H. Elliott.

A. Mueller has been appointed superintendent and purchasing agent of the Mankato (Minn.) Electric Traction Company, to succeed E. N. Thyse, resigned.

Louis J. Hauck has been elected vice-president of the Cincinnati, Newport & Covington Light & Traction Company, Covington, Ky., to succeed Clifford P. Garvey.

R. E. Bowen has been appointed engineer of the power station of the Little Rock Railway & Electric Company, Little Rock, Ark., to succeed A. W. Russell.

J. M. Ahearn, assistant superintendent of the Ottawa (Ont.) Electric Railway, has also been appointed purchasing agent, vice D. N. Gill, who has entered military service.

Frederick E. Hayes has been appointed general superintendent of the Sandwich, Windsor & Amherstburg Railway and Windsor & Tecumseh Electric Railway, Windsor, Ont.

G. K. Rudd has been appointed roadmaster of the Cincinnati, Newport & Covington Railway and the South Covington & Cincinnati Street Railway, Covington, Ky., to succeed K. B. Norman.

W. D. Ranshaw has been appointed claim agent of the Cincinnati, Newport & Covington Railway and the South Covington & Cincinnati Street Railway, Covington, Ky., to succeed B. W. Fitzgerald.

R. Harold Smith, who has been managing the Bridgeton (N. J.) Traction Company, has been appointed general manager of the Schuylkill Railway and Schuylkill Electric Company at Girardville, Pa.

A. R. Koonce, formerly master mechanic of the Little Rock Railway & Electric Company, Little Rock, Ark., has been appointed superintendent of the railway department to succeed Richard Eick.

E. D. Loper, formerly master mechanic of the Key West (Fla.) Electric Company, controlled by Stone & Webster, has been appointed master mechanic of the Columbus (Ga.) Railroad, also controlled by Stone & Webster.

Robert Allan Stephens, lawyer, Danville, Ill., and secretary of the Illinois Bar Association, has been appointed by Governor Lowden as secretary of the Public Utilities Commission of Illinois. He succeeds Robert V. Prather, Olney.

Clarence R. Manzer, chief clerk of the transportation department of the Chicago (Ill.) Surface Lines, has been commissioned first lieutenant in the Quartermaster's Corps and is now in Washington, D. C. Mr. Manzer held his position with the Surface Lines and the Chicago City Railway for many years.

J. F. Rodgers, superintendent of track and roadway for the Chicago (Ill.) Surface Lines, has been commissioned major in the construction division of the Quartermaster's Department, U. S. Army. Mr. Rodgers held his position with the Chicago Surface Lines since the merger in 1914 and held a similar position with the Chicago City Railway for a period of several years prior to the merger.

N. S. Wiltsie has been promoted to general superintendent of the Bamberger Electric Railroad, Salt Lake City, Utah. He will have charge of all operating departments and the active operation of the line. Mr. Wiltsie has been with the Bamberger line for the last ten years and was recently in charge of the train service, with the title of superintendent of transportation.

William L. Ransom, counsel Public Service Commission for the First District of New York, has in *The Survey* of July 20 an article which discusses in a broad way the necessity of the public paying for utility service and meeting present emergency costs so as to keep essential services unimpaired. Mr. Ransom also believes, as noted in the issue of July 20 in connection with his address before the National Municipal League, that cities in now permitting a disregard of franchise fare limits may properly insist upon other changes in the public interest.

Richard Eick has been appointed purchasing agent of the Little Rock Railway & Electric Company, Little Rock, Ark., to succeed C. J. Griffith, who retains the title of general manager. Mr. Eick has been superintendent of the railway department of the Little Rock Railway & Electric Company since 1911. Before becoming connected with the company, Mr. Eick was division superintendent of the North Jersey Traction Company, from which company he went to the United Railroads, San Francisco, as division superintendent. He resigned from the United Railroads in 1904 to become superintendent of transportation of the Little Rock Railway & Electric Company, which position he held until July, 1911, when he was promoted to the position of superintendent of the railway department.

M. F. Flatley recently resigned as master mechanic of the Dayton & Troy Electric Railway, Tippecanoe City, Ohio, to become master mechanic of the Lackawanna & Wyoming Valley Railroad, Scranton, Pa. Before becoming connected with the Dayton & Troy Electric Railway Mr. Flatley was master mechanic at the Lebanon shops of the Terre Haute, Indianapolis & Eastern Traction Company, in charge of equipment on the Northwestern, Martinsville, Crawfordsville and Lebanon divisions. He became master mechanic of the Terre Haute, Indianapolis & Eastern Traction Company's property in June, 1915, and was previously employed for six years as master mechanic on the Rochester, Syracuse & Eastern Railway. He was also employed by the Brooklyn Rapid Transit System as foreman of the elevated division for four and one-half years, and served three years as foreman of car equipment on the elevated division of the Interborough Rapid Transit System in New York. His first experience in electric railway work was obtained during his connection with the Westinghouse Electric & Manufacturing Company.

R. R. Smith, mention of whose appointment as general manager of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., was made in the July 13 issue of this paper, has been connected with the electric railway industry for the last twenty years. He was graduated from the electrical engineering course of Worcester Polytechnic Institute in 1898. After a few months with the Shaw & Ferguson Syndicate, he was appointed superintendent of the Sherbrooke (Que.) Street Railway. In 1901 he became superintendent of the Pawtucket City division of the Rhode Island Company, and in 1896 left there to accept the position as general manager of the Evansville & Southern Indiana Traction Company. He left Evansville to assume charge of the transportation, power and track departments of the Louisville Railway, as traffic manager of that property, leaving there to take the position of general superintendent of the Buffalo & Lake Erie Traction Company. In 1913 he became connected with the Terre Haute, Indianapolis & Eastern Traction Company and Indianapolis Traction & Terminal Company, as purchasing agent for both these properties, which position he resigned to assume the management of the Chicago, South Bend & Northern Indiana Railway.

Obituary

David Morgan, formerly with the Illinois Traction System at Carlinville, Ill., was killed in action in France on June 15. He was a private in the United States Marine Corps.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Franchises

San Diego, Cal.—The City Council of San Diego has granted a franchise to the Los Angeles & San Diego Beach Railway for the construction of an extension on Girard Avenue from Prospect Street to Silvarado Street.

Santa Ana, Cal.—War conditions which made it inadvisable and unnecessary for the Pacific Electric Railway to build its proposed extension to Irvine at a cost of $300,000 have resulted in the company filing a request with the Board of Supervisors asking that an extension of not more than three years be granted the company for completing the work under its county franchise. If the war should end within three years the franchise could then be made operative, according to the petition.

Track and Roadway

Anniston & Camp McClellan Transportation Company, Anniston, Ala.—It was expected that actual construction would be begun on July 20 by the Anniston & Camp McClellan Transportation Company on its line from Anniston to Camp McClellan. The project is estimated to cost about $300,000. More than $125,000 has been subscribed. L. L. Crump, Anniston, secretary. [July 6, '18.]

Mobile Light & Railroad Company, Mobile, Ala.—Operation has been begun by the Mobile Light & Railroad Company on its extension to the Chickasaw shipbuilding plant.

Pacific Electric Railway, Los Angeles, Cal.—The City Council of Riverside has denied the petition of the Pacific Electric Railway to abandon its lines on Brockton Avenue and Seventh Street.

Municipal Railways of San Francisco, San Francisco, Cal.—The Board of Supervisors of San Francisco has under consideration the construction of an extension of the line of the Municipal Railways over Army Street to Potrero Avenue, so that service may be afforded to the Union Iron Works, Hunter's Point and the industrial plants in that section of the city.

***Washington, D. C.**—Emergency war measures are under consideration by the authorities for various extensions of the street railway systems in Washington so as to afford more adequate means of transportation to and from the many new government buildings in West Potomac Park and the section of the city south of Pennsylvania Avenue and west of Seventeenth Street. A plan said to be favored by the Public Utilities Commission of the District of Columbia calls for the construction of a "belt" line having physical connection with existing lines from all points in the city and suburbs. The Secretaries of War and Navy are in correspondence with the District Commissioners on the subject and a plan of action will be adopted in a short time.

Gary (Ind.) Connecting Railways.—The Public Service Commission of Indiana has issued an order denying the petition of Charles M. Alford to dismantle that part of the Gary Connecting Railways from Gary to Woodville Junction.

Louisville & Interurban Railway, Louisville, Ky.—The newspapers of Louisville have been conducting a campaign in an effort to get the Louisville & Interurban Railway to extend its line to West Point, Ky., for the purpose of giving the soldiers stationed at the artillery range at that place an opportunity of coming to Louisville on the electric line instead of having to depend on the steam roads. So far the company has not declared any intention of extending the line.

New Orleans Railway & Light Company, New Orleans, La.—Work will be begun at once by the New Orleans Railway & Light Company on the relocation of its tracks on Dauphine Street from Poland and Jourdan Avenues to North Rampart Street.

Boston & Maine Railroad, Boston, Mass.—A new signal tower will be erected by the Boston & Maine Railroad in the Charleston district of Boston. The structure will be about 25 ft. x 40 ft., and will be two stories high. The cost is estimated at $10,000. The H. Wales Lines Company, Meriden, Conn., is the building contractor.

United Railways, St. Louis, Mo.—Construction is under way by the United Railways of an extension of its Hamilton Avenue line through the Hi-Pointe subdivision, and it is expected that the line will be completed in September.

Public Service Railway, Newark, N. J.—Plans are being made by the Public Service Railway for immediate work on the extension of its system on the west side of the Hackensack River. The extension is planned to provide transportation facilities for workers engaged at the plant of the Federal Shipbuilding Company and other plants in this vicinity.

Cincinnati & Dayton Traction Company, Cincinnati, Ohio.—Extensive improvements in the equipment, properties and service of the Cincinnati, Dayton & Toledo Traction Company, which connects Cincinnati, Hamilton, Middletown, Franklin, Miamisburg, Dayton and Germantown are being planned by the Cincinnati & Dayton Traction Company which recently took over the operation of the line.

***Miami, Okla.**—A committee has been appointed by the Miami Business Men's League to build and operate an electric or other interurban railway through the Miami mining district, at an estimated cost of about $650,000. Among those appointed were Dr. W. L. McWilliams, George L. Coleman, John Cheyne and G. W. Dick.

Wheeling (W. Va.) Traction Company.—The construction of a new approach to the Steubenville (Ohio) bridge across the Ohio River is under way by the Wheeling Traction Company. When this construction is completed through car service will be inaugurated between Steubenville and Wheeling, W. Va. For this service the company recently purchased nine new steel center-entrance cars. Seven of these cars will be required to maintain the schedule. Each car has a seating capacity of seventy persons and is 57 ft. 10 in. long.

Shops and Buildings

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—This company has acquired half a block in Baltimore, bounded by Eutaw, Lombard, Howard and Pratt Streets, and plans to construct a terminal station and additional tracks. The cost is estimated at about $300,000.

Public Service Railway, Newark, N. J.—A new car shop will be built by the Public Service Railway at Bloomfield Avenue and Lake Street, Newark. The structure will be of brick, 162 ft. x 50 ft., one story high, and will cost about $45,000. The company will also make some alterations in its office and storage building at the same location.

Power Houses and Substations

Georgia Railway & Power Company, Atlanta, Ga.—A new high-tension line has been installed by the Georgia Railway & Power Company from the Dunlap plant to feed the two mills of the Pacolet Manufacturing Company at Gainesville and New Holland. The mills will consume about 6000 hp. Four 2000-kva. transformers, one to be held in reserve, were installed to supply power from the 110,000-volt current brought in by the Tallulah Falls lines. A 110,000-volt switch was moved from Cartersville to the Dunlap substation to control the bank of transformers.

Maryland Electric Railways, Annapolis, Md.—A report from the Maryland Electric Railways states that its substation formerly located at Baltimore has been moved 6 miles south to Linthicum.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Heavy Sales of Coils for Traction Road Service

Traction Companies Heretofore Having Their Own Winders Forced Into Market by Labor Shortage

Unexpectedly the sale of coils for electric railway equipment was greatly augmented during the season now about closed. At the present time the demand has fallen off, excepting for obligatory replacements and maintenance of rolling stock in actual operation. It is the custom to provide coils for the rehabilitation of cars withdrawn from service during the off-season, which is in the late winter and all through the spring months.

It has been the practice of traction companies and public utility companies, generally, particularly throughout the East, to wind coils in their own shops. For lack of skilled winders, and a shortage of every kind of expert labor, many railways were obliged this year to purchase their supply for 1918-1919 in the open market from manufacturers specializing on such equipment.

Prices for coils have been fairly steady, with increases coming along at intervals with the changes in the cost of metals and other essential material. The scarcity of labor competent for winding of coils has also been a factor of the first importance with production costs in this highly specialized field. The latest advance was 15 per cent, announced about sixty days ago. Manufacturers do not look for any further increase, at least this year.

Activity in Specialties Market

Holden & White, Inc., Chicago, report unusual activity on the part of electric railways in the purchase of their car equipment specialties. For example, they have received in the last few days a large number of orders for Perry-Hartman side and center bearings, Garland ventilators, Anderson slack adjusters and Miller trolley shoes. Among those who have purchased bearings are the West Penn Traction Company; Buffalo & Lake Erie; Honolulu Rapid Transit Company; Houston Electric Company; Michigan Railway; Levis County Railway; Oklahoma Railway; Buffalo, Lockport & Rochester; West Chester Street Railway; Union Traction Company of Indiana; North Branch Rapid Transit Company; Emergency Fleet Corporation; Schuylkill Railway.

Garland ventilators have been ordered for new cars being built for the Fort Wayne & Northern Indiana, the Public Service Railway, and the Richmond Light & Railway Company. Considerable quantity orders for Miller trolley shoes have been received from the International Railway; Waterloo, Cedar Falls & Northern; Elgin & Belvidere; Dayton & Troy Electric Company; Milwaukee Electric Railway & Light Company; Salt Lake, Garfield & Western; East St. Louis & Suburban Railway, and the Aurora, Elgin & Chicago Railway.

Bituminous and Anthracite Production Increased

Requirements of Fuel Administration Being Reached—Shipping Record Also Heavy

A record-breaking production of bituminous coal, quoting the weekly report of the United States Geological Survey, marked the week of July 13. The output (including lignite and coal made into coke) is estimated at 13,243,000 tons, an increase over the week of July 6 (five working days) of 2,987,000 net tons or 29 per cent and over the current week of last year of 1,479,000 net tons or 12.5 per cent. The average production per working day is estimated at 2,207,000 net tons as against 2,051,000 net tons during the week of July 6, or an increase of 7.6 per cent, and as compared with the average production per working day of 1,961,000 net tons during the week of July 13, 1917.

The output during the current week of 13,243,000 net tons is approximately 1,031,000 net tons, or 8 per cent, above the average weekly requirements of 12,211,500 net tons established by the United States Fuel Administration. However, the average weekly production for the coal year to date is estimated at 11,568,000 net tons or 5.3 per cent behind the weekly requirements. In order to make up the deficit for the coal year from April 1 to date of 643,000 net tons per week or 9,651,000 net tons, it will be necessary to have approximately ten more weeks of production equivalent to that of last week, or a production of 12,472,000 net tons during each of thirty-seven remaining weeks in the coal year ended March 30, 1919, a figure only twice attained—the week ended June 15 and the current week. Reports from the carriers show increased shipments for the week of July 13, ranging from 26 to 36 per cent.

Anthracite shipments for the week were also vastly increased, the records showing 48,331 cars of anthracite, against 31,493 cars during the week of July 6.

Future Bright for the Buying of Railway Equipment

Careful Survey of Eastern Field Leads to This Conclusion—Price Increases New and Prospective

With manufacturers and sales representatives urging traction road managers to place orders for maintenance and replacement equipment for the fall and winter, buying during the past week is rather sluggish. Optimism is not lacking, however. A well-known supply agent returning from a personal survey of the field in the East stated that railway buying was looking up. He believed that before the year is out a number of the electric lines will be in the market for a quantity of new equipment. Orders for current replacements in volume and value compare favorably with the same season in 1917. The increase in prices on many accessory lines has deterred buying, so much so that houses make announcements of this character, which are considered unavoidable under present conditions, with more or less reluctance.

LIFE GUARDS ADVANCE 10 PER CENT—FENDER MATERIAL TO FOLLOW

About a week ago an increase of 10 per cent was made on life guards. Material for fenders is difficult to obtain and when the stock now in hand is exhausted an advance in price will follow. Manufacturers therefore advise the early placing of orders.

The supply of rattan for car seatings is approximating a state of acute shortage. Prices have been revised only at long intervals, but the indications are now that higher quotations will be in order if the rattan situation does not improve.

On bells and gongs trade is active and sales are increasing. Within a month one manufacturer, who said the revision was general, increased his prices from 10 to 25 per cent. Deliveries from stock are fairly prompt.

An announcement that copper wire has been advanced $50 a ton, which aroused some comment, only means that the apparently higher price is that of the official figures on copper given in detail in the ELECTRIC RAILWAY JOURNAL of July 6, as against the former quotation of 23½ cents a pound.

GEARS AND PINIONS ACTIVE

Managers and purchasing agents are in the market for gears and pinion requirements for 1919. A number of large orders have been booked, and conditions are such that promises are given on a definite basis. On July 12 an increase of 12½ per cent was made on gears and pinions, both for cast and forged, by a Western manufacturer. Heretofore a differential in price existed, but both kinds are now placed on the same selling basis. The buying is on a more generous scale than for some time.

Inquiries for snowplow equipment are coming along in increasing numbers. Manufacturers have accepted orders from prominent traction companies, East and West, for early and late fall shipment. Prices remain unchanged, although each specification is treated individually from the factory's viewpoint.

Various grades of plush car seatings were advanced from 5 to 7½ per cent on July 1 by one of the leading manufacturers in the East. The same company on July 8 also announced an increase of 5 to 12½ per cent on imitation leather goods employed in the production of seatings and curtains for electric cars. The higher cost is owing to the increased cost of material—cotton drills, sheetings and other goods used in the backing of the artificial leather.

Shortage in Track Hardware Generally Admitted

Bolts and Nuts on Longer Delivery—Fish Plates, Tie Plates, Etc., Go Out of Stock

Following a scant supply of many items in the list of electric railway supplies and accessories, the presumption was that in this category would fall nearly everything of iron and steel. Manufacturers and sales agencies producing and handling these goods have stated at various times that the shortage in certain lines was becoming more acute. Under the conditions with which nearly all the primary metals are distributed for commercial manufacture, being under the control of the government, the supposition that track hardware was short seemed more than probable.

Careful inquiry among producers and sellers of the goods in question proved that in some respects a shortage exists, at least for bolts and nuts of some sizes. Track bolts, mill supply, can be delivered in from thirty to sixty days. Nuts in thirty days. Fish plates, tie plates, angle plates, angle bars, tie rods, mill supply, deliveries on some are from stock, with shipments going forward, without priority preference, whenever the embargoes will permit. Deliveries on rollings can be made in from two to three weeks. Prices on these lines are under government control, and follow the quotations made in the regular market for electric railway materials of the ELECTRIC RAILWAY JOURNAL, on another page in this department.

A Wall Street report that no agreement had yet been reached between the steel men and the War Industries Board on the price of rails is authoritatively stated as being without foundation. The prices ruling for the past three months for T-rails, A.S.C.E. standard, in various quantities, still prevail. The quotations on T-rail, high (Shanghai) and grooved girder rails are also unchanged. Traction companies are not very active in looking out for rail requirements at present, although making inquiries; but are expected to come into the market before the close of the year, if the financial situation warrants.

Rolling Stock

Connecticut Company, New Haven, Conn., is reported as contemplating the purchase of twenty one-man and fifteen interurban cars, for which specifications are under way.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., which recently placed an order for thirty-one one-man cars with the American Car Company as noted in the ELECTRIC RAILWAY JOURNAL of last week, is reported as having delivery promised by Oct. 1.

Monongahela Valley Traction Company, Fairmont, W. Va., has placed orders for twelve new cars, two of which are express. The order has been placed with the Jewett Car Company, Newark, Ohio, which agrees to supply them within thirty to forty-five days after it receives the steel for their construction. The company has already secured the steel at Bridgeport, Pa., which was shipped to Newark on July 12, therefore the cars should be delivered by Sept. 1. The four interurban cars have been ordered from the same company which agrees to deliver four months after it receives the steel herewith, now being arranged for. The Kuhlman Car Company has been awarded the contract for six light double-truck car bodies to be delivered in four months. This purchase of cars mentioned in the ELECTRIC RAILWAY JOURNAL of June 29 puts the rolling stock of the Monongahela Valley Traction Company in fine condition. This is one of the largest orders for equipment for electric railways ever given by a West Virginia concern. Specifications for the city and suburban cars follow:

CITY CARS

Number of cars ordered	6
Date order was placed	July 3, 1918
Date of delivery	Four months
Builder of car body	Kuhlman
Type of car	Pay-as-you-enter, double truck, city service
Seating capacity	40
Weight:	
Car body	15,500 lb.
Trucks	11,000 lb.
Equipment	6,400 lb.
Total	32,900 lb.
Bolster centers, length	16 ft. 3½ in.
Length over all	40 ft. 6 in.
Truck wheelbase	5 ft. 0 in.
Width over all	8 ft. 4 in.
Height, rail to trolley base	10 ft. 8½ in.
Body	All steel
Headlining	Composition
Roof arch or monitor	Arch
Air brakes	Westinghouse Traction Brake—straight
Armature bearings	Plain
Axles	Carnegie hammered steel
Bumpers	Channel
Car signal system	Faraday
Car trimmings	Plain
Center and side bearings	Plain
Control	K-35 with line switch
Designation signs	Hunter
Door operating mechanism	National Pneumatic
Fenders or wheelguards	H-B
Gears and pinions	Nuttall "BP"
Hand brakes	Peacock
Heater equipment	Consolidated Car Heating Co.
Headlights	G. E.
Journal boxes	Symington
Lightning arresters	West
Motors, type and number	4 West 506-A, inside hung
Registers	Ohmer
Sanders	De France
Sash fixtures	Brill Renitent
Seats	Brill conforming longitudinal rattan
Step treads	Feralun
Trolley catchers or retrievers	Knutson No. 2
Trolley base	Nuttall
Trucks	Standard C-50 depressed side frame
Wheels	26-in. forged steel

SUBURBAN CARS

Number of cars ordered	4
Date of delivery	Four months from delivery of steel
Date order was placed	July 3, 1918
Builder of car body	Jewett Car Co.
Type of car	Suburban passenger car
Seating capacity	48
Weight:	
Trucks	15,500 lb.
Equipment	6,400 lb.
Bolster centers, length	21 ft. 0 in.
Length over all	48 ft. 0 in.
Truck wheelbase	6 ft. 1 in.
Width over all	8 ft. 6 in.
Body	All steel
Headlining	Agasote
Roof, arch or monitor	Arch
Air brakes	Westinghouse straight air
Axles	A E R A—E B
Bumpers	Angle
Car signal system	Consolidated
Car trimmings	Plain
Center and side bearings	Plain
Conduits and junction boxes	Plain
Control	Westinghouse K-35G
Couplers	Radial
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote
Designation signs	Hunter
Gears and pinions	Nuttall—"BP"
Hand brakes	Peacock
Heater equipment	Consolidated Car Heating Co., electric
Headlights	G. E.
Journal boxes	Symington
Lightning arrestors	Westinghouse
Motors, type and number	4 Westinghouse 306-CV-4, inside hung
Paint, varnish or enamel	Standard
Registers	Ohmer
Sanders	De France
Seats	Hale & Kilburn
Seating material	Rattan
Slack adjuster	American Slack Adj.
Springs	Semi-elliptic
Trolley catchers or retrievers	Knutson No. 2
Trolley base	Nuttall
Trucks	Standard Motor Truck Co., C-50-P
Wheels	Carnegie hammered steel 34 in.

San Diego (Cal.) Electric Railway, while not in the market for new cars, is to have a hearing before the Railroad Commission of California on Aug. 7 out of which some suggestions for one-man cars may come. Whether the company will change its own cars or purchase new ones, states W. Clayton, vice-president and managing director, depends upon a great number of conditions which it is impossible to anticipate at present.

Boston (Mass.) Elevated Railway has placed with the J. G. Brill Company an order for the bodies for 200 center-entrance motor cars, 47 ft. 5 in. over end posts, and for fifty center-entrance trailers, 46 ft. 10 in. over end posts. The motor trucks are to be Brill 77-E and the trailer trucks are to be Standard arch-bar type. These cars are duplicates of the latest center-entrance multiple-unit cars now operating in the East Boston tunnel. The order for the electrical equipment has been evenly divided between the Westinghouse and General Electric companies.

Trade Notes

I. D. Landis has been appointed sales manager of the John D. Godfrey Company, Elkhart, Ind., manufacturer of coal-handling equipment.

Rutherford & Uptegraff, in the First National Bank Building of Pittsburgh, Pa., have been appointed exclusive representatives in the Pittsburgh and near-by territory for the Electrical Engineers' Equipment Company of Chicago.

Under-Feed Stoker Company of America, Chicago, Ill., has removed its office in Cincinnati, Ohio, from the Union Trust Building to the Union Central Building, Fourth, Vine and Baker Streets, where S. A. Williamson is the company's representative.

L. D. Calhoun has been appointed as assistant sales manager of the Square D Company, manufacturer of electrical safety switches at Detroit, Mich. Mr. Calhoun has been advertising manager of the company for the past year, and in addition to his new duties will continue to handle the company's advertising, etc.

F. A. Mansfield, formerly connected with the sales department of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa., has resigned to take the position of Pittsburgh district sales manager of the Mechanical Appliance Company at Milwaukee, Wis. This company manufactures a complete line of alternating-current and direct-current motors, small generators, motor-generator sets and inverted rotaries.

Le Carbone Company, a French concern with wide American affiliations, manufacturing carbon brushes, has sent the following cable to its representative in the United States, W. J. Jeandron, New York City, showing the great ties of friendship which bind the French and American republics together: "Advise all our friends what admiration and gratitude France is feeling for the gigantic effort of sister republic. Thursday, July 4, was also our national day."

Bound Brook Oil-less Bearing Company, Bound Brook, N. J., has perfected arrangements whereby every employee who has been in the service of the company for three months is insured to the amount of $500, increasing with the length of service, payable at his death to whomever he may direct the policy to be issued. The entire expense of the policy is paid by the company. The insurance will apply to the employees of the company's three plants: Plant No. 1 at Bound Brook, N. J., and Plants Nos. 2 and 3 at Lincoln, N. J.

United States Railroad Administration, division of public service and accounting, on July 11 issued circular No. 16, which deals with the matter of bonds to be required in connection with the extension of credit for transportation charges, as prescribed in general order No. 25, effective Aug. 1. The bonds covering the extension of credit will be of two classes, namely, (1) to cover patrons transacting business at one or more points with one carrier; (2) to cover transactions at one point with two or more carriers. Details applicable to both classes of bonds are furnished. Copies of this order may be obtained by applying to the regional director.

New Advertising Literature

Bush Electric Tool & Manufacturing Works, Redlands, Cal.: Catalog describing safety tools for use on high-tension lines, with illustrations showing the tools used in actual practice.

Holophane Glass Company, New York, N. Y.: Handsomely illustrated thirty-six-page book on street lighting. Diagrams are given showing how energy in lighting may be conserved through the use of scientific methods. There are suggestions also for obtaining artistic effect.

Westinghouse Church Kerr & Company, New York, N. Y.: Map of the United States, in colors, inclosed in stiff covers, showing, by designating marks, location of construction work, consulting engineering projects and engineering and construction done under the supervision of this company.

NEW YORK METAL MARKET PRICES

	July 17	July 24
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.87½	8.62½
Tin, Chinese*, cents per lb	92	94
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	July 17	July 24
Heavy copper, cents per lb	23½	23½
Light copper, cents per lb	20	20
Red brass, cents per lb	22	22
Yellow brass, cents per lb	14	14
Lead, heavy, cents per lb	7	7
Zinc, cents per lb	5¼	5¼
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	July 17	July 24
Rubber-covered wire base, New York, cents per lb	30 to 39	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.10 to 32.40	36.75
Weatherproof wire (100 lb. lots), cents per lb., Chicago	33.42 to 35.00	37.50
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross tons	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4¼	4¼
Rails, girder (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35

	July 17	July 24
Galvanized wire, ordinary, Pittsburgh, cents per	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80½%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste, cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.80	$1.82
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.81	$1.83
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	73	66

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Vacation Awards for Accident Prevention

THE conscientious operator is ever seeking some way of rewarding the careful motorman and conductor. Money bonuses are the first to come to mind, but these often prove less attractive to the recipient than the equivalent in time off. Perhaps the reason for this is that an extra $2.50 or $3.50 looks just like the kind of payment which he gets for ten hours labor and does not seem a large amount to pay for three or six months of freedom from accidents. So why all this bother to be super-alert?

About a day off there is more glamor. It is a return to freedom and to recuperation which in themselves will help him to keep the accident slate clean when he goes back to work. The vacation means more to him than the equivalent in money. The length of such a vacation should depend upon accident conditions. The critical point in the graph would be where the vacations cost more than the accident saving. Whatever basis is worked out, however, it should be an individual rather than a group award as there is no reason why an indifferent motorman should get the same treatment as the man who is extra careful.

The One-Man Car Now a National Question

THE unadorned term "one-man car" has meant so many different things that we are happy to be able to put on record in this issue the statement on that subject by the War Board of the American Electric Railway Association. We are still happier to add that this statement was prepared in response to the request of the National War Labor Board.

In the course of the electric railway wage hearings which this board is conducting it has been natural to bring up any and every means that would permit electric railways to operate at lower costs. One-man cars were among the means mentioned, and deservedly so, for the one-man car has also proved wonderfully effective in giving more service to the public. One need read only the association's digest of one-man car service in ten cities of 21,000 to 400,000 population to realize that the right kind of one-man car service is a boon to the public as well as to the railway.

These results have been achieved, of course, only with those one-man cars in which the car operator's desires have been met by the installation of automatic equipment to replace hand labor, and in which the passenger's desires have been met by shorter headways and faster schedules. Those who object to such an innovation are as short-sighted as the workmen who destroyed the first typesetting machines. In fact, they are even more shortsighted, for it is certain that only the use of the one-man automatic car can save hundreds of electric railways and thousands of electric railway jobs even if we pay no attention to what this car means as a conserver of the resources of the nation.

There is a Vital Relation Between Wages and Electric Railway Incomes

WHEN once the public is convinced that additional incomes allowed to electric railways will largely go into increases in employees' wages, there will be much less reluctance to allow the companies to collect more money. People seem to have a prejudice against providing for a return upon capital, but as a rule they have more sympathy with any movement toward reasonable increases in wages. It would be futile to urge that the capital now invested in the electric railway business be allowed to earn more than a reasonable return, but the arguments of employers and employees alike to the effect that more money must be collected if higher wages are to be paid are receiving careful attention from governing bodies and from the public itself.

We have no desire at this time to argue regarding the relative rights of labor and capital to a return upon their respective investments. We believe that the workers should be well paid, wages being determined upon a basis of justice, and we believe that in the long run justice will be meted out to capital as well. What we want now to emphasize is that the necessity for paying higher wages is a much more potent argument with the public than high prices of materials and difficulty of attracting new capital. The electric railways should make the most of the situation, frankly stating, however, that the necessity for granting higher wages is but one of several reasons for increases in fares.

Somehow or other fares should be more or less automatically adjusted with cost of labor, just as modern electric power contracts involve rates contingent upon the price of fuel. If coal costs more per ton, the kilowatt-hour in many companies' power contracts advances in price automatically by an equitable amount. Such a provision is essentially made in certain modern electric railway franchises which permit fare increases when the working capital falls below a fixed amount, and provide for corresponding reductions.

Higher wages are justified and must come both on account of competition and increased cost and standards of living; by way of corollary, higher fares are necessary (that is, more income per passenger-mile) to pay not only the higher wages but also the higher cost of money and of supplies. We look forward to the day when an increase in the cost of a car ride will be viewed with the same equanimity as a boost in the price of milk or mushrooms.

Roundabout Is the Shortest Way in Washington

THE customary rectangular layout of American cities doubtless accounts largely for the absence of the belt, circle or ring line to be found in a number of the larger European cities. Hence, it is worth stating that Washington, for which John A. Beeler has just suggested a belt line, also happens to be a city with a large number of radial avenues with the Capitol, the White House and various monument squares as the starting points. The need for the belt line is the enormous expansion of the Army and Navy departments in what, from the traffic standpoint, is an offside portion of Washington. In fact, a distressingly large area of beautiful park ground has been destroyed to make room for both temporary and permanent buildings. Now has come the job of transporting about 25,000 people with satisfaction to themselves and with minimum expense to the railway. Two ways are possible: The first, to route cars through from all over the city; the second, to distribute the riders via a belt line with transfers to other lines.

At first glance the through-routing scheme looks the more satisfactory, because the distances are less. Actually it is not so desirable because of the time lost through the inefficient use of cars in the congested area. Moreover, in this particular case, it was found that through routing would have meant the installation of a much larger amount of new special work.

In brief, the proposed belt line is not too far from the center of the city to be wasteful of mileage and time; it would tend to subtract from the central congestion rather than to add thereto and, finally, it would be free from the handicap of European belt lines in having a large number of free transfer points, since there are fully twenty in 6 miles. In fact, the shortness of the line, its inside location and the ease witn which passengers can transfer to the nearest through route offer a direct solution for not the least important problem brought on by this mightiest of wars.

How Freight Can Be Hauled at No Cost for Power Plant or Track!

ONE of the ghosts of the average operating man contemplating freight haulage is that the power house and substation equipment will not permit it. This one excuse has in too many cases stood in the way of the development of a freight service that would be of great economic value to the community served. Hence, it would be well for all railway men to analyze their power conditions before permitting this threadbare excuse to cheat them out of a lucrative revenue and the possibility of rendering an invaluable service to their communities.

Analysis will show that for freight service, whether the motive power equipment is placed under a flat car or regular electric locomotive, there must be some differentiation in the design from that for passenger propulsion. Freight trains need not move at passenger speeds, so that the use of passenger motive power equipment should be eliminated entirely, when freight service is considered. The fact that many roads operate freight motor cars on practically passenger time has shown operating officials that the power demands of this service are heavy and has led them to believe that all freight service exacts a large amount of power. Since speed is obtained at the expense of power and high speed is not necessary, two ways are open:

1. Equip freight motor cars with low-speed locomotive motors, capable of propelling the motor car and hauling two or three trailers. This type of operation could be conducted in many cases during the day time between passenger trains, if long sidings are provided.

2. Haul standard steam railroad freight cars at night with low-speed-motor electric locomotives.

During these off-peak hours on many systems the property is lying practically idle so that any use at such times will not only increase the revenue but will improve the load factor. In other words, there would be no cost for power equipment, simply for the energy used.

Massachusetts Shows a Good Record of Fare Increases

SINCE early 1913, when the Massachusetts Public Service Commission was established with broader powers than the predecessor board possessed, no fewer than twenty-four of the thirty-seven electric railways under the commission's supervision have been allowed increases in fares. These increases apply to about 1900 miles of line out of 2050 miles operated by the companies in the Bay State, with the exception of the Boston Elevated Railway, which, as our readers know, is now run under a public control law. Expressed in percentage of miles of track, 92½ per cent have raised their fares and 3 per cent more have received permission to do so, leaving only 4½ per cent whose fares are not yet increased. In Boston a 7-cent fare was put into effect on Thursday of this week on all the lines of the Boston Elevated Railway. These figures effectively dispose of the idea still held in some quarters that the commission has been slow to appreciate the financial needs of the roads, and a detailed study of the rates allowed shows that the old nickel fare has at last become outlawed as the measure of a proper charge for service.

As might be expected, the fares allowed under the board's decisions show a wide range. There have been straight increases to 6 and 7 cents on properties serving city as well as suburban and rural territory, and in one case a 10-cent fare has been imposed without enough opposition on the part of the public to require formal proceedings by the commission. An 8-cent fare has been approved for certain lines; reduced-rate tickets have been withdrawn in a number of instances, and the length of the fare zones shortened in others. On still other properties the replacement of the old 5-cent fare system by some form of zone system has taken effect. The maximum rate per mile now authorized on any electric road to the State appears to be 3 cents, while 2½ cents has become common in the face of the advance in steam railroad passenger rates and the still increasing costs of operation. The Massachusetts tariffs now on file at the office of the commission furnish a veritable museum of interest to the electric railway traffic officer and fare specialist.

The public has come to appreciate the need of paying higher fares, but it is doubtful whether the increases so far put into effect are capable at present of yielding a really fair return upon the investment. Case after case analyzed by the commission shows that patronage has fallen off following any substantial fare increase. The various appeals to thrift and patriotism, combined with the amazing purchase and operation of private automobiles in Massachusetts, have done their part. On the other hand, jitney competition is better regulated to-day than formerly.

Owing to the many conflicting causes present it is obviously impossible to tell at all closely the ratio which should be expected between an increase in fares and the corresponding increase in receipts, but as conditions themselves during the war are constantly changing, this ratio even if known for any property at any particular time would not remain constant for any length of time.

Fight—But Don't Forget To Prepare for Peace Problems

PEACE will come some day. Just now, of course, our primary job is to help win the war, but even during these fighting days it is well for men to look ahead to the inevitable readjustment that must come with the end of hostilities. Our allies—even our enemies—have begun in an organized way to prepare for reconstruction. What must we do?

Our Washington representative, Wingrove Bathon, who has made a careful study of the question, answers it in this way: An agency should be created immediately to gather facts now, lay plans now, educate the public now and lead the nation's industries in the victories of peace when the right time comes. He suggests a Readjustment and Reconstruction Commission, appointed by executive order of the President and composed of leaders in all private industrial effort, to be assisted by an Advisory Council of government officials and legislators especially charged with the conduct of affairs vital to the industrial, commercial, transportation, labor, financial and educational worlds.

Beyond the shadow of a doubt such a co-ordinated organization would render a great service to the American people and even to the whole world, in view of the part our resources must play in the general reconstruction. The post-war problems are sure to come. Not only will there be the problems of the orderly reintroduction of returned soldiers into industry, the use of the productive capacity expanded for war needs and the development of export trade, but also the questions of how to deal with the myriad of other subjects upon which, as a result of the times, the public is already doing accelerated thinking. Returning observers tell us that even now in Europe there is a widespread radicalism and extremism hardly dreamed of here. It is not too much to say that our whole economic system will be in a state of flux in the post-war period. It would be folly not to recognize these facts and not to take every possible step to see that the nation advances along lines of the most sound development.

England has already risen to the opportunity and the duty of the hour. Through the Ministry of Reconstruction and its Advisory Council investigations are already under way in such matters as finance, shipping, labor and industrial organization, rural development, the machinery of government, health and education, housing and internal transportation. Take, for example, the two vital topics of labor and internal transportation. The study of the former is covering conciliation and arbitration, a general labor survey, army demobilization and the like. Committees for the latter are investigating control of public utility societies, town planning and the whole inland system of transport. The ministry is in consultation with the Board of Trade concerning the future of the railways, and an inquiry has been begun into the question of storage and distribution as essential elements in transportation policy.

This country should do likewise, and the public utilities should help the movement in every way. They should, of course, be represented in the national commission, for they will have post-war problems of rates, labor supply, financing, acquisition of new facilities from the manufacturers and other important matters for readjustment. Nor should their importance be depreciated in any way, for their present vital essentiality, which the President and other government officials have been prompt to recognize, will not abate in the slightest degree during the days of reconstruction. Then, as now, maximum utility efficiency will be necessary to the nation's welfare.

The Agitation for Higher Fares

IN AN instructive article in the *Survey* for July 20, William L. Ransom, chief counsel for the Public Service Commission for the First District of New York, urges a higher fare for electric railways and gives expression to the following truth which he emphasizes by italics: "The public can have in transportation or public utility service only what it is willing to pay for and there is no way of getting something for nothing for the public, from the public utility, over any considerable period of time." For this reason he believes the municipalities ought not to bar necessary increases in rates merely because they can bar them, but he thinks that in return for the removal of the 5-cent fare limitation the cities might insist on some changes in franchise terms for public protection. Specifically he says: "Lines and portions of lines that are no longer necessary or desirable should be abandoned and not continued as drains upon the resources of the systems. In many instances, rail lines on the surface are obsolete and should give way to improved and more economical facilities. 'Water' should come out of stock; the power of 'extortion' possessed by the holders of 'pioneer franchises,' covering essential links of the present-day system, should be broken. * * * Old franchises, granted in reckless disregard of public rights as to duration, terms and the like, may now be put on a fair, modern social basis."

On the general lines laid down by Mr. Ransom under which electric railways may secure their higher fares, he will find few who will disagree with the terms. The taxation of perpetual franchises has caused them to be considered with less esteem than formerly, and a fair modern franchise which will grant a reasonable return on the investment in the enterprise would be welcomed by most companies, but time is required to establish just and reasonable terms. During this study, there is danger that irreparable harm will be done. The present applications are emergency ones. Let the franchise situation be considered at length, as its importance demands, but do not delay temporary fare relief in the meantime.

SPEEDED-UP TRANSPORTATION HELPS TO WIN THE WAR

Putting Car Wheels Under Shipbuilders

Division of Passenger Transportation and Housing of Emergency Fleet Corporation on June 17 Reported Adequate Service in Eighty-five Out of One Hundred and Sixty-four Shipyards—Complete Traffic Relief Secured in Twenty Other Cases, Contracted For in Six and Agreed To in Fourteen—Up to June 1 the Corporation Had Loaned $6,000,000 for New Railway Facilities

SHIPBUILDERS must have adequate transportation to and from work. This is a national necessity, and the Division of Passenger Transportation and Housing of the Emergency Fleet Corporation is meeting it in a national way. Since this division was formally organized on April 1, it has made marvelous progress in surveying the transportation facilities and requirements in the shipbuilding districts and in aiding electric railways to make the improvements demanded by the win-the-war program.

At its very formation the Division of Passenger Transportation began to hum with activity, and it is still doing so. The results accomplished have been many, but it is impossible even now to give a definite summary. Each day sees new reports from investigators, from men checking up the progress of improvements, from men following the needs of the expanding shipbuilding industry itself. Indeed, nothing but a moving picture would do full justice to the work of the division.

Because the electric railway industry is vitally interested in what is being accomplished, however, this journal is going to give its readers a snapshot of matters as they existed during the first part of June, after more than two months of assiduous effort. This picture does not represent conditions to-day, but it is an indication of the speed and the vigor with which the division is acting, and an earnest of the greater results which are now without doubt an accomplished fact.

To understand the scope of the work along passenger transportation lines, it is necessary to know that the sea and the lake borders of the United States have been divided into eleven great shipping districts, containing at the latest count 164 shipbuilding companies. The approximate location of the district lines is shown in the accompanying diagram.

As a means of facilitating the work of the Division of Passenger Transportation in eliminating railway deficiencies and in following up adjustments, Director A. Merritt Taylor has organized a force to work in the field. Inasmuch as it does not seem necessary, however, to provide separate field men for each shipbuilding division, Mr. Taylor has grouped some of these districts in such a way that the field-work divisions number seven. They are constituted as follows:

(a) Eastern District: This includes all shipyards in Connecticut, Rhode Island, Massachusetts, New Hampshire and Maine—headquarters, Boston.

(b) New York District: This includes Newark Bay, Staten Island, Hudson River and Long Island—headquarters, New York.

(c) Philadelphia District: This includes the Delaware River shipyards at Bristol, Gloucester and Camden, Philadelphia, Chester and Wilmington—headquarters, Philadelphia.

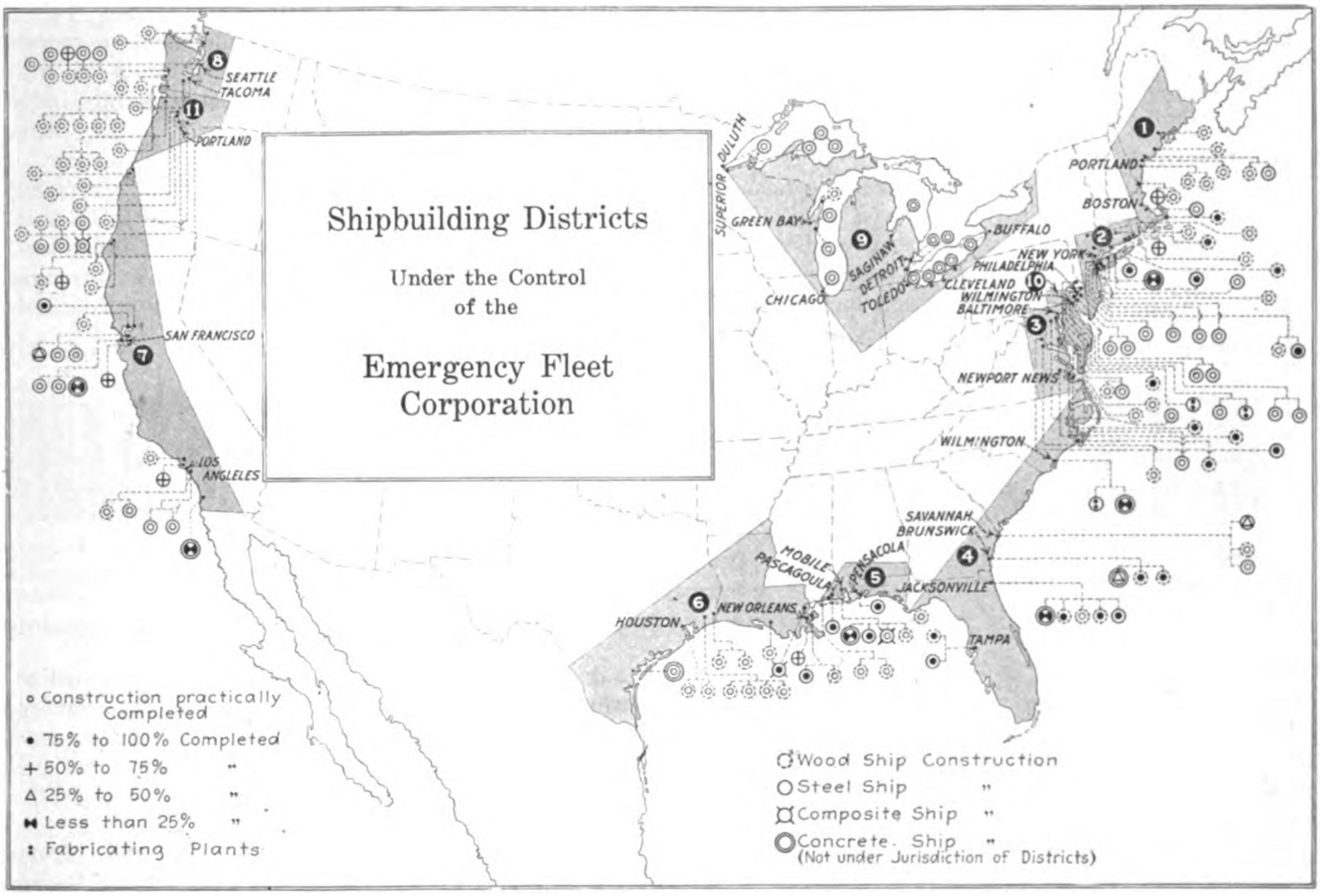
(d) Chesapeake Bay: This includes shipyards from Baltimore to Newport News—headquarters, Baltimore.

(e) Southern District: This includes shipyards from North Carolina to Texas—headquarters, Jacksonville, Fla.

(f) Pacific District: This includes all shipyards on the Pacific Coast—headquarters, Seattle.

(g) Central District: This includes all shipyards on the Great Lakes—headquarters, Philadelphia.

Each field division is in charge of a district engineer located at the district headquarters. His duties are to keep in close touch with the transportation service rendered to the shipyards in his district, to watch the progress of all railway construction work and to see that additions and betterments agreed to by the railways are actually placed into effect. He also keeps in close touch with the district auditor in checking up contracts and payments authorized thereunder for additional facilities as covered by contracts. The district engineer is expected to give special attention to forecasting the character and the extent of additional facilities required to provide adequate transportation service for at least six months in advance.


Shipbuilding Districts
Under the Control
of the
Emergency Fleet
Corporation
SEATTLE
TACOMA
PORTLAND
SAN FRANCISCO
LOS ANGELES
SUPERIOR
DULUTH
GREEN BAY
CHICAGO
SAGINAW
DETROIT
TOLEDO
BUFFALO
CLEVELAND
NEW YORK
PHILADELPHIA
WILMINGTON
BALTIMORE
NEWPORT NEWS
WILMINGTON
PORTLAND
BOSTON
SAVANNAH
BRUNSWICK
JACKSONVILLE
TAMPA
MOBILE
PASCAGOULA
PENSACOLA
NEW ORLEANS
HOUSTON
1
2
3
4
5
6
7
8
9
10
11
○ Construction practically Completed
● 75% to 100% Completed
+ 50% to 75% "
△ 25% to 50% "
■ Less than 25% "
: Fabricating Plants
Wood Ship Construction
Steel Ship "
Composite Ship "
Concrete Ship "
(Not under Jurisdiction of Districts)

Owing to the growing nature of the work, no fixed organization chart can well be drawn for the whole division. The approximate responsibilities and interrelationships of the general organization, however, are as shown in the diagram on page 191.

The division is divided into two main sections. One section is devoted entirely to transportation matters and reports through its own officers directly to Mr. Taylor. The other section, which is not shown in detail in the diagram, is concerned only with housing. It is under the supervision of an assistant director, also reporting directly to Mr. Taylor. The two sections share a clerical force and an accounting and statistical department.

The ELECTRIC RAILWAY JOURNAL of May 4 contained a digest of the information which the Division of Passenger Transportation began at its institution to secure from shipyards and railways, together with an outline of the procedure followed in local examinations. In accordance with this procedure the organization has been carrying on its surveys throughout the country, and the general transportation situation in the nation's shipyards as of June 17 was found to be as shown in the diagram and in Table I on page 188.

MORE THAN HALF OF SHIPYARDS ARE O. K.

These exhibits tell their own story of the improving transportation conditions in the shipbuilding districts. Nevertheless, it seems worth while to emphasize here the facts that on June 17 eighty-five out of the 164 shipyards had reported no transportation difficulties at all, and that for the seventy-six which had reported inadequacies complete relief had been secured in twenty cases, had been contracted for in six and had been agreed to in fourteen. In each of the last two cases, too, immediate partial relief had been secured in practically all instances through either the better use of existing facilities or the installation of temporary facilities. The remaining thirty-six shipyards were still under investigation. The foregoing results in the way of relief were obtained partly with and partly without financial aid from the Emergency Fleet Corporation.

$6,014,270 ALREADY APPROPRIATED TO AID RAILWAYS

What the Division of Passenger Transportation is doing to help electric railways put themselves in a position to handle shipbuilding traffic in spite of their restricted resources is more clearly shown by the financial record for the period up to June 1. As shown in Table

TABLE I—HOW THE WORK OF THE DIVISION OF PASSENGER TRANSPORTATION IS PROGRESSING

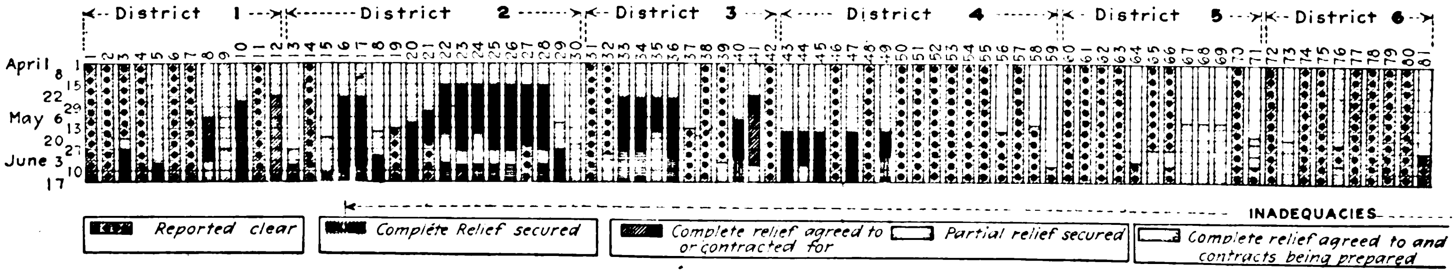
	June 1	June 6	June 13
Shipyards reporting clear of transportation difficulties	83	83	85
Shipyards not reporting	8	3	3
Shipyards reporting inadequacies in transportation	73	76	76
Complete relief secured	13	19	20
Complete relief agreed to and contracted for	12	8	6
Immediate partial relief at these yards secured through better use of existing facilities or installation of temporary facilities	4	5	4
Complete relief agreed to and contracts being prepared	11	14	14
Immediate partial relief at these yards secured through better use of existing facilities or installation of temporary facilities	7	12	12
Under investigation by engineers in the field	10	9	12
Under investigation through district officers, through district supervisors or by correspondence	27	26	24

TABLE II—APPROPRIATIONS UNDER CONTRACT WITH EMERGENCY FLEET CORPORATION TO JUNE 1, 1918

Location	Railway Concerned	Work	Cost
Hog Island, Pa.	Philadelphia Rapid Transit Company Philadelphia Railways	Track extensions and purchase of 160 cars	$3,105,000
Port Newark, N. J.	Public Service Railway	Track extension and purchase of eighteen cars	821,739
Camden, N. J. Gloucester, N. J.	Public Service Railway	Construction of track and purchase of power house, substation equipment and thirty-three cars	1,240,780
Newport News, Va.	Newport News & Hampton Railway, Gas & Electric Company	Track extensions and purchase of ten cars	300,000
			$5,457,519
Add 10 per cent for contingencies and margin			546,751
Total appropriations under contract			$6,014,270

II, the division's appropriations to that date on behalf of the Emergency Fleet Corporation for new railway facilities, authorized under five contracts already signed, totaled $6,014,270. Since then a contract for $829,638 has been made in the case of the United Railways & Electric Company, Baltimore, Md.

Up to June the division had reached agreements or recommended additional appropriations in the case of ten other shipyards, the proposed facilities ranging from simple track extensions to track, power and car items. Moreover, the organization had under advisement the furnishing of additional cars for six industrial plants handling shipbuilding material and machinery, and it was considering expenditures for track, cars or power equipment in connection with sixteen shipyards. Still another item of expenditure is the amount which the Emergency Fleet Corporation may pay to shipyard workers who operate electric railway cars, in order to bring the railway wage scale up to the shipyard scale, as is already being done in the Staten Island (N. Y.) yards.



WEEKLY PROGRESS BEING MADE BY THE DIVISION OF PASSENGER TRANSPORTATION IN

In view of the number of shipyards still under investigation and the probable further expansion of already examined shipyards so as to require added passenger transportation, it is evident that the $6,014,270 of appropriations thus far made may be considerably increased during the coming year. Certainly the transportation work of the electric railways in the shipyard districts will not grow less in the near future. Table III, showing the past records of employment in representative shipyards and the estimated totals of employees at the end of the next six months, hardly indicates a declining tendency.

TABLE III—ESTIMATED INCREASES IN NUMBER OF SHIPYARD WORKERS

	Number of employees		
	Maximum in 1916	May 1918	Estimated in six months
Camden, N. J.	4,179	10,145	20,000
Newport News, Va.	6,955	9,175	17,300
Chester, Pa.	1,059	4,279	5,480
Quincy, Mass.	3,204	14,439	15,000
Sparrows Point, Md.	2,786	7,544	10,000
Baltimore, Md.	1,713	7,172	10,000
Seattle, Wash.	159	3,450	4,200
Staten Island, N. Y.	952	3,001	5,400
Shooters' Island, N. Y.	434	5,345	5,645
Jacksonville, Fla.	642	2,218	4,718

PRACTICAL RESULTS ACCOMPLISHED

References have been made in other issues of this journal to the physical improvements which individual electric railways have been enabled to make through the assistance of the Emergency Fleet Corporation, but it is deemed advisable now to present a general outline of what has been accomplished throughout the country up to June 1. Take first the cases in which actual contracts had been made up to that time:

Hog Island.

Electric railway transportation to and from Hog Island, Pa., is supplied by the Philadelphia Rapid Transit Company *via* its Chester Short Line to a delivery loop at Ninety-fourth Street, Elmwood, about 1½ miles from the shipyard, the passengers being transferred at that point to a shuttle steam train. Additional electric railway facilities are supplied by the Philadelphia Railways, which operates a line from southeastern Philadelphia over the Penrose Ferry Bridge, the route passing Hog Island at a distance of about ½ mile.

Contracts have been executed covering the construction of a double-track branch from the Chester Short Line into the Hog Island shipyard and the purchase of 100 new cars to be operated by the Philadelphia Rapid Transit Company. In the case of the Philadelphia Railways, contracts have been executed covering rehabilitation in South Philadelphia, the construction of a double-track branch from the south end of the Penrose Ferry Bridge into the Hog Island shipyard, the purchase of thirty additional second-hand cars and the rehabilitation of certain existing cars. Thirty additional cars have been ordered but these cars as yet have not been asigned to any particular company.

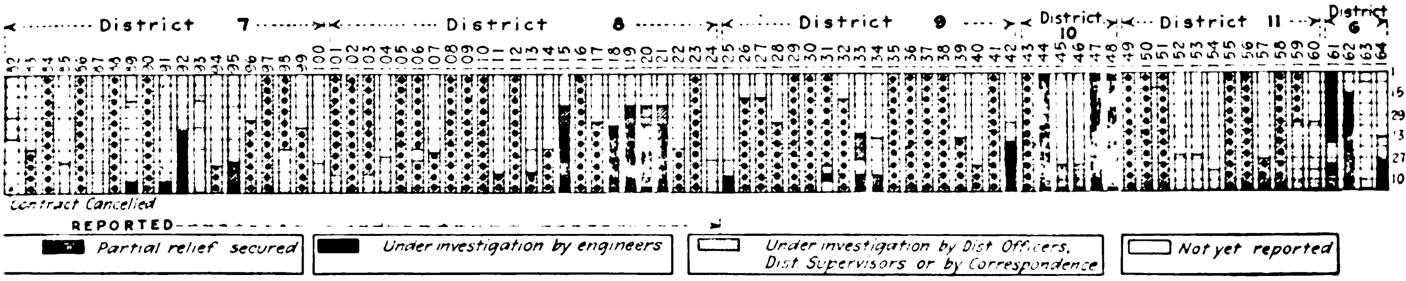
Port Newark.

Port Newark, N. J., is served by the Public Service Railway. Deficiencies in transportation there have consisted of the absence of direct street-car connection with the shipyard, resulting in dependence upon auto buses. Permanent additional transportation facilities are now under construction in the form of a 2-mile double-track extension of the Newark service by way of Doremus Avenue and Avenue R to the shipyard.

Camden and Gloucester, N. J.

The Public Service Railway also supplies service at Camden and Gloucester. Inadequacies were found to exist principally because of the shortage of cars and of men to operate them. The car shortage was due to the facts that eighteen cars had been lost by fire and that both shipyards started and stopped work at the same time.

Immediate relief was obtained by staggering the times of starting and stopping by a difference of one hour. This expedient increased the number of rush-hour cars available for each plant from an average of ten to twenty-one cars, without any resort to new equipment. In addition, present and future requirements are being provided for by the purchase of thirty-three new cars and the installation of the necessary power-house, substation and line equipment, together with terminal loops at the shipyards.



CLEARING UP RAILWAY DIFFICULTIES IN THE SHIPYARDS OF THE EMERGENCY FLEET CORPORATION

Moreover, the site selected for the housing development at Camden and Gloucester requires the construction of a 1-mile single-track extension. The estimated cost of this proposed extension is $210,000.

Newport News, Va.

Employees who do not live within walking distance of the shipyard at Newport News use the lines of the Newport News & Hampton Railway, Gas & Electric Company, which operates sixty-five cars in all. The lines extend ¾ mile north, 3 miles south and 11 miles east of the yard. The rush-hour conditions were found to be unsatisfactory, but under the contract made ten additional cars are to be purchased by the company.

The Emergency Fleet Corporation has authorized the construction of 500 houses at Hilton. A contract for the extension of the Huntington Avenue line to the proposed housing site, about 3 miles away, has been made.

HOW THE CONTRACTS RUN

For the benefit of operators who may be interested in the details of contracts between electric railways and the Emergency Fleet Corporation, there is inserted on page 190 a summary of two formal agreements entered into by the Division of Passenger Transportation and Housing after this department was organized. The two Hog Island contracts and the Port Newark agreement were made before that time by another government agency. In order to give the latest information regarding contract terms, there is concluded a contract just entered into with the United Railways & Electric Company, Baltimore, Md. This is drawn along the lines of the later contracts mentioned above.

While some variations will be found to exist in the contracts summarized, the general terms are similar. The fundamental point is the furnishing of capital by the Emergency Fleet Corporation, with the railways paying interest thereon at 5 per cent. Operation of the new property is to be in the hands of the railways for at least the period of the war, and then the railways are to purchase the property at appraised values determined by boards of arbitrators, payment in most cases to be made in five annual installments.

OTHER IMPROVEMENTS ARE BEING PLANNED

As stated above, the Division of Passenger Transportation and Housing had, at the date of this review, reached understandings with local electric railways as to the transportation needs in ten other shipbuilding centers. While these understandings are subject to amendment before enactment into formal contracts, their general scope may be indicated as follows:

Essington and Chester, Pa.

Electric railway transportation for the shipyards at Chester and the Westinghouse Electric & Manufacturing Company at Essington is provided by the Southern Pennsylvania Traction Company and the Philadelphia Rapid Transit Company. Inadequacies exist principally by reason of the limited capacity of the single-track lines concerned, and the shortage of cars and car operators.

The construction of a second track paralleling the present single track of the Southern Pennsylvania Traction Company between Darby and Chester, and the purchase of twenty-two new cars, together with the necessary substation and line equipment, have been recommended. Thus adequate service will be provided between Chester and Darby and the territory adjacent thereto, from which the shipbuilding companies in Chester draw a considerable part of their labor.

The rehabilitation of the Wanamaker Avenue Line and the construction of a loop in Chester by the Philadelphia Rapid Transit Company has also been recommended to provide good local transportation for the Westinghouse plant and to provide accommodations for special cars to be operated for the shipyards at Chester.

Abstracts of Recent Contracts Made by Division of Passenger Transportation

CAMDEN AND GLOUCESTER

Public Service Corporation of New Jersey

Work To Be Done: Construction of two loops, together with power house, repair shop, substation apparatus and appurtenances, car shortage tracks and overhead electrical equipment. Thirty-three new cars are to be purchased.

Cost: Estimated cost is $1,240,780, to be paid by the Emergency Fleet Corporation, whatever it may be.

Operation: Operation shall be under the control of the railway, but such priority shall be given to the transportation of shipyard employees as may be necessary to make service rendered them adequate to the demand.

Period of Operation: Duration of war and thereafter until notice of termination of operation is served by either party and until both parties have consented, in writing, to the appraisal figure hereafter provided for.

Interest: From commencement of operation to termination of operation, the railway shall pay interest at the rate of 5 per cent per annum on the actual cost.

Final Accounting: At termination of operation, the railway shall purchase all property (except the two loops, the estimated cost of which is $60,295) at an appraisal figure to be determined by a board of three—one selected by each party, and these two to select a third. The Emergency Fleet Corporation shall have the option to retain any car or all cars.

Basis of Appraisal: "Reasonable worth and value to the railway for its own use or for the use of Public Service Electric Company as its lessee, or for sale after the termination of operation under this agreement."

Payment: Payment of the appraisal figure shall be made in five equal annual installments, the first installment to be due one year after termination of operation. Interest on balances due shall be 5 per cent per annum.

Security: Bond, guaranteeing performance of contract, to be executed by the Public Service Corporation, holding company for the railway, and title to all property to be retained by the Emergency Fleet Corporation until full purchase price is paid. If any part of principal sum or interest is in default for two months, the entire balance shall become due and payable.

NEWPORT NEWS

Newport News & Hampton Railway, Gas & Electric Company

Work To Be Done: A single-track extension of existing line into proposed village of "Hilton," with all necessary tracks, overhead construction and feeders, and purchase of ten new cars.

Cost: To be paid by Emergency Fleet Corporation, whatever it may be; estimated at $300,000.

Operation: Operation of such extension is for the service and benefit of the shipyard and its employees; and preference shall be given to employees of the shipyard in so far as the railway has a lawful right to discriminate.

Period of Operation: Duration of war and thereafter until either party gives three months' notice of a desire to terminate the contract, and thereafter until the decision of arbitrators.

Interest: From commencement of operation to termination of operation, the railway shall pay 5 per cent interest per annum, payable semi-annually, on actual cost.

Final Accounting: At termination of operation the railway shall purchase all property, including the ten cars, at an appraisal figure to be determined by a board of three—one to be selected by each party, and these two to select a third. The Emergency Fleet Corporation may elect to retain six of the ten cars.

Basis of Appraisal: "Upon the then existing physical value provided, however, that in no event shall the appraised figure for the construction work and four of the ten cars be less than $175,000."

Payment: Payment of the appraisal figure shall be made in five equal annual installments, interest on balances due being payable semi-annually at the rate of 5 per cent per annum. The first installment shall be paid one year after the termination of operation.

Security: The Emergency Fleet Corporation shall retain title to the property, including the ten cars, until the principal sum together with the interest thereon is fully paid. If any part of the principal sum or the interest be in default for two months, the entire balance shall become due and payable.

BALTIMORE

United Railways & Electric Company

Work To Be Done: Purchase of fifty electric cars fully equipped for train operation and the construction of storage facilities and terminal loops.

Cost: To be paid by the Emergency Fleet Corporation, the contract amounting to $829,638.

Operation: Operation is under lease, whereby the railway pays rent equal to 5 per cent on the purchase price of the cars. All maintenance and repairs are borne by the United Railways & Electric Company. The cars shall be devoted to the best interest of the Emergency Fleet Corporation as determined by it.

Period of Operation: Duration of the war and thereafter until both parties have consented in writing to the terms of purchase as provided for.

Interest: From commencement of operation until the termination of the lease, interest in the form of rent shall be paid at the rate of 5 per cent per annum on the actual cost.

Final Accounting: At the termination of the lease the Emergency Fleet Corporation shall have the election to sell all or any of the fifty cars to the company at a price not more than 100 per cent or less than 75 per cent of the actual cost to the corporation, the exact amount being determined by arbitrators, if so decided—one to be appointed by the company, one by the Emergency Fleet Corporation and the third by the two arbitrators thus chosen.

Basis of Appraisal: The appraisers shall determine (a) 75 per cent of the actual cost of the cars to the Emergency Fleet Corporation; (b) the value of each of the cars to the company; (c) the value of each of the cars for sale. The highest figure shall constitute the appraised value, which may not exceed 100 per cent.

Payment: Payment shall be made in five equal installments, of which the first shall become due one year after the termination of the war. Interest on all balances due shall be figured at 5 per cent.

Security: The Emergency Fleet Corporation shall retain title to all cars until the principal sum together with interest thereon is fully paid. If any part of the principal sum, or interest, be in default for one month, the entire balance shall become due and payable.

Various changes in routing of the Philadelphia Rapid Transit Company cars to provide quicker and cheaper transportation to the plants have been agreed upon.

Kearny, N. J.

Transportation at Kearny has been inadequate owing to the lack of cars and men on the part of the Public Service Railway, and to the inconvenient location of the station on the Jersey Central Railroad. Recommendations for relief include the rendering of additional tripper service by the Public Service Railway (ten cars), the changing of the location of the Jersey Central station and the bringing of the service of the Pennsylvania Railroad and the Hudson & Manhattan Railroad, transportation agencies heretofore not used, to the shipyards.

Quincy, Mass.

At Quincy the transportation facilities furnished by the Bay State Street Railway have been inadequate, resulting in dangerous overcrowding of cars. The difficulties have been lack of sufficient power to handle the morning and evening rush-hour traffic, inadequate track facilities over the Neponset bridge and insufficient cars. Some improvement has been accomplished through a flattening out of the morning and evening rush-hour periods by having some shipyard workers report for work at 7 a.m. and some at 8 a.m., and having them quit work at 5 p.m. and 6 p.m. This plan gives better railway service, but it is unsatisfactory both to the men and to the shipyard management.

The plan now agreed upon to relieve the situation is to construct a transmission line for the purpose of increasing the power supply, by overhead construction or by conduit if the former is not allowed; to rehabilitate thirty-seven cars to permit train operation, and to widen the Neponset bridge to permit double-track operation.

Sparrows Point, Md.

The shipyard at Sparrows Point is served by the United Railways & Electric Company, but the present line is ¾ mile from the shipyard gate and there is a shortage of cars. Moreover, housing facilities are to be provided at St. Helena, and this requires an improvement in transportation facilities.

To meet the need the construction of a spur from the present line to the shipyard gate is under investigation. The Pennsylvania Railroad passenger tracks into the shipyard are to be shifted to the west, and the electric lines placed to the east of the main entrance. It is proposed to include sufficient storage tracks for an additional train on the Pennsylvania line and for storage of electric cars between rush hours.

Additional cars are on order and are being delivered to the electric railway.

Baltimore, Md.

The shipbuilding company at Baltimore has three yards. The upper yard, a small one located near Frost and Jackson Streets, has adequate transportation facilities. The lower and east yards are located at the end of Fort Avenue, the yard gates being opposite each other. Approximately 5000 employees are carried over the Carey Street line and the Hartford Avenue line of the United Railways & Electric Company to and from the shipyard gates, which form the eastern terminus of the line. Passengers are carried away in one direction only, and the cars are badly overcrowded. No loop is provided and the cars have to change ends.

Already the working hours of the two plants have been staggered so as to permit the use of tripper cars twice during each rush hour. Moreover, according to latest advices, the Baltimore case has just been covered by the drawing of a contract involving the expenditure of $829,638 by the Emergency Fleet Corporation. Fifty cars fully equipped for train operation are to be purchased, and storage facilities and terminal loops constructed.

Curtis Bay, Md.

The Curtis Bay shipyard is served by one line of the United Railways & Electric Company, but the men have to walk a long distance from the end of the car line. The line was badly overcrowded during the last winter, and there was a shortage of power. The railway, however, is going to extend its line a distance of 1500 ft., which will bring it within ½ mile of the shipyard gate. The sidewalk from the end of the extension to the gate will be constructed, and additional car service will be provided.

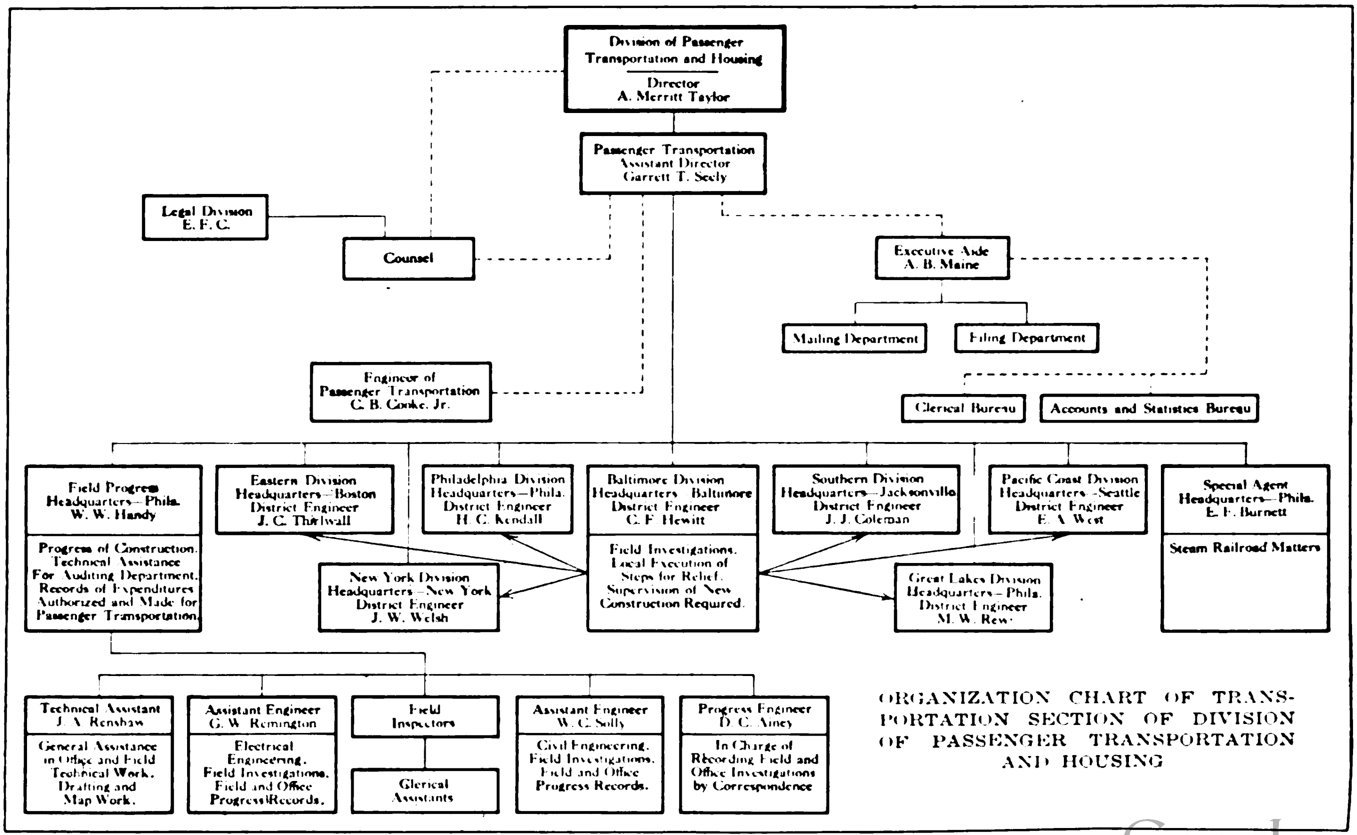
Seattle, Wash.

The shipyards in Seattle are served by the Puget Sound Traction, Light & Power Company, which lacks adequate track facilities to handle such service. A proposed extension of the electric lines has been under advisement. The Northern Pacific Railway, however, is operating steam service to the shipyards, and it is stated that the transportation facilities are now adequate.

Oakland, Cal.

About 85 per cent of the 6000 employees of the Oakland shipyard reside in territory served by the surface lines of the San Francisco-Oakland Terminal Railways. These men have to walk 2400 ft. from the shipyard gate to the Eighth Street line, from which they transfer to all parts of Oakland. More than 400 employees (mostly skilled workmen) walk about 2000 ft. from the shipyard gate to the Aldine Station of the Southern Pacific interurban electric line, connecting with the Southern Pacific ferry operating between the Oakland Mole and San Francisco. This service is adequate. Minor facilities are also afforded over the Twelfth Street line of the San Francisco-Oakland Terminal Railways and the Eighth Street line of this company to Alameda.

An extension of the line between Eighth Street and the shipyard, a distance of 2000 ft., has been agreed upon. A prepayment inclosure to be constructed at the end of the extension near the gate, to be used also for storage of cars during the non-rush hours. Additional service has been provided by the Southern Pacific electric interurban line from the Aldine Street station. The Webster Street drawbridge, crossing the Oakland Estuary, has been ordered closed during the rush hours. This affects service to employees living


Division of Passenger Transportation and Housing
Director
A. Merritt Taylor
Passenger Transportation
Assistant Director
Garrett T. Seely
Legal Division
E. F. C.
Counsel
Executive Aide
A. B. Maine
Mailing Department
Filing Department
Engineer of Passenger Transportation
C. B. Cooke, Jr.
Clerical Bureau
Accounts and Statistics Bureau
Field Progress
Headquarters—Phila.
W. W. Handy
Progress of Construction. Technical Assistance For Auditing Department. Records of Expenditures Authorized and Made for Passenger Transportation.
Eastern Division
Headquarters—Boston
District Engineer
J. C. Thirlwall
Philadelphia Division
Headquarters—Phila.
District Engineer
H. C. Kendall
Baltimore Division
Headquarters—Baltimore
District Engineer
C. F. Hewitt
Field Investigations. Local Execution of Steps for Relief. Supervision of New Construction Required.
Southern Division
Headquarters—Jacksonville
District Engineer
J. J. Coleman
Pacific Coast Division
Headquarters—Seattle
District Engineer
E. A. West
Special Agent
Headquarters—Phila.
E. F. Burnett
Steam Railroad Matters
New York Division
Headquarters—New York
District Engineer
J. W. Welsh
Great Lakes Division
Headquarters—Phila.
District Engineer
M. W. Rew
Technical Assistant
J. A. Renshaw
General Assistance in Office and Field Technical Work. Drafting and Map Work.
Assistant Engineer
G. W. Remington
Electrical Engineering. Field Investigations. Field and Office Progress Records.
Field Inspectors
Clerical Assistants
Assistant Engineer
W. C. Solly
Civil Engineering. Field Investigations. Field and Office Progress Records.
Progress Engineer
D. C. Ainey
In Charge of Recording Field and Office Investigations by Correspondence

ORGANIZATION CHART OF TRANSPORTATION SECTION OF DIVISION OF PASSENGER TRANSPORTATION AND HOUSING in Alameda and using the surface lines of the San Francisco-Oakland Terminal Railways.

Staten Island, N. Y.

Electric railway transportation at the shipyards on Staten Island is dependent upon the Richmond Light & Railroad Company The service has been inadequate owing to the distance of Staten Island from large sources of labor supply, requiring long trips by ferry or steamer, as well as to deficiencies in the local electric railway service.

Recommendations for immediate relief include the operation of twelve additional tripper cars, of summer type now available, for the local service. For permanent relief, twelve additional cars will be purchased. This service will be made more effective by means of terminal loading tracks at the shipyards, thereby permitting the use of a greater number of trippers without interfering with the regular service. Further relief is being arranged for by additional ferry service and the operation of special steamers from adjacent districts.

Fare Increases in Massachusetts

Twenty-four Companies Operating 92½ per Cent of Mileage Raised Their Fares

THE Public Service Commission of Massachusetts was established in 1913. Since that time, of the thirty-seven street railway companies operating in Massachusetts (exclusive of the Boston Elevated railway system, over whose rates the commission has no jurisdiction) having a total length of line of about 2050 miles, twenty-four companies representing 1900 miles of line have been allowed increases in rates of fare.

The following summary shows, as of Aug. 1, 1918, the companies granted increased rates, the length of line represented, the date of the commission's findings with the time taken for consideration in each case, together with a brief statement of the character of the increases which were granted:

		Commission's Decision	
Company	Length of Line (Miles)	Date	Character of Increase
Bay State	762	Aug. 31, 1916	6-cent fare on country lines.
Bay State	....	Mar. 5, 1917	Reduced rate tickets in Fall River withdrawn.
Bay State	....	July 3, 1917	6-cent fare on city lines.
Bay State	....	June 11, 1918	6-cent cash fare within restricted inner zones on certain city lines with 2-cent additional cash fare to outer zone; by tickets to and from center, 5 cents and 7½ cents, respectively, with further reduced rate for off-peak travel. Zone system on interurban lines, with varying cash rates of 2 cents, 2½ cents and 3 cents per mile. Reduced-rate tickets withdrawn or modified.
Blue Hill	16	July 31, 1915	6-cent fare on part of line; additional zone established.
Blue Hill	....	June 15, 1918	7-cent fare on part of line.
Boston & Worcester	49	Sept. 22, 1917	Zone system 2 cents per mile.
Boston & Worcester	....	July 16, 1918	Increased to 2½ cents per mile.
Bristol & Norfolk	6	Aug. 31, 1916	6-cent fare.
Concord, Maynard & Hudson	18	May 25, 1917	Zone system 2 cents per mile.
Concord, Maynard & Hudson	....	Aug. 1, 1918	Increased to 3 cents per mile.
Connecticut Valley	45	April 16, 1918	Workmen's tickets withdrawn.
Connecticut Valley	....	July 6, 1918	Round-trip tickets withdrawn.
Holyoke	58	Dec. 31, 1917	5-cent cash fare in restricted inner and outer zone. 6⅔-cent ticket rate between points located in both zones. 7-cent fare on branch line.
Massachusetts Northeastern	120	Oct. 14, 1916	6-cent fare.
Massachusetts Northeastern	....	June 29, 1918	5-cent unit; re-established with restricted additional zones.
Middlesex & Boston	106	Oct. 28, 1914	6-cent fare.
Middlesex & Boston	....	Aug. 10, 1917	Certain lines increased to 7 and 8 cents.
Middlesex & Boston	....	June 29, 1918	6-cent lines increased to 7 cents; 1 cent for transfer on certain lines. Reduced-rate tickets withdrawn.
Milford & Uxbridge	53	Aug. 9, 1917	6-cent fare.
Milford, Attleboro & Woonsocket	28	July 15, 1918	7-cent fare.
New Bedford & Onset	37	Sept. 8, 1915	6-cent fare.
New Bedford & Onset	....	Aug. 24, 1917	Reduced-rate tickets withdrawn.
Norfolk & Bristol	20	Aug. 19, 1915	6-cent fare.
Norfolk & Bristol	....	June 29, 1918	7-cent fare.
Northampton	24	June 29, 1918	Additional zones.
Northern Massachusetts	45	April 30, 1918	Zone system 2 cents per mile.
Norton, Taunton & Attleboro	19	Aug. 30, 1917	6-cent fare.
Norwood, Canton & Sharon	6	May 2, 1917	7-cent fare.
Providence & Fall River (Swansea & Seekonk)	10	Mar. 13, 1914	6-cent fare.
Springfield	141	Mar. 30, 1918	5-cent cash fare in restricted inner and in outer zone. 6⅔-cent ticket rate between points located in both zones not more than 5 miles distant; 8⅓-cent ticket rate beyond 5 miles.
Taunton & Pawtucket	17	Jan. 11, 1918	7-cent. fare.
Union	42	Aug. 20, 1917	*Monthly commutation tickets withdrawn.
Ware & Brookfield	11	Mar. 29, 1917	7-cent fare.
Worcester Consolidated	250	July 1, 1918 Aug. 1, 1918	6-cent fare.
Worcester & Warren	19	Mar. 30, 1917	7-cent fare.
Worcester & Warren	19	Dec. 13, 1917	10-cent fare.
Total	1,902 miles		

* Allowed under tariff filing without formal proceedings.

Increases in fares were pending on Aug. 1, 1918, upon the following street railways:

Name	Length of Line (Miles)	Hearing Closed	Tariff Effective	Character of Increase
Brockton & Plymouth	22	*...........	Aug. 15, 1918	7-cent fare.
East Taunton	11	July 16, 1918	....	6-cent fare.
Interstate Consolidated	27	July 9, 1918	....	Additional zones established.
Milford & Uxbridge	**	July 23, 1918	....	7-cent fare on certain zones.
New Bedford & Onset	**	July 10, 1918	....	7-cent fare.
Northern Massachusetts	**	*...........	Aug. 19, 1918	6-cent fare, additional zones at 3-cents per mile.
Total	60			

* Pending under tariff filing.
** Previous increase allowed by commission.

"As Necessary as Rails"

UNDER this caption, in a recent issue of *Tram-O-Grams*, J. C. Davidson, publicity manager Denver (Col.) Tramway, emphasized the great importance of publicity to electric railways. In his opinion, the money necessary for carrying on this great work is an expense that is looked upon by the leaders of this industry as an economical means of curtailing vast expenditures. In other words, it prevents misunderstandings which might lead to a long drawn-out series of small outlays in the end totaling sums of tremendous proportions.

Electric railways in nearly all large cities, says Mr. Davidson, are waking up to the full realization of the usefulness of wide publicity on matters relating to their work. To his mind, *Tram-O-Grams* and the newspaper campaigns used in Denver are fairly good illustrations of what may be accomplished by presenting the facts in a truthful and straightforward manner to the people, throwing light on subjects that heretofore have been a closed book, drawing criticism about matters little understood and answering them satisfactorily.

The Denver company feels that its patrons have come to realize that the company has no desire to profit at the expense of good-will.

A. E. R. A. War Board Submits Brief on One-Man Cars

National War Labor Board Informed of Improvements in Service, Stimulation of Travel and Decrease in Energy and Labor Due to Modern One-Man Cars

IN ACCORDANCE with the request of the National War Labor Board a brief on the development of modern one-man cars was presented to that body on July 26 by the War Board of the American Electric Railway Association. The data for the brief were compiled for the War Board by J. F. Layng, railway department General Electric Company, and Walter Jackson, business manager ELECTRIC RAILWAY JOURNAL. The situation on the one-man car is set forth as follows:

THE USE OF ONE-MAN CARS WITH AUTOMATIC EQUIPMENT

Beginning with the year 1914, the increasing incursions of the private automobile and the coming of unregulated jitney competition led railway engineers and operators to design a car which could be safely and economically operated with one man at the shorter intervals necessary to regain and even to create street railway travel. The need for such a car has since been accentuated by enormous increases in all operating costs and by the scarcity of platform labor, owing to the large number of men who have gone into war or war industries. Thus the average operating ratio has risen from 58 per cent in 1912 to 72 per cent in February, 1918.

At the present writing some 700 of the modern one-man cars hereinafter described have been built, and it is estimated that at least 30,000 could be applied advantageously. Inasmuch as the term "one-man" car has been loosely construed, it is well to define the types that pass under that name.

The term "one-man" car is applied to any car on which one man acts as conductor and motorman. There may be the widest difference, however, in the kind of service and in the character of the equipment.

The oldest application of one-man cars is for stub-end or shuttle service in suburbs where travel is light. In such cases, the car differs only from the usual two-man car in the locking of the rear platform to prevent unauthorized ingress and egress. Such operation is of little importance in saving man-power since the mileage of shuttle cars is less than 1 per cent of the total. It is a service which is given merely to permit access to other lines.

A somewhat wider application of the one-man car is its use on complete routes with light traffic calling for headways of say fifteen to thirty minutes between cars. For such service it is desirable to have a more attractive car than for shuttle service and also to use labor-saving equipment, such as air brakes. Several hundred cars are now operated as one-man cars under such limitations.

But by far the widest application of the one-man car is in cities where downtown congestion does not demand the largest possible passenger capacity per unit or where such congestion could be overcome by rerouting part of the traffic. Such application has already been proved feasible in cities up to 400,000 population and with car intervals of thirty-five to forty seconds through the use of the safety or automatic type of one-man car. It has been proved that because of the thoroughgoing substitution of automatic equipment for manual labor, this car can readily be handled by one man.

New safety one-man cars seat twenty-nine to thirty-five passengers each, or about three-fourths the usual capacity of two-man cars. In practice, however, it is customary to operate 25 to 50 per cent more units than of the larger cars so that the frequency of service and the number of seats offered are substantially increased with say two-thirds the number of men. These cars weigh less than 400 lb. per seat, whereas the displaced cars weigh 700 to 1200 lb. per seat. This reduction in weight means a proportionate reduction in coal. Most of these cars economize coal still further through the use of anti-friction bearings.

The term "safety" may also be applied to cars rebuilt for one-man operation by being equipped with the same group of automatic appliances. These cars are just as valuable for the saving of platform personnel but they are not so economical in fuel, naturally, as the newer, lighter cars.

The safety equipment is a combination of air brakes, air-operated doors, air sanders and the deadman's handle of the electric controller. These equipments so inter-act automatically that:

1. The doors will not open until the car has come to a full stop.
2. The car will not start until the doors are closed.
3. The power will go off, the brakes will apply instantaneously, and the tracks will be sanded the moment the operator of a moving car fails to bear down on the controller handle of the deadman type.

The saving in manual labor may be appreciated from one item alone, that of air operation of doors. A car which makes eight stops per mile, requires one opening and one closing movement each time. At a schedule speed of 9 m.p.h., this means 9 × 8 × 2 or 144 door operations in one hour or 1440 door operations in ten hours. The air brake gives a like saving in manual labor, and, as all operations on a one-man car are concentrated at the front platform, the labor of reaching up to pull bell signal and fare register cords is also eliminated.

The best proof that safety cars need only one man is presented by the fact that nearly always these cars are making better, faster schedules than the two-man cars which they replaced. If the one-man car was appreciably slower, the railways would abandon its use because the loss in mileage, the slowing up of the service and the increased liability of congestion would wipe out any saving due to smaller personnel. The superiority of the safety car for certain classes of service, as based upon actual operation, was first set forth in the ELECTRIC RAILWAY JOURNAL for Sept. 22, 1917, in a series of articles which have been accepted as authoritative not only by the operating companies but also by the public service commissions of many states. This superiority of the "safety" car is confirmed for a still wider range of service by the following memoranda made by the same transportation analyst who prepared the earlier survey. These later figures, covering ten cities ranging in population from 21,000 to 400,000, should prove conclusively that one-man safety cars are amply able to meet a wide range of operating conditions, and that if they were applied wherever possible there would be a saving of hundreds of thousands of tons of coal annually and a saving in men of vigorous physique equivalent to at least one division of the United States Army!

Columbus, Ga.—Population 21,000

One-man service was begun on April 15, 1918, on a 6-mile belt line which serves rich and poor, white and colored. This change has proved so satisfactory that the company cannot get more cars fast enough to satisfy the riders on other lines. The cars make the round trip in thirty-six minutes instead of forty; they take 1 kw.-hr. per car-mile instead of 2.3 kw.-hr. per car-mile, or in terms of coal they use 3 lb. of coal per mile instead of 6.9 lb. of coal per mile. Actually, less power is now used to run cars every twelve minutes than when cars were run every twenty minutes. The greatly improved service is given with nine men instead of twelve.

Tampa, Fla.—Population 37,000

One-man car service was begun Jan. 10, 1918, on the Michigan-Hyde Park crosstown line, 12.22 miles round-trip length. It is the most representative line in Tampa, since it carries Latin cigarmakers, negroes, white, etc. The people were accustomed to open cars which they could board at any point, often while the car was in motion. In one day they were asked to change to front-entrance, prepayment closed cars which cannot be left or boarded under normal conditions while the car is in motion. The change was a success. The old schedule speed of 8.6 m.p.h. was raised to 9.2 m.p.h., an increase of 7 per cent; fifteen and ten-minute intervals were replaced by ten and seven-and-one-half-minute intervals with a consequent increase in riding of 15 to 20 per cent. The coal requirements per car are less than half of the old 15-ton cars. The desire of the public to co-operate is also evident from the fact that 75 per cent of the passengers tender exact fare. Twenty men are now giving 30 per cent more service to the public than was formerly given with thirty men.

Beaumont, Tex.—Population 50,000

Two-man service on light cars without the safety devices was begun in 1916. Experience indicated that the safety devices should be applied in order to make better schedules and easier working conditions for one-man service. The fourteen cars on hand have just been converted to the safety type. According to latest advices the railway plans to give 50 per cent more service with fewer men than before.

Houston, Tex.—Population 120,000

One-man car service was begun on June 2, 1918, on the Woodland Heights line, which has a round-trip length of 9.53 miles. One mile is the most congested part of the city where the interval between cars is as short as forty seconds. The cars make the round trip in sixty minutes instead of seventy minutes, and this combined with a 33⅓ per cent to 50 per cent increase in service has enlarged travel more than 52 per cent. The headway on the Woodland line alone is as low as four minutes. The extraordinary increase in service noted has been obtained with approximately two-thirds the former number of platform men.

Fort Worth, Tex.—Population with Soldiers 100,000

Fort Worth was the first to demonstrate the ability of the safety car, beginning on the Summit Avenue line on Nov. 1, 1916. On Oct. 1, 1917, four more lines were added. On the Summit Avenue line the schedule speed had been raised 12½ per cent so that a round trip of 6.6 miles could be made in forty instead of forty-five minutes. The average increase in service was 50 per cent and the increase in riding about 20 per cent.

During the past year, Fort Worth has enjoyed the extraordinary increase of 35 to 40 per cent in traffic throughout owing to the presence of Camp Bowie. The remarkable thing is that the one-man cars have absorbed this unexpectedly large increase without suffering in schedule speed or causing a demand for additional cars. At present an increase of more than 50 per cent in travel is handled with 108 instead of 150 man-hours a day.

Of the new lines, it may be pointed out that the East Front-Samuels line, 6 miles round trip, has to run over twenty-four busy blocks. Nevertheless this line has the same schedule as before, although three safety one-man cars are carrying 50 per cent more riders than three two-man cars did, employing fifty-six instead of 107 man-hours. The Henderson-West Weatherford line with nearly 100 per cent increase in travel maintains the old schedule speed of 9.9 m.p.h. and uses 121 instead of 142 man-hours; the St. Louis Avenue line is run at the high schedule speed of 10.2 m.p.h. and it uses fifty-six instead of 110 man-hours to handle 25 per cent more travel; the Forest Park line has reduced its man-hours from seventy-six to thirty-nine.

In view of the extraordinarily heavy traffic at Fort Worth, it is significant that step and platform accidents on these cars have been practically nil.

El Paso, Tex.—Population with Soldiers 100,000

On Feb. 14, 1918, the Washington Park line, 6½ miles round trip, was opened with about 15 per cent increase in mileage. The schedule speed was raised from 9.25 to 10.1 m.p.h. Travel has increased 35 per cent while ten men have been replaced by six. Power requirements are now 1 kw.-hr. instead of 1.8 kw.-hr. per car-mile. The Sunset line shows similar results, four men handling 40 per cent more travel than eight men did before.

Tacoma, Wash.—Population 100,000

In 1917, the company began to operate old cars with safety equipments, but for all-day use these have since been replaced by new light cars on four lines which operate downtown. The Portland Avenue line, started on Dec. 7, 1917, is giving 15.4 per cent more mileage and carrying 26.2 per cent more passengers (all comparisons are of May, 1918, and May, 1917). The Sixth Avenue line, started on Jan. 28, 1918, with an individual headway as low as three and one-half minutes, is giving 69.6 per cent more mileage and carrying 55 per cent more passengers. The Old Tacoma line, started on Nov. 19, 1917, is giving 36.8 per cent more mileage and carrying 28.3 per cent more passengers.

Seattle, Wash.—Population 400,000

Seattle is the largest city operating one-man safety cars in the congested section. Thus the Summit Avenue line operates in with overlapping lines having a headway as low as thirty-five seconds. This line was completely equipped by June 27, 1918. The round trip of 4.9 miles is made in forty-two minutes. The service has been increased 66 per cent and the patronage 59 per cent with less power and fewer men than before. In this city the men did not believe that the cars could be operated readily by one man. The company agreed to let them go out with two, but at the end of a week the men stated that they were satisfied that the cars could be operated with one man; and they have been operated with one man per car ever since.

Everett, Wash.—Population 25,000

All city service is now handled with one-man cars. The service has been increased by 35 to 50 per cent, the cars operated increased from thirteen to eighteen, the traffic increased almost 50 per cent, the average energy per car-mile reduced from 3.34 kw.-hr. to 1.91 kw.-hr. and the platform personnel reduced by 25 per cent or more.

Bellingham, Wash.—Population 37,000

This city has also been converted completely to safety car operation. Coincident with a reduction of energy requirements from 214,300 kw.-hr. in May, 1916, to 155,000 kw.-hr. in May, 1918, the car-miles rose from 73,382 to 94,118 and the patronage from 321,284 passengers to 400,239 passengers. The number of operatives has been lowered from seventy-five to forty-nine.

SUMMARY

In general these definite points may be brought out from the foregoing data:

1. That the one-man safety car is applicable to a wide range of electric railway conditions.
2. That the safety cars of new construction permit enormous savings in fuel.
3. That all safety cars permit greatly increased service to the public, while still permitting a large reduction in platform personnel.
4. That the safety car, because of the use of automatic devices, can be operated at a higher schedule speed by one man than an older-style car can be operated by two men.
5. That the safety car fully justifies its name as a preventer of accidents through the inter-operation of control, brakes, doors, steps, sander and emergency brake.
6. That only the safety car's economies in operation and improvements in service have made it financially practicable to maintain railway service in small cities where short headways were a necessity and in larger cities where the shortage of labor has seriously impaired the ability to give adequate service even with but one man per car, as at Seattle and Tacoma.
7. That the safety car is preferred by the men themselves because it eliminates all manual labor and avoids division of responsibility with a second platform man.
8. That the safety car promotes better public relations in demonstrating the good-will of the railway, thereby paving the way for a solution of the local utility problems.

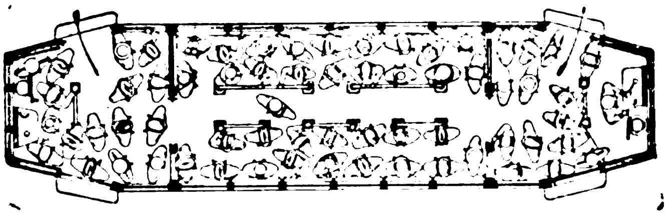
It may be of interest to add that as these modern cars now cost about $6,700 each, the probability that electric railways can order them in large quantities is remote if operating costs should rise sufficiently to absorb in advance the increased revenues that these cars might bring.

In conclusion, it is respectfully pointed out that the rate of change or turnover of platform men is so great that no man has ever been deprived of work on the properties named because of the introduction of the one-man car. The railways hope, in fact, that the elimination of manual labor on these cars will enable them to offer employment to a wider classification of men and to keep such men longer in the service.

Seatless Car Being Tried in Rome

ON SOME of its routes the Rome (Italy) Tramways is experimenting with a number of seatless motor and trailer single-truck cars. These cars, as shown by the accompanying loading diagram, are of the inclosed type with bowed ends, and they accommodate as many as sixty-five passengers.

Passengers enter at the rear and descend at the front, both on the near side. The rear platform accommodates seventeen persons, and the front one only thirteen, a space being chained off for the motorman. In the body of the car, separated by a series of hand rails, are three parallel longitudinal aisles. The center one is kept free for fare collection and passenger circulation.



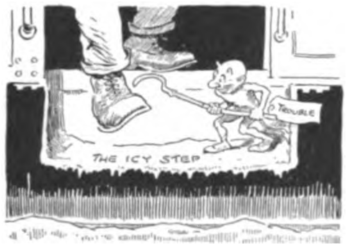
ARRANGEMENT OF PASSENGERS IN SEATLESS-CAR BEING TRIED IN ROME, ITALY

The new cars are clearly marked on the vestibules at each end: "Standing Places Only." The company plans to try them for six months and watch the economic and social results. If there is no serious objection, the public authorities will permit the continuance of the seatless-car service and its extension as traffic demands require.

On July 1, 670 officers and employees of H. M. Byllesby & Company and affiliated companies were engaged in the military service of the United States or Allies. This represents 13.8 per cent of all male employees of the organization. There are now four gold stars in the Byllesby service flag.

Some Typical Posters of the National Safety Council Prepared Under the Auspices of the Electric Railway Section

Ice - Treacherous



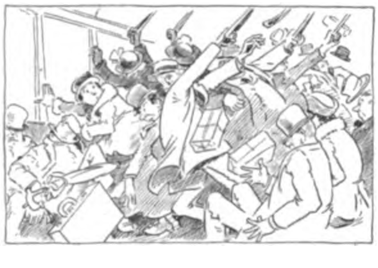
KEEP THE CAR STEPS AND PLATFORMS FREE FROM ICE

Begin early with the fall of snow to sweep them clean. If the packed-down snow and ice gets ahead of you, use a very little sand to overcome the danger of passengers slipping. Falls on icy car steps and platforms may easily result seriously, perhaps fatally.

It's Human Nature to Forget One's Awkwardness and Blame the Ice Entirely

Don't Give Passengers a Chance for Complaint of This Kind Against You

CURVES



Irate Passenger (at the complaint window)—

"I have been riding home every evening with motorman No. 672. He hits the curves at 40 miles. Last night he threw an old lady from her seat to the floor. The night before two children, standing, were thrown down violently. The rest of us fared little better. I am tired of being

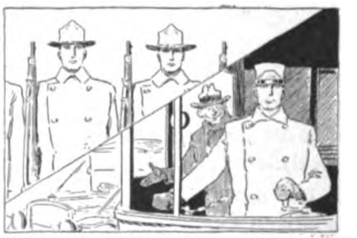
"Tied in a Knot Every Evening"

Fall-in-Car Accidents are difficult to handle because the trainmen very often do not know they occur and cannot report them.

DON'T CAUSE SUCH ACCIDENTS

BY IMPROPER OPERATION AROUND CURVES

ATTENTION!



Squad Attention! Brings each soldier's thought to that point of alertness where he instantaneously executes the simplest or the most difficult movement.

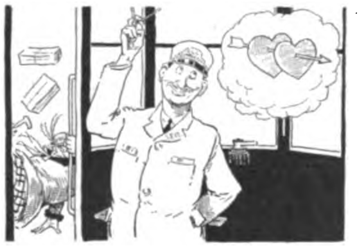
Motormen Attention! To the important duty of operating your car with safety.

It's the BIG COMMAND of YOUR JOB—and ALERTNESS ANSWERS ITS REQUIREMENTS

Let Not the Babble of the Thoughtless Passenger Dull Your Mind to Your Duties

And make you responsible for personal injury to pedestrian or driver

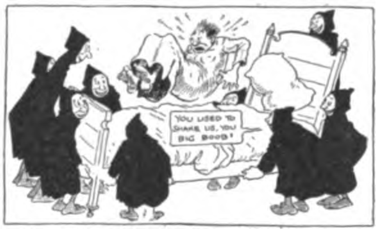
Send Your Valentines After The Day's Work Is Done



Your heart may be full to overflowing with sentiment, longing for expression in the form of a sweet-scented missive to HER.

But Don't Jeopardize the Lives of Persons Boarding Your Car by Inattention to Duty

THE ROUGH MOTORMAN


YOU USED TO SHAKE US, YOU BIG BOOB!

He steps on the "juice," he slams on the air,
He heeds not the stress of the straphanger there.

If his passengers could have their wish, the "rough" motorman's sleep would be continually haunted by the spectre of his misdeeds.

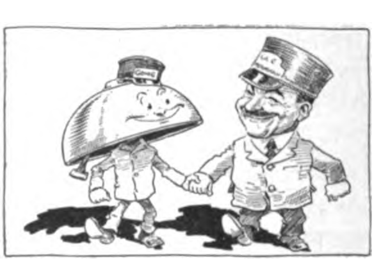
He Shakes Up Their Bones at Every Start and Stop of the Car

Many accidents are charged up to him - - aged and infirm people, women and children are thrown and sometimes seriously injured.

Don't Join the Rough Motorman's Class

Start and Stop Your Car Smoothly and Easily

KNOCK YOUR FRIEND



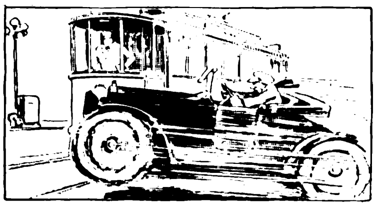
Knock Your Friend—The Gong!

It's the best friend the motorman has and, unlike all other friends, doesn't object in the least to the knocking. The gong is on your car for

YOU TO USE

Don't Be Afraid to Wear Out a Little Shoe Leather on It

THE SPEED MANIAC



His Creed—Save a Second Whatever the Cost

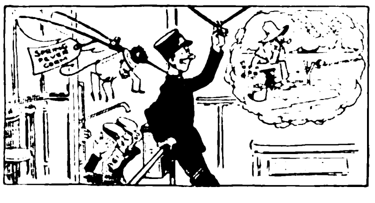
Collisions between street cars and automobiles are increasing at an alarming rate but investigation shows that nearly always the fault lies with the drivers and not with the trainmen. The streetcar company is not liable, but all such cases are more or less troublesome and expensive. More than that

TOO MANY LIVES ARE ENDANGERED

Do More Than Your Share — Keep An Eye Open At All Street Intersections for the Reckless Driver

Avoid Accidents — It Helps Your Record

THE SPRING-FEVER BUG



Its Sting Is Almost Irresistible

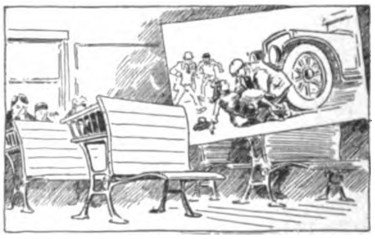
The Spring-Fever Bug Takes Your Mind from Your Work and Accidents Happen

After the long winter months of fighting snow and slush and ice, listening to kicks from chilled passengers and to overheated old gentlemen complaining about the service - - when the spring days come they are Irresistible in Fact.

Give ear to the call of the fresh green of the earth, to the bright sunshine, to the song of the birds. Take down the trusty rod, dig a few worms—and off to the fishing hole.

The Tonic of the Day Off Will Make You a Safer Street Car Man

THE VACANT SEAT



"THE LITTLE GIRL WHO SAT THERE WAS KILLED BY AN AUTOMOBILE LAST WEEK"

The rules require that you operate your car with extra caution when approaching and passing schools; you are responsible, in large measure, for the safety of the children. What do the few seconds lost time amount to in comparison with the injuries which might befall a little child in a street car accident?

Operate Your Car Past Schools As If the Safety of Your Own Children Were Involved

Don't Be Responsible for a Vacant Seat

Public Service Says Living Wage Is $1,115

Company Avers Present Hourly Rates of 35 and 40 Cents Permit Adequate Living Standard—Says Working Conditions Are as Nearly Perfect as Demands of Operation Permit

THAT the demands of electric railway employees for a wage of 60 cents an hour are unwarranted in order to give them a living wage is the position taken by the Public Service Railway, Newark, N. J., in its pending case before the War Labor Board. The company calculates that average annual earnings of $1,115 will give its trainmen their customary standard of living, even in this period of high prices, and that under the present reasonable working conditions this earning power is assured by the existing rates of pay of 35 cents (to end of fifth year) and 40 cents (thereafter) an hour.

WORKING CONDITIONS ARE FAVORABLE

In its brief the company asserts that working conditions are at least as favorable as on any electric railway and are as nearly perfect as the exigencies of operation permit. The runs are constructed to provide as nearly as possible a ten-hour working period. This, it is said, has been considered the desirable working period for the industry, and it is necessary because of the peculiar characteristics of the business.

The company denies that the hours of work of trainmen are spread over excessive periods of time. The spread periods for all runs of nine hours or more are indicated in the following tabulation:

	Number	Per Cent
Total number of runs paying nine hours or over	1531	100.0
Number of runs finishing within twelve hours	694	45.3
Number of runs finishing between twelve and thirteen hours	504	32.9
Number of runs finishing between thirteen and fourteen hours	294	19.2
Number of runs finishing between fourteen and fifteen hours	39	2.6

Thus out of a total of 1531 runs, 45 per cent or 694 conclude the day's work within a twelve-hour period. A total of 1198 or 78.2 per cent have work spread over thirteen hours, and 1492 or 97.4 per cent over fourteen hours. Less than 3 per cent go beyond fourteen hours, while the maximum spread time is fourteen and a half hours.

The brief directs attention to the fact that the Boston Elevated Railway, operating under agreement with the Amalgamated Association of Street & Electric Railway Employees and in compliance with a nine-in-eleven-hour law effective in Massachusetts, has 27.5 per cent of total runs concluding in a period of more than thirteen and less than fourteen hours, whereas the Public Service Railway has but 19.2 per cent in this period and 2.6 per cent in the fourteen-to-fifteen-hour period. In connection with these results, there should be considered the great number of trippers operated on the Boston Elevated Railway lines as against the negligible quantity in New Jersey.

TABLE I—RESULTS OF PROPOSED CHANGE OF SPREAD TIME ON NINE TYPICAL LINES OF PUBLIC SERVICE RAILWAY

	Present Spread Time	Proposed Ten Hours in Eleven
General average pay per day per man @ 30 cents	$2.87	$2.25
General average pay per day per man @ 35 cents	3.34	2.62
General average pay per day per man @ 40 cents	3.82	2.99
Number of crews on full runs	266	217

This means that forty-nine crews or ninety-eight men, representing 18 per cent of the crews at present working full paid runs, would be forced on the extra list and have to work trippers.

Number of crews on trippers	27	155
Additional crews of trippers under proposed plan		128
Total crews now required	266 plus 27 = 293	
Total crews required in ten in eleven hours	217 plus 155 = 372	

This is an increase of seventy-nine, or 27 per cent.

Under the ten-in-eleven-hour plan suggested by the Public Service Railway employees, an addition of 31 per cent or 1071 men would be required to maintain the service. The cost to the company would be $370,344 annually, if the reduction in spread time were practicable.

Table I is an exhibit for nine typical lines, showing results under the present spread of time and the rearrangement of runs that would be required if the company attempted to meet the ten-hours-in-eleven demand. The change would require an increase from 293 crews to 372 crews, an addition of seventy-nine crews or 27 per cent.

With reference to other working conditions the company submits that:

1. Pay for waiting time for extra men is already covered in the amount of guarantee paid them of $17.50 per week, which assures each man adequate recompense for any time that may be spent at rollcalls when work is not provided.
2. The institution of an additional amount for waiting time would permit of abuses and would be a constant source of friction and dissatisfaction.
3. It would bring about double payment to the men in many cases and would make it necessary to reduce the number of men carried as extras.
4. The amount of waiting time is really negligible under present conditions.
5. The present weekly guarantee is adequate for the service rendered and assures the trainmen a better minimum wage than obtains on other comparable railway systems, even those operating under agreements with the union.
6. Overtime as now defined on the property is the period during which a trainman works voluntarily after he has concluded his scheduled run. The prevailing rate includes an allowance of 5 cents an hour over the regular rate. The demand that overtime "be all work performed or waiting under orders to work in excess of ten hours" is impracticable and discriminatory.

In short, the company states that this is no time to alter conditions that were found satisfactory before the war. The changes now suggested would result in reducing production and artificially increase the cost of service, contrary to the policies and principles of the National War Labor Board and the best interests of the country.

PRESENT RATES GIVE ADEQUATE LIVING WAGE

The wage rates in effect prior to June 1 were 28 to 34 cents an hour, the maximum being reached at the end of the tenth year. On June 6 a new schedule became effective, providing for 30 cents an hour during the first six months, 35 cents an hour to the end of the fifth year and 40 cents an hour thereafter. The reason for the probationary period is the unsteadiness of work on the part of the less experienced and usually younger and single men.

In introducing the discussion of wages, the brief lays weight upon the point that trainmen are not skilled mechanics. It cites the finding in the bulletin "Street Railway Employment in the United States," published in April, 1917, by the Bureau of Labor Statistics, Department of Labor, to the effect that the occupation of conductors is "semi-clerical in some respects and one of responsibility rather than skill," and that the work of motormen is "easily learned and should be classed as a responsible rather than a skillful occupation."

These statements are confirmed by an examination of 500 platform men selected at random from employees hired in 1916, 1917 and 1918. More than 50 per cent of the 500 trainmen were recruited from three occupations—laborers, teamsters and clerks. Almost a fourth of the platform men were ordinary laborers before entering the employ of the company. With few exceptions these men were unskilled workers, commanding wages at the bottom of the industrial scale.

In order to show clearly the relative situation of trainmen and men of like ability employed in other industries in the territory the company investigated various enterprises around Newark. The results are shown in Fig. 1. Whereas the average income of the trainmen was in excess of $1,046 a year, few employees of the four concerns included earned this amount. The classes of labor from which trainmen are recruited—namely, laborers, drivers and clerks—did not in any case earn the amounts paid to trainmen in 1917. While skilled mechanics, such as tool makers, foremen, pattern makers, lathe hands or masons earned more in 1917 than did the trainmen, the excess amounts were not large.

A comparison of the wage rates per hour paid to trainmen in 1917 with the hourly rates paid to the classes of labor covered in the above-mentioned diagram is said to be unfavorable to the railway. In almost every case the hourly rate in other industries exceeds that of trainmen, but if an examination is made of aggregate hours of employment of these workers in the course of a year, it will be found that the advantages of the hourly rate are entirely offset. The trainmen averaged more than 3000 hours in 1917. Very few classes of employees in other industries enjoy such great regularity of employment.

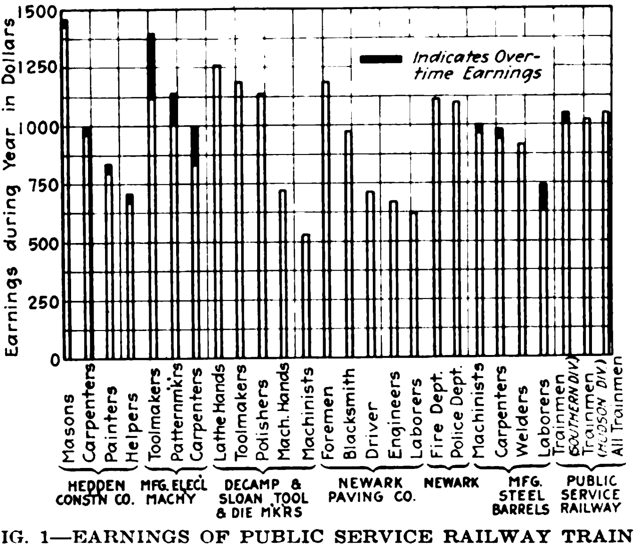


FIG. 1—EARNINGS OF PUBLIC SERVICE RAILWAY TRAINMEN IN 1917 COMPARED WITH THOSE OF OTHER WORKERS IN SAME LOCALITY

In the company's opinion, the present wages of trainmen are adequate to attract and hold a sufficient number of men and women to meet operating needs. Fig. 2 shows the number of applications and appointments for the position of conductor from January, 1914, to June, 1918. The number of applications has always largely exceeded the number of men appointed. Moreover, out of 765 men hired as trainmen between June 1 and July 3, 221 or more than 28 per cent were former trainmen.

MONEY COST OF LIVING STANDARD

On the basis of investigations into the cost of living in Philadelphia and New York in 1917, the company concludes that a family income of from $1,200 to $1,400 a year is required. It directs attention to the fact, however, that in adjusting such estimates to local cases due regard should be given to the composition of the family group (as compared to the standard of five members), to complementary family earnings and to the value of welfare and compensation provisions made by the employer.

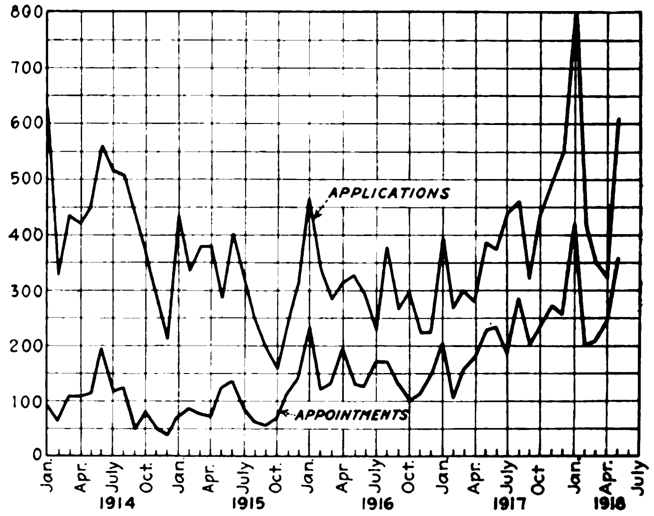


FIG. 2—RELATIONSHIP OF APPLICATIONS AND APPOINTMENTS FOR PUBLIC SERVICE RAILWAY CONDUCTORS

The company made a census on July 6 to obtain accurate statistics as to size of family, earnings, etc., covering 90 per cent of the platform men. The average household for the married men, it was found, consists of 3.86 members. A readjustment of the $1,500 standard for five family members, suggested in the April, 1918, Monthly Review of the Bureau of Labor Statistics, upon this and the other points gives the following:

Standard for family of five†		$1,500.00
Allowance for smaller family	$156.75	
Allowance for complementary family earnings *	210.00	
Minimum allowance for welfare and pension plans	17 81	384.56
Adequate annual earnings per trainman		$1,115.44

†This figure, the brief states, was based on statistics covering other sections of this country and Canada, in which living costs are higher than in New Jersey.
*Railway census showed average annual complementary earnings of family to be $156 or 14.9 per cent of the average earnings of trainmen.

In 1917, when the wage rates ranged from 25 to 32 cents prior to Oct. 1, and 28 to 34 cents after Oct. 1, trainmen earned the following average amounts: (a) Men now in 35-cent service group, $827; (b) Men now in 40-cent service group, $1,140. These averages are determined from reports made by the company to the collector of internal revenue.

By applying the rates of 35 and 40 cents an hour to the actual number of hours worked by each man during 1917 and striking an average for each group, the earnings of trainmen in each group during 1918 are determined as follows: (a) Trainmen receiving 35 cents an hour would receive $1,237; (b) Trainmen receiving 40 cents an hour would earn $1,414.

Thus trainmen in the 35-cent group would receive about $122 more than is necessary to insure their subsistence and that of their families in health and reasonable comfort. Trainmen in the 40-cent group would receive about $300 in excess of the sum necessary.

In 1917, in divisions of the company where savings clubs were in operation, 62 per cent of the total trainmen were depositors, as compared to 54 per cent in 1914, 56 per cent in 1915 and 65 per cent in 1916. The employees have subscribed $242,400 to the Liberty Loans, an average subscription of $55.17 from 41.7 per cent of the total number of trainmen.

In concluding the discussion of a living wage, the company shows that the present annual earnings of its trainmen are considerably higher than the annual earnings fixed by the Railroad Wage Commission for practically all employees of steam railroads. Electricians, station agents, blacksmiths, structural iron workers, car inspectors, telegraphers, masons, carpenters, painters, car repairers, all receive much less than the trainmen of the Public Service Railway. The details are shown in Fig. 3. In the company's opinion, the conclusions of the Railroad Wage Commission, transmitted to the Director General of Railroads in April, 1918, are of prime importance in this case.

The company concludes, therefore, that the wage rates should be fixed at 35 cents and 40 cents an hour, with a probationary period as now obtaining. The demand of the men for 60 cents an hour with 90 cents for overtime the company characterizes in these words:

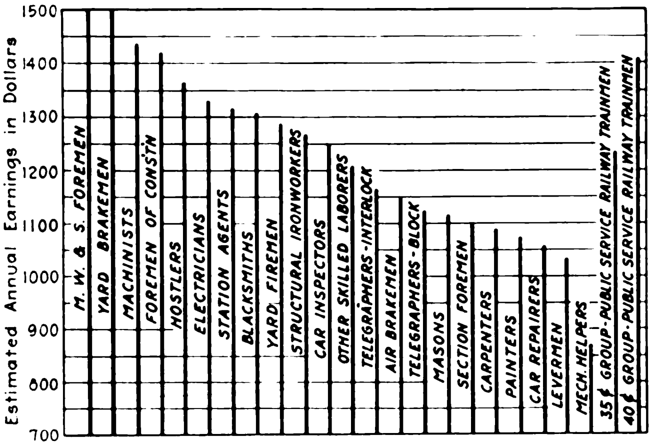


FIG. 3—ESTIMATED AVERAGE EARNINGS OF STEAM RAILROAD EMPLOYMENT FOR 1918 COMPARED WITH THOSE OF PUBLIC SERVICE RAILWAY TRAINMEN AT PRESENT RATES

> The saddling of this extra expense upon this company is unwarranted upon the theory that it is necessary to preserve the former standard of living of trainmen, where it has been shown that the present wages insure the maintenance of the standard of living prevailing before the war and enable the trainmen to live in health and reasonable comfort. Under such circumstances, the only justification for increases is to advance the standard of living of trainmen to a standard heretofore unknown, and this can only be justified upon the theory that war-time is a suitable time in which to try social experiments.

Women Conductors in Baltimore

They Began Service on July 11 and the Force Is Being Increased—Public's Attitude Gratifying to Company

WHILE women conductors have been on the cars of the United Railways of Baltimore only a short time, they have applied themselves to their work so earnestly and the public has taken to this innovation so naturally there appears to be no question that they will be an unqualified success in holding the places of the soldier and sailor boys until the war is won and the "warriors" return to resume their old platform positions. The women went on the cars on July 11. There was not a large number—just half a dozen were in the first little squad that was graduated from the training school at Park Terminal, where the intricacies of their new profession had been explained and its principles expounded. This first installment of women conductors was placed on the vestibuled pay-as-you-enter cars of the St. Paul Street and Boulevard lines, and the number has been gradually added to until there were fifteen on the cars on July 19, and more to go into service shortly. The uniform worn consists of a plain skirt and a coat of military cut except that it has wide collars. Straw hats are worn. The lady in civilian clothes in the group is Mrs. Anna Cook, the supervisor of women conductors.

WOMEN CONDUCTORS IN BALTIMORE WEAR STRAW HATS

The reception of women conductors by the Baltimore public was similarly gratifying. There may have been in some quarters a belief that, while women had succeeded in this calling in other large cities here and abroad, there might be a difference in Baltimore—a Southern city. If there was a difference in the reception given the women it was difference on the side of respect and hearty co-operation from the patrons of the cars and the press of the city.

The women conductors are paid the same scale of wages as the men—35 cents an hour the first year, with an increase of 1 cent an hour each year of service. They are guaranteed a minimum wage of $75 per month.

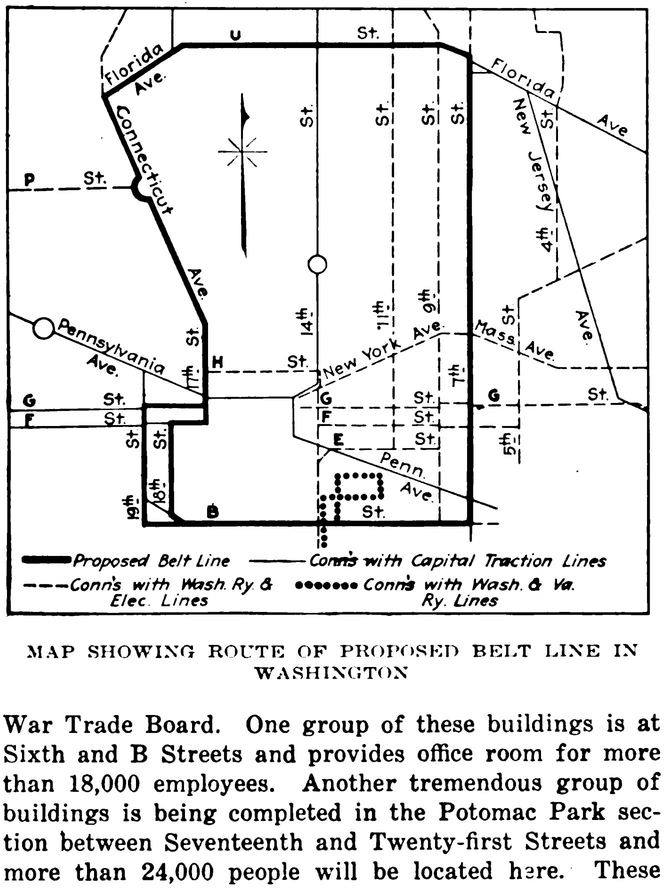
Forged Axle Bearings Show Economy Over Steel Castings

As an economy measure the Portland (Ore.) Railway, Light & Power Company is now forging axle bearings instead of using steel castings. The forgings at present cost $4.20 per pair, while even a year ago the steel cost $6 per pair. The oil well required in some of these bearings is cut out with a resistance welder.

Belt Line Recommended for Washington

John A. Beeler Shows How Vast Growth of Army and Navy Clerical Forces Can Be Handled Comfortably

SECTION 10 of the Beeler report on the traffic situation in Washington has just been issued. It is now under the joint consideration of the Army Department, the Navy Department and the Public Utilities Commission of the District of Columbia. It is devoted primarily to a discussion of the best way of providing transportation to and from a number of the large office buildings which the government has been obliged to erect on park grounds, especially on the Mall and in Potomac Park, Washington, to supply offices for the War and Navy Departments, Fuel and Food Administrations, Council of National Defense, Red Cross and War Trade Board. One group of these buildings is at Sixth and B Streets and provides office room for more than 18,000 employees. Another tremendous group of buildings is being completed in the Potomac Park section between Seventeenth and Twenty-first Streets and more than 24,000 people will be located here. These two new groups of buildings are in what were heretofore unimportant sections of the city with limited transportation facilities.



MAP SHOWING ROUTE OF PROPOSED BELT LINE IN WASHINGTON

To serve this district the report recommends the construction of a belt line railway as shown in the map, to connect with the three railway systems of Washington. Existing track can be used to a considerable extent so that of the entire distance around the belt of approximately 6.1 miles, only 1.5 miles will have to be built. The report suggests that the line can be operated in several ways but recommends that the Capital Traction Company operate one track in one direction and the Washington Railway & Electric Company the other track in the other direction. Then the operation of each would be entirely independent of the other and the public would have the option of boarding the first car in either direction. Mr. Beeler adds that the company furnishing the best service would undoubtedly be rewarded with the best patronage.

LETTERS TO THE EDITORS

A Push-Button Car Is Practical

SAFETY CAR DEVICES COMPANY

ST. LOUIS, MO., July 23, 1918.

To the Editors:

I have just noticed the editorial on page 90 of your July 20 issue regarding the "Remote Control or Push-Button Car."

I fully agree with you that there is no reason, mechanically, why the remote control, as outlined, should not be an established fact; such control to include the starting of the car, operation of the brakes, doors, sand, etc. It is only a question of whether the industry would pay the added expense and whether the control could be worked out to be entirely automatic, as you state. No doubt the editorial in question will start some of our railway operators to thinking along the lines suggested. C. P. CASS, President.

Copies of Fare Circular

SIOUX FALLS TRACTION SYSTEM

SIOUX FALLS, S. D., July 28, 1918.

To the Editors:

We have on hand a supply of extra copies of our little paper *On the Cars* which was used so effectively in our recent campaign for a 6-cent fare, and the thought has occurred to us that it might be of assistance to other roads which are engaged in the same endeavor for increased rates if it was brought to their attention. If you think it advisable to put such a notice in the JOURNAL we shall be very pleased to assist the electric railway fraternity by forwarding to them on request copies of the issue mentioned.

R. C. MILLS, Manager.

Charging Batteries from a Shop-Motor Circuit

SELMA TRACTION COMPANY

SELMA, ALA., July 25, 1918.

To the Editors:

The method for charging batteries described on page 69 of your July 13 issue is all right for a large road with facilities for doing things easily and where no account need be taken of the cost. But what is the little road to do when it wants to charge its batteries and must of necessity keep down costs?

The writer has always charged batteries, when necessary (and regardless of what the expert battery people say), on a 500-volt circuit without injury to the batteries. If we have a large battery to charge we put it in circuit on the negative side with the motor that runs the shop machinery. This motor is of 10 hp. and uses about 8 amp. on its average load. This is about right for charging the ordinary starting battery on an automobile. If we have a smaller battery to charge we put it in series with one of the smaller motors in the shop. By charging batteries this way no power is wasted, and the added resistance of the battery is so small that no difference can be noticed in the speed of the motor.

The writer has frequently charged the batteries of a Baker electric automobile by this method when the mercury arc rectifier usually employed for charging it has been out of commission. W. E. NESS.

A Plea From a Minor Official

July 18, 1918.

To the Editors:

The present time, when the electric railway industry is in a state of transition, seems most opportune to bring before the proper officials a subject of vital interest to a number of electric railway employees and indirectly to the companies themselves; that is to say, the remuneration of the minor officials.

It is unnecessary to speak of rising costs to a railway executive, but it might be well to remind him, when it comes to a readjustment of wages, of the situation that confronts one group of men among his working force who are faithfully doing their work but who, being unable to press their case, must accept whatever is offered them.

Most of these men have worked their way up to their present positions by years of hard work. They served their apprenticeship on the cars or in the shops and for their industry and special fitness were advanced later to positions of trust that carried increased responsibilities as well as a larger wage. As they showed further ability they were again promoted, but their wages, in most cases, have not kept pace with their increased duties.

The carmen, on the other hand, backed by their unions, have been increasingly active, and every two or three years have presented their demands and have usually obtained what they sought. Their wages are much higher and their working conditions have improved immeasurably. With each increase to the men the companies usually have given the officials some slight advance, but not in proportion to that obtained by the men under them; in many cases, they have actually received less money. As a result it is increasingly difficult to obtain responsible and efficient employees to take the places of those officials who for any reason have left the organization. In fact, in many instances, when a vacancy occurs and a man from the ranks is advanced he finds that instead of receiving a pecuniary reward for his fitness he will have to take a cut in wages. Of course he then refuses the job unless he is given his car rate. This causes him to look upon the place as being merely of a temporary nature, and he considers that he is conferring a favor by even temporarily filling it. Again dissatisfaction arises among the other employees doing a similar work when they see a newcomer with no other reason except that he belongs to a union being specially favored.

If the service is to be kept at the standard maintained in the past, the office force must not be allowed to drift away nor must the work be allowed to deteriorate. Railroading has a certain fascination that is peculiarly its own and this accounts for the large number of good men still in the service, in spite of the extraordinary opportunities existing in other lines. But it is to be hoped, for the sake of the industry, that the powers that be will see that something besides fascination is necessary to combat the high cost of living and that when further wage increases are considered the minor officials will not be forgotten.

ONE OF THEM.

AMERICAN ASSOCIATION NEWS

Progress on Engineering Association Program

THE Engineering Association committee on subjects met in New York on Aug. 1 and arranged the program for the October meeting. Martin Schreiber, E. R. Hill, C. L. Cadle and E. B. Burritt attended. At the first session there will be an address by an officer of the American, British or French army on engineering or transportation activities in the war zone, followed by discussion. In the first period of the second session the difficulties in the way of securing adequate equipment and supplies, with the remedy therefor, will be covered by an engineer, and a purchasing agent and a manufacturer will present prepared discussion. In the second period there will be an address on war activities in the United States by an officer from one of the departments in Washington, followed by discussion.

In addition to the above features the usual reports of the officers and the executive and nominating committees will be presented.

It is understood that Major-General William J. Snow, chief of field artillery, United States Army, has accepted an invitation to be one of the speakers before the Engineering Association.

Good Fellowship Meeting at Toledo

JOINT company section No. 11 held its closing meeting for the season on June 28, a purely social affair. Music, recitations, dancing, comedy and moving pictures made up the program. A buffet luncheon was served at the close. The section plans to hold a moonlight excursion during the summer and may arrange for a picnic also.

Connecticut and Rhode Island Companies Have Outings

THE Connecticut Company section held its summer outing at Momauguin, near New Haven, on Thursday, July 25. The program included field events and a ball game in the afternoon. The outing of the Rhode Island section was held at the Warwick Club on July 27.

Musical Program at Manila

THE meeting of Company Section No. 5, held at Manila on June 4, was largely occupied with a musical program furnished by the transportation department orchestra. The chairman of the program committee read a list of nine names of members who will present papers at coming meetings.

Reclaiming Old Cars as a War Measure

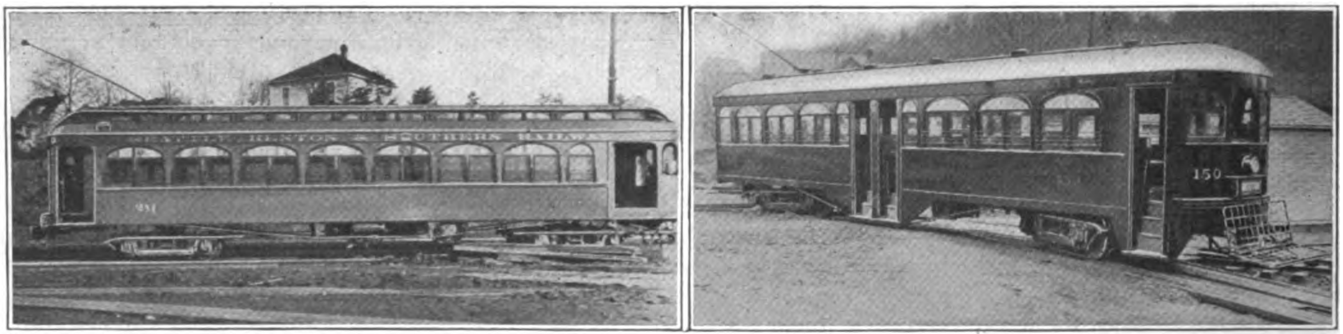
Seattle & Rainier Valley Railway Remodels Two Cars to Provide Better Entrance and Exit Facilities — Larger Wheels Used

By K. A. Schaller
Electrical Engineer and Master Mechanic, Seattle & Rainier Valley Railway

The Seattle & Rainier Valley Railway serves a section of Seattle which contains a large proportion of shipbuilding employees. The shipyards early in the war had contracts for a large number of ships and were rushing the construction work. As more firms began to enter the shipbuilding business the number of employees increased proportionately. This caused added congestion to the already fully-loaded transportation facilities until the necessity for additional passenger equipment became pressing.

Due to war conditions electric railway lines on the Pacific Coast have found it increasingly difficult to secure reasonable deliveries of cars or equipment from Eastern manufacturers, so the needed cars could not be obtained except with long delays. The constantly rising cost of material of all classes prompted this road to make a careful investigation of old equipment to determine whether in the face of the present cost of new replacing equipment it would not be advantageous to reconstruct some of this and bring it sufficiently up to date to warrant placing it in service. The company had on hand two 35-ton, 55-ft. vestibuled passenger and baggage cars with steel underframes. These were of the three-compartment type with passenger, smoker and baggage sections, a cab for the motorman and a vestibule on the rear. The equipment consisted of four Westinghouse-305 motors and K-34 control for single-end operation. The brakes were straight air with D2 compressors.

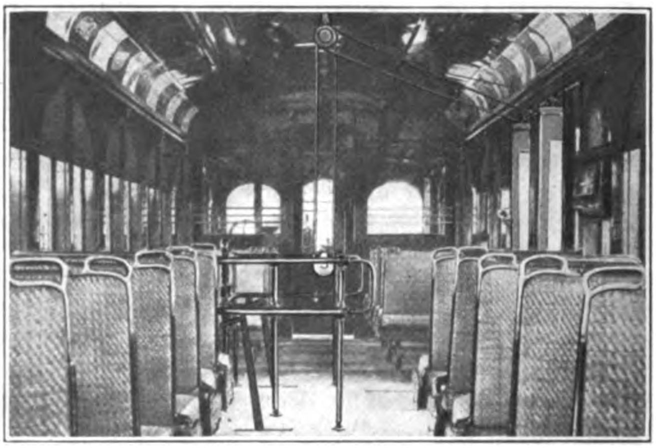
These cars had become obsolete due to the increased schedule speed now used and to the inadequate entrance and exit facilities. The maximum speed could not be increased as vertical clearances necessitated the use of 30-in. wheels with these car bodies. The single narrow entrance and exit increased the loading and unloading time and made the stops exceptionally long. An accompanying illustration shows one of these cars before reconstruction.



VIEWS OF CAR BEFORE AND AFTER ALTERATIONS WERE MADE

In January, 1917, the reconstruction of these two cars was undertaken with the idea of lowering the roofs by cutting off the monitor decks and making arched roofs. The rear vestibules were also closed and a center entrance and exit and a front exit introduced. The original smoking compartment was made a part of the main passenger compartment and the original baggage compartment was converted into a smoker. The cab dimensions were left unchanged except that the right side was closed off to make room for the new front exit.

The opening for the center doors and steps was cut through the wall on one side of the car so as to remove two complete double windows. These window casings, sash, etc., were installed where the baggage doors were removed. In this construction it was necessary to cut but one longitudinal I-beam completely away and to cut off one-half from the top of the next I-beam, making it in effect a T-beam for the length of the well.



PIPING ARRANGEMENT AT ENTRANCE AND CONNECTIONS FOR DOOR OPERATION

In order to retain the strength in the longitudinal sills which were cut, the framework around the doors and steps was constructed of channel and T-iron, the truss rod on that side of the car was lengthened and an additional turnbuckle inserted, and the truss rod was placed in the channel which supports the door and step structure. This maintains the function of the truss rod and gives added bracing to the door and step apparatus.

All the material used for this reconstruction except the new channel and T-iron necessary to build the framework for the doors and steps was taken from the car as originally constructed.

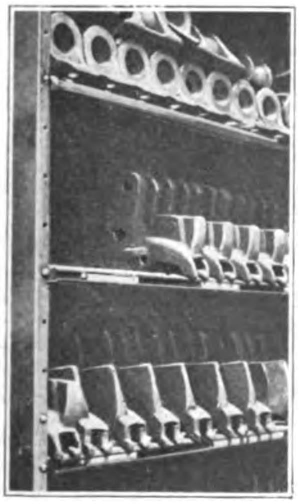
Standing room for about fifteen passengers is possible in the loading well, and a pipe framework with the opening into the car is so located that the passengers must pass the conductor and fare box as they leave the loading well. In using the center doors as exits the conductor controls two openings in the pipe framework which permits quick unloading. All doors are the company's standard for all-steel cars. Those at the center are each made up of two similar sections to each opening, each half being split and hinged. They are operated by the conductor by means of a sprocket and chain through one sectional shaft at the top. The front exit door is operated by the motorman.

As a safety feature a 40-watt lamp was installed over each door. These are connected in series with two lamps in the motorman's cab placed in a box with a red glass. When any door starts to open and the threaded shaft is turned three-quarters of one revolution it releases a spring switch placed on the ground side of the lamps, thus turning them on and warning the motorman that the doors are open and the car must not be moved.

The city ordinances of Seattle require that headlights be dimmed when operating in the city. In compliance therewith two 40-watt lamps illuminating the side roller destination signs together with four lamps in the front destination sign are connected in series with the headlight, thus dimming it. Outside the city the side signs are not needed so these lamps are cut out, thus enabling the headlight to give better illumination.

One of these cars has since been equipped with Westinghouse AMM brake equipment with M22 brake valve which is standard for the company's steel cars. This car is now hauling a trailer during the rush-hour period. The trail car is equipped with AMM trail-car brakes which have all the value of automatic brake equipment with the added advantage of the quick recharge feature. This motor and trailer train have materially relieved the congestion incident to close headway during the rush hour. At a later date the companion car will have a trailer added in the same manner.

Storing Brakeshoe Heads Symmetrically



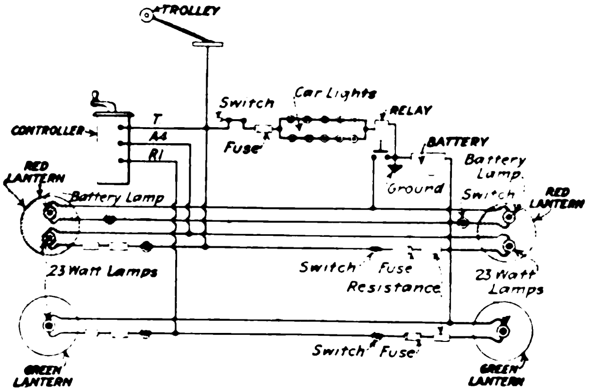
CABINET FOR STORING BRAKESHOE HEADS

IN MANY street railway shops, brakeshoe fittings are stored in a heterogeneous pile in some odd corner, with little or no thought as to convenience in picking out the proper style and size. At the Framingham (Mass.) shop of the Boston & Worcester Street Railway, shoe heads are stored on adjustable metal shelves with as much care as though they were incandescent lamps. "Rights" are not carried in the same compartment as "lefts," there being no apparent saving in space by so doing, and time is saved by grouping similar parts together. Such an arrangement gives a neat appearance to the shop, enables the stockman to tell at a glance what types to order, and saves the repairman much time and labor in making replacements.

Indicating Tail Lights Prevent Accidents and Save Power

REAR OF A CAR OF THE CLEVELAND RAILWAY EQUIPPED WITH INDICATING TAIL LIGHTS

THE cars recently ordered by the Philadelphia Rapid Transit Company for service to the Hog Island shipyard are equipped with Nichols-Lintern indicating tail lights. These consist of two lanterns, one provided with a red lens, the other with a green lens. The lanterns are mounted on the ends of the car, one on either side of the trolley catcher. The circuits controlling the lamps in these tail lights are interlocked with the control apparatus so that a red light is visible when the car is stationary or coasting with power off. Both red and green lights are burning when the controller is in series or half-speed position. With the controller in full-multiple or full-speed position the green light alone burns. The accompanying diagram shows the connections necessary to accomplish these results.



WIRING DIAGRAM FOR INDICATING TAIL LIGHTS WITH AUXILIARY BATTERY SYSTEM

These tail lights are arranged with an auxiliary battery circuit which supplies current to a lamp in the red lens in case the main power supply should fail, as when the trolley leaves the wire.

The safety and economical features claimed for this device are: In congested sections cars can operate closer to the car ahead without danger of accidents. By having an indication as to the operation of the car ahead, the motorman is able to coast more and have less need for applying his brakes than otherwise. Automobile and truck drivers behind cars equipped with these indicating tail lights are able to regulate their speed to that of the car and thus avoid collisions while also saving time.

Recent Happenings in Great Britain

Need for Economies Becomes More Pressing as War Goes On—Operating Results in London and Glasgow

(From Our Regular Correspondent.)

The Sheffield Corporation bill has received the sanction of the House of Commons. Evidence was given in support of the clauses to enable the corporation to carry goods and parcels on its tramway system. At the inquiry the general manager of the Huddersfield Corporation Tramways said that in his view the carriage of goods and parcels by tramways was the most economical method of transport, and he considered the powers sought by the Sheffield Corporation were in the interests of the city. Huddersfield's maximum charge for the carriage of coal by tramway is 3d. per ton-mile. In the Sheffield bill it was proposed to charge a maximum of 2d. per ton-mile.

WOMEN DRIVERS OPPOSED

The Sheffield tramways and motors committee recommends that should it be necessary to employ women as drivers of cars they should be subject to the same conditions as regards pay, etc., as those under which men now work. The questions of a 12½ per cent increase upon total earnings of tramway employees and equal pay for women have been the subject of a conference, and the executive of the Council of Municipal Tramway Authorities, not being able to advise the granting of the requests, has signified its willingness to submit them to arbitration. With a view to economizing, the tramway committee recommends: (1) blotting out of "Stop-by-request" stations in as many places as possible; (2) requesting the public to refrain from overcrowding and ladies to shop at quiet times of the day; and (3) motormen to economize in every direction.

With economy as its watchword, the Liverpool tramways committee is carrying out more reforms. The latest is the abolition of a number of stops on the various routes. This is being done at the instance of the Coal Control Board. About 300, or roughly 20 per cent of the stops on the Liverpool system, are being abolished. The authorities have aimed at leveling up the distances between the different stops, so that they will average about 200 yards.

WOULD MODIFY REQUIREMENTS

The select committee on tramways (statutory requirements) has issued its report. It recommends that the Board of Trade be empowered by legislation to permit, until two years after the war, the modification of statutory requirements with regard to the charges for the conveyance of traffic on tramways and railways constructed wholly or mainly on public roads in the case of undertakings the financial circumstances of which are proved to have been injuriously affected by causes arising out of the war. Evidence was given that wages had increased from 60 to 100 per cent and the cost of materials from 100 per cent to more than 200 per cent on pre-war rates. In addition there was the increased cost of fuel, and consequently of power, coupled with restrictions on supply. Statistics were supplied showing that out of eighty municipal undertakings only twenty-eight are charging maximum fares to ordinary passengers, and forty-four maximum workmen's fares.

TRAMWAY BILL GOES TO HOUSE

After three days' consideration, the select committee to which the House of Commons referred the London United Tramways bill, has passed the preamble. The bill was unusual in respect that it asked Parliament to revoke or modify the provisions by which the company had been enabled to secure Parliamentary approval to its schemes. For some time the undertaking of the London United Tramways has been in the hands of a receiver for the debenture holders, and, at present, the tramways cannot earn enough to pay interest on the debenture stock. The bill was promoted as a *modus vivendi* by which the public service given by the company's tramways might be continued and the physical property placed promptly on a satisfactory basis. The scheme of the bill included a drastic reduction of the capital, an increase of the fares, which had been found to be impracticable and unworkable, a postponement of the date, and an alteration of the terms of purchase by the local authorities. The part of the company's undertaking inside the London County Council area and its power station at Chiswick had been acquired by the London County Council. By the clause agreed to accumulated surplus revenue is to be applied to putting the system into good condition and repair. The bill will be reported to the House.

INCREASING RAIL LIFE

Important experiments are being carried out by the Leeds tramways committee in order to produce a harder wearing surface on the tram rails in the city. The treatment consists in hardening the rail surface by heating it with an oxy-acetylene jet, and then quenching it with cold water. By this means the normal "pearlite" structure of the steel is transformed to a "sorbitic" structure to a depth of ¼ in. to ⅜ in. The temperature to which the rail must be raised before quenching is, roughly, 700 deg. C. The practicability of the process depends partly on the nature of the adjoining paving. It is doubtful if the treatment would be economically sound in normal times, as the process is both costly and inconvenient, but at the present time when new rails are so difficult to obtain, any device which will prolong the life of the existing plant is worthy of consideration.

In the annual tramway estimates for 1918-1919 of the London County Council the total receipts are given as £3,321,750, and the working expenses are £2,593,140, showing a surplus on working of £728,610. This sum, with interest and sundry rents, makes up a total working surplus of £751,889. The charges against this working surplus to be deducted amount to £739,774, leaving a net surplus of £12,115. The estimates, which are to be brought up in a revised form, are based on the assumption that the car mileage during the year will be 50,000,000. The highways committee, reporting on the estimates, says that the realization of the improved revenue required in 1918-1919 is dependent on the revision of fares. The new scale was applied on the tramways south of the Thames in May, and early in June certain fare changes were made on the lines on the north side of the river. Owing, however, to the time occupied in negotiations with other undertakings concerned in through running services, the complete fare revision has not yet been brought into operation. The estimates contain provision of £204,000 for the payment of allowances to officers and employees on war service.

GLASGOW SURPLUS A RECORD

At a recent meeting of the tramways committee of the Glasgow Corporation the accounts for the year ended May 31 were submitted. They showed that the surplus available for handing over to the common good was the record one of £177,552, compared with £160,985 a year ago. The traffic receipts were £1,404,110, against £1,245,507 a year ago, while sundry receipts brought in £8,524 against £14,607, making the grand total £1,412,635, compared with £1,260,115 for the previous year. The traffic expenses, owing to increased wages, material and fuel, were £527,151, against £395,735, and as the increase in wages applied only to a small part of the past year, these items will again be greatly increased in the current year's accounts. The expenditure on dependents due to the war was £93,120, which compared with £92,645 a year ago. The total expenditure was £1,044,183, in comparison with £838,065, the respective balances carried to the general account being £368,452 and £422,049.

The report of the British Electric Traction Company for the year ended March 31 makes a slightly improved showing over that for the preceding period, though war conditions have not been more favorable to tramway undertakings. The return from holdings in associated concerns amounts to £210,400, as aginst £205,300, representing 4.93 per cent as against 4.79 per cent on the book value. The net profit comes out at £118,200, as compared with £108,700. The dividend on the ordinary stock is once more 3 per cent, and after placing £21,200, as against £15,000, to reserve, £112,100 goes forward, or £14,500 more than twelve months ago. Investments now figure for £4,263,000 and the reserve stands at £450,000. A. C. S.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Interest for City Suggested

Manager at Tacoma Outlines Work Necessary and Shows City Way to Obtain Substantial Interest

In a recent report to the citizens' committee of twenty-five, Louis H. Bean, manager of the Tacoma Railway & Power Company, Tacoma, Wash., suggested the financing of further betterment of the railway system by the city, for an equity interest in the company; city control of operation of the system, and a plan of gradual acquisition of the entire properties of the company by the city.

$1,615,000 NEEDED FOR IMPROVEMENTS

Included in the report was a list of extensions and betterments which in the opinion of the company managers are necessary to place the system on a completely satisfactory basis with regard to service. This list was made by the management in reply to a request from the committee. The estimated cost of the suggested improvements and extensions is placed at $1,615,000.

Proceeding from the assumption that the committee will continue the investigation it has commenced as agreed in the contract for temporary service, that is, establish a fair value for the property and a suitable return on capital, Mr. Bean submits a general plan for making the improvements recommended and giving the city control and eventual ownership of the system. Mr. Bean points out that the city could acquire possession of the property by getting an equity for financing betterments and increasing this equity by net returns after giving the company a fair return or by deeding the system to the city, the company leasing the system back at an agreed valuation and percentage of profit, the net earnings for the city and such taxes as were saved to go toward the purchase.

COMPANY'S PROPOSAL EXPLAINED

In submitting these proposals, Mr. Bean said:

"In order that the interests of the city may be properly protected in the matter, and that the city may proceed on a plan of acquiring the property, we recommend that the city furnish the money for improvements as outlined, acquiring an equity in the property for the amount advanced. The companies will submit direction of their operation to the City Council, or to any committee of citizens or board agreed upon for that purpose, the city granting long-time franchises or entering into a long-time contract in lieu of franchises for that purpose, all net earnings from the whole property in excess of the amount required for depreciation and a fair return on our investment to go to the city to build up a fund for the gradual acquisition of the property by the city, such extensions as may be found necessary by the City Council, committee or board, to be made on the same basis, that is, the city furnishing the money and acquiring equity in the property.

"Or the companies will agree, on the final report of committee, in case said findings and recommendations are adopted by the city and the companies, provided some legal difficulties in connection with the mortgage can be overcome, to deed the property to the city of Tacoma, leasing the same back from the city at the valuation so fixed, all net earnings over depreciation and percentage agreed upon to go to the city toward purchase price of property. The taxes thus saved to the property would then go toward purchase of property by the city."

War Labor Policies Fixed

The National War Labor Board on July 18 issued an announcement in connection with the labor disturbances in munitions plants at Bridgeport, Conn., in which it declared that the War Labor Policies Board was not opposed to changes in wage scales during the war but had adopted the principles and policies of the War Labor Board including the following:

1. The right of the workers to organize into trade unions and to bargain collectively with their employers.
2. The continuance of existing union standards where they have heretofore applied, plus the right of the workers to obtain improved conditions, wages or hours or work through decisions of the National War Labor Board or any umpire it may select in specific cases.
3. Equal pay for equal work, whether performed by men or by women.
4. Recognition of the basic eight-hour day where a law requires it and settlement of the question of hours in other cases with due regard to governmental necessities and the welfare, health and proper comfort of the workers.
5. Maintenance of the maximum of production.
6. Due regard for the labor standards, wage scales and other conditions in particular localities in fixing wages, hours and conditions of labor.
7. Declaration of the right of all workers to a living wage, insuring the subsistence of each worker and his family in health and reasonable comfort.

Wage Increase in Brooklyn

Sixth Increase in Five Years, Effective On Aug. 2, Adds $1,100,000 to Annual Payroll

Increases of wages to its transportation employees were announced on July 26 by the Brooklyn (N. Y.) Rapid Transit Company. The percentage of increase ranges from 10 to 25 per cent. The statement made by Timothy S. Williams, president of the company, follows, in part:

PRESIDENT WILLIAMS EXPLAINS

"In order to retain as far as possible the services of its faithful and experienced men in the transportation departments, and to attract the better class of new men seeking employment, the companies of the system have decided that they will anticipate an increase in the average rate of fare (either by official authorization or by reinstating fares previously charged and authorized by franchises and the law), by making substantial increases in the wages of their transportation men.

"The present financial condition of the Brooklyn system does not justify any increase in wages at this time, but the directors believe that it would be a serious mistake not to make every effort possible to preserve the valuable asset which both the company and the public possess in the large proportion of tried men in its service.

"The increase will cost the company on the basis of the number of cars now operated in the neighborhood of $1,100,000 a year. The percentage of increase ranges from 10 to 25 per cent, and the principle upon which the rates were advanced has been generally that followed by the Federal Wage Commission in its recent recommendation for increase of wages to steam railroad employees, namely, consideration of the increased cost of living.

SIX INCREASES IN FIVE YEARS

"This is the sixth increase in wages of transportation employees in little more than five years. The new rates on the surface lines range from 30 cents to 40 cents an hour for motormen and conductors, and the new rates for motormen on the elevated and subway lines range from 40 cents to 50 cents an hour. Inasmuch as motormen for the elevated and subway lines are taken from the best men on the surface lines, this means that a surface motorman can look forward to a 50-cent rate through promotion to elevated and subway service. The rates of other transportation employees are increased proportionately."

The increases went into effect Aug. 2.

Service at Cost for Chicago

New Grant Will Likely Provide This With Properties in Hands of Public Trustees

Service at cost would seem to be assured as the basis of a settlement of the franchise negotiations in Chicago. The public trustee plan recommended by Special Counsel Fisher has been accepted by all parties, and at a meeting of the local transportation committee on July 29 the final draft of the ordinance was all but perfected.

The general features of the proposed ordinance have been set forth from time to time in the ELECTRIC RAILWAY JOURNAL, and although there has been a complete reversal of position in accepting the trustee plan the principal changes are in the financial provisions.

NINE PUBLIC TRUSTEES TO CONTROL

It is now proposed to form a corporation, "not for pecuniary profit," to be known as the Chicago Traction Company, under which a board of nine public trustees would take over for operation all the properties of the surface and elevated lines. The first board would be selected by the companies subject to the approval of the City Council. The members would continue in control until 1927. The method of selecting their successors would be decided by the City Council after that date. It is also proposed to secure State legislation for home rule so that the trustees would have all authority now held by the utilities commission.

The latest financial plan provides that all new money and all refunding is to be paid for at actual cost. Of the present capital account of the combined companies 60 per cent would be covered by bonds at 5 per cent until refunded. The remaining 40 per cent would be in the form of preferred stock with a guaranteed return of 7 per cent during the life of the ordinance and an extra allowance of 1 per cent during the average life of the existing grants, or until July 1, 1932. This would give an average return of 6.2 per cent up to 1932 and 5.8 per cent thereafter on all securities, or an average of 5.96 per cent for the next thirty years. The companies had previously insisted on a return of 6.35 per cent, and the original offer under the trustee plan was 5.6 per cent.

The companies were conceded another point by adding to the total valuation an item of $542,104 which is for real estate owned by the elevated lines but not used for railway purposes. This makes the total elevated valuation about $71,000,000, and the capital account of all companies as of June 30, 1916, about $218,418 000.

PLAN AN INDETERMINATE FRANCHISE

Another change in the ordinance is the elimination of the thirty-year grant. The arrangement now proposed is for an indeterminate franchise with the right of the city to purchase and take over all the property at any time by paying the capital account. It is expected that opposition which previously existed to changing the state law in favor of grants longer than twenty years will be removed because of the greater confidence of the public in a plan which does away with private control. All the opposing elements appear to have been silenced by the latest proposal, and even the prospect of higher fares which may be necessary to furnish service at cost has not brought forth any serious criticism.

The ordinance is scheduled to go to the City Council on Aug. 5. If it meets with approval there and at the public referendum in November, the State Legislature will be asked for certain new laws next January. Other necessary steps for approval of the measure might defer the effective date until early in 1920, at which time the financial market is expected to be in shape to take care of the program for raising great sums of money.

Wage Demand Made in Providence

The demands of the union for an advance in wages approximating 62 per cent have been refused by the federal trustees of the Rhode Island Company, Providence, R. I. The heads of the union were formally notified on July 12 that the granting of the increase is impossible at present.

The demands of the men were presented to the federal trustees by James H. Coleman, business agent of the union. Theodore Francis Green, secretary of the board, stated that the demands were entirely unlooked for, inasmuch as an agreement reached last May, when increases aggregating $300,000 a year were granted, was supposed to continue in force until May 31, 1919. The increase requested would amount to approximately $1,500,000 a year.

Business Agent Coleman has admitted that there is an agreement between the union and the railroad company which should be in force until May 31, 1919, but declares that the men cannot live on the present wage.

An agreement has been reached whereby the matter will be tentatively submitted to the Federal board in Washington, but the Rhode Island Company has reserved rights in the matter by consenting to let the War Board handle the dispute only on condition that the status of the company, financially and otherwise, be taken into consideration.

Wages Increased in Fargo

The wages of the trainmen of the Northern States Power Company, at Fargo, N. D., have been increased to the following scale: first six months, 26 cents an hour; second six months, 27 cents; third six months, 28 cents; fourth six months, 29 cents; after twenty-four months, 30 cents. On Jan. 1, 1917, an increase of 1 cent an hour was made and on Nov. 16, 1917, a further increase of 2½ cents was made. The total increase since Jan. 1, 1917, amounts to 6 cents an hour, or 25 per cent.

No Minimum Wage Ruling

War Labor Board Will Decide Individual Cases on Basis of Particular Facts Involved

The War Labor Board on July 31 decided against establishing at this time a minimum wage to be applied generally throughout industry. It announced that the determination and the application of a fair living wage will be made in each case on the facts involved.

At the same time the board adopted a resolution, written by William H. Taft and submitted jointly by Mr. Taft and Frank P. Walsh, the joint chairmen, in which the attention of capital and labor is invited to the wisdom of composing their differences upon the basis of the principles and policies of the board as approved by the President in his proclamation of April 8.

The resolution as passed unanimously by the board follows in part:

> Resolved: That this war is not only a war of arms, but a contest in industrial resourcefulness and energy.
>
> That the period of the war is not a normal period of industrial expansion, from which the employer should expect unusual profits or the employees abnormal wages; that it is an interregnum, in which industry is pursued only for common cause and common ends.
>
> That capital should only have such reasonable returns as will assure its use for the world's and nation's cause, while the physical well-being of labor and its physical and mental effectiveness in a comfort reasonable in view of the exigencies of the war should likewise be assured.
>
> That this board should be careful in its conclusions not to make orders in this interregnum, based on approved views of progress in normal times, which, under war conditions, might seriously impair the present economic structure of our country.
>
> That the declaration of our principles as to the living wage and an established minimum should be construed in the light of these considerations.
>
> That for the present the board or its sections should consider and decide each case involving these principles on its particular facts and reserve any general rule of decision until its judgments have been sufficiently numerous and their operations sufficiently clear to make generalization safe.

Would Pool Interests Now

The Public Service Commission for the First District of New York has approved and sent to the Board of Estimate of New York City a form of agreement to be entered into by the city with the Interborough Rapid Transit Company modifying dual subway contract No. 3, so as to provide for the commencement of the forty-nine-year lease of the subways to the Interborough to begin on Aug. 1, 1918. Under the dual system contracts the Interborough has a forty-nine-year lease of the underground lines assigned to it, including the original Interborough subway. One of the terms of dual contract No. 3 was that the lease of the original subway should be abbreviated and made coterminous with the leases for the new subway lines which have been constructed since, and which are to be operated by the Interborough in connection with the old lines. By the signing of this agreement the lease will go into effect and as a result of the pooling of the earnings, the city will begin to share profits months earlier than would otherwise be the case.

War Labor Board Grants 48-Cent Maximum

This Award Made for Surface Lines in Chicago, Cleveland and Detroit—Maxima in Smaller Cities 42 Cents and 45 Cents—Board Asks President Wilson to Urge Special Legislation Looking to Appointment of Federal Agency to Raise Fares Where Necessary

Wage increases ranging from 35 to 65 per cent were granted on Aug. 1 by the War Labor Board to the employees of twenty-two electric street and interurban railways in various parts of the country. The awards were handed down just as this issue was going to press, and consequently the full details cannot be published until later. From the preliminary data released by the Committee on Public Information, however, a general idea of the scope of the decisions can be secured.

The wages of surface-line trainmen in the larger cities of Chicago, Cleveland and Detroit have been fixed at rates running from a minimum of 43 cents an hour to a maximum of 48 cents an hour. The maximum in the case of the Chicago Elevated Railways is 50 cents an hour. In the smaller cities, where the cost of living is less, the new rates vary in general from a minimum of 38 cents an hour to a maximum of 42 cents an hour, or from a minimum of 41 cents an hour to a maximum of 45 cents an hour. In a few cases the interurban wage rate has been put 1½ to 2 cents an hour higher than the new city rate near by. The general minimum for trackmen, pitmen, oilers and similar employees seems to be 42 cents an hour.

FEDERAL AID IS NEEDED

In announcing these increases, the War Labor Board said that it had recommended to President Wilson that special legislation be enacted by Congress to enable some executive agency of the federal government to consider the financial condition of the electric railways of the country and raise fares in each case in which circumstances require it.

In explaining this proposal the board said:

"We believe it to be a war necessity justifying federal interference. Should this be deemed unwise, however, we urge upon the local authorities and the people of the locality the pressing need for such an increase adequate to meet the added cost of operation.

"This is not a question turning on the history of the relations between the local electric railways and the municipalities in which they operate. The just claim for an increase in fares does not rest upon any right to a dividend upon capital long invested in the enterprise. The increase in fare must be given because of the imminent pressure for money receipts now to keep the electric railroads running so that they may meet the local and national demand for their service.

"Overcapitalization, corrupt methods, exorbitant dividends in the past, are not relevant to the question of policy in the present exigency. In justice the public should pay an adequate war compensation for a service which cannot be rendered except for war prices.

"The credit of these companies in floating bonds is gone. Their ability to borrow on short notes is most limited. In the face of added expenses which this and other awards of needed and fair compensation to their employees will involve, such credit will completely disappear. Bankruptcy, receiverships and demoralization, with failure of service, must be the result. Hence our urgent recommendation on this head."

CASES DECIDED SEPARATELY

The wage increases awarded by the War Labor Board were on a sliding scale and varied, being based on local conditions and facts peculiar to the individual cases. In practically all instances, the awards were made retroactive. In all cases where employees are compelled to work in excess of the period of their regular runs the companies must pay overtime on the basis of time and a half.

While not going deeply into the question of labor unions, the board, in cases where the right of employees to organize was an issue, ordered that workers be protected in the exercise of their right to join trade unions without fear of molestation by the employer.

A step to accelerate the method of graduating men from one wage classification to another also was taken by arbitrarily fixing the limit of apprenticeship on cars at one year, with a probationary period of three months.

REMARKS IN PARTICULAR CASES

Regarding the Chicago companies the board said:

"The award in this case is an increase in maximum wages from 39 to 48 cents an hour. It was required by an increase in the cost of living and is not more than fair. It does entail on the companies, however, a heavy increase in their operating expenses. The showing made by the companies to us clearly discloses that in order to enable them to render adequate service the fares they are permitted to charge should be substantially increased."

The increase in the case of the International Railway was conditioned upon the continuance in force of the rate of fare recently granted by the City Council. Should this rate be revoked then the wage increases shall automatically terminate.

The board in the case of the Columbus Railway, Power & Light Company ordered that there be no interference with the employees' right to organize, and that four men who previously had been discharged by the company be reinstated.

In awarding the Detroit increase, the board said that it was substantial but fair. The board, however, recommended a raise in fare. Permission was also given for the employment of women or negro men if the necessity arises. Sunday and holiday runs in Detroit are to be no more than eight hours, the board decided, while night runs will be eight hours with ten hours' pay. The company's open shop policy is to be continued and is "not to be deemed a grievance" by employees.

A wage of $17.50 per week is to be guaranteed for the first year and $20 a week thereafter by the Public Service Railway. Regarding other employees the board ordered that men should be paid in accordance with the actual platform time that they work, and their request for a ten-hour day was denied.

48-CENT MAXIMUM

The list of awards made by the War Labor Board follows:

Chicago Surface Lines—Motormen and conductors, first three months, 43 cents; next nine months, 46 cents; thereafter, 48 cents; effective on Aug. 1.

Chicago Elevated Railways—Motormen, extra, first three months, 44 cents; next nine months, 45 cents; thereafter, 50 cents; motormen, regular, first year and thereafter, 50 cents; effective on Aug. 1.

Chicago & West Towns Railway—Motormen and conductors, 43 to 48 cents per hour, effective Aug. 1.

Cleveland Railway—Motormen and conductors, 43 to 48 cents per hour, effective June 1.

International Railway, Buffalo, N. Y.—Motormen and conductors, 43 cents an hour for the first three months, 46 cents for the next nine, and 48 cents thereafter. Operators of one-man cars, 5 cents an hour above this scale. Engineers on freight cars, for the first three months 45 cents an hour, the next nine months 48 cents, and thereafter 50 cents. Conductors on freight cars, 44, 47 and 49 cents an hour. Brakemen on freight cars, 41, 44 and 46 cents an hour. Increases retroactive to June 1.

Detroit United Railway—Motormen and conductors, 43 to 48 cents an hour.

45-CENT MAXIMUM

Public Service Railway, Newark, N. J.—Motormen and conductors, first three months, 41 cents an hour; next nine months, 43 cents an hour and thereafter 45 cents an hour.

Scranton Railway—Motormen and conductors, first three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter 45 cents per hour.

Columbus Railway, Power & Light Company—Motormen and conductors, 41 to 45 cents an hour, effective July 1, 1918.

Evanston (Ill.) Railway—Motormen and conductors, 41 to 45 cents an hour, effective Aug. 1.

Omaha & Council Bluffs Street Railway—Motormen and conductors, 41 to 45 cents an hour; minimum for other employees, 42 cents an hour, effective July 17.

East St. Louis lines, East St. Louis, Ill.—Motormen and conductors, 41 to 45 cents an hour; interurban, 47 cents an hour, effective July 1.

Schenectady Railway—City lines, motormen and conductors, 41 cents an hour for the first three months; 43 cents for the next nine and 45 cents thereafter. On interurban lines, 46½ cents an hour.

New York State Railways (Rochester)—City lines, the same as for Schenectady; interurban lines, 47 cents an hour, and the West Shore Railway, 50½ cents an hour.

MAXIMUM OF 42 CENTS OR LESS

Cleveland, Painesville & Eastern Railway and Cleveland, Painesville & Ashtabula Railway—Motormen and conductors, 38 to 42 cents an hour.

Cleveland, Southwestern & Columbus Railway—Motormen and conductors, 38 to 42 cents per hour; other employees, minimum of 42 cents an hour, effective April 1.

Cleveland & Eastern Traction Company—Motormen and conductors, 38 to 42 cents an hour, effective May 1.

Galesburg Railway, Lighting & Power Company—Motormen and conductors, 38 to 41 cents an hour, effective July 13.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—Motormen and conductors, first three months, 38 cents an hour; next nine months, 40 cents an hour; and thereafter 42 cents an hour.

New Orleans Railway & Light Company—Motormen and conductors, 38 to 42 cents an hour, effective July 1.

Joplin & Pittsburgh Railway—Motormen and conductors, 38 cents an hour for the first three months, 40 cents an hour for the next nine months and 42 cents an hour thereafter.

United Traction Company, Albany, N. Y.—Minimum wage of 40 cents an hour.

Commissions Ask Federal Advice

War Committee Requests President Wilson to Appoint Federal Administrator or Board to Recommend Railway Relief Without Disturbing Local Regulatory Powers

President Wilson has been asked by the war committee of the National Association of Railway and Utility Commissioners to appoint a federal electric railway administrator or board to aid commissions and municipalities by recommendation and advice in assuring the maintenance of adequate rates and service. While recognizing that electric railways need assistance, the regulatory association opposes the idea of direct federal control over local utilities and asserts that the powers of commissions or municipalities should not be disturbed except as these are voluntarily subordinated to federal recommendations in this emergency period.

RAILWAY EFFICIENCY MUST BE MAINTAINED

The request to President Wilson is contained in a communication signed by Charles E. Elmquist, president of the association, and submitted on July 3. This communication reads in part as follows:

"The committee fully recognizes, as must every open-minded analyst of the conditions confronting public utility service, that the war has brought sharp advances in operating cost, a necessity for readjusting wage scales upwards, and severe inroads upon the revenues ordinarily applied to the upkeep of the property and the payment of some degree of return to the investors. The requirements of the war situation have, in many instances, made abnormal demands upon the facilities and resources of the local electric lines. Almost everywhere it is true that the maximum efficiency of the nation in war-time industry would be seriously menaced by the breaking down or the abridgement of service.

"It would seem clear that whatever action is taken under federal auspices or otherwise should properly recognize that each application for an increase in rates or a curtailment in service should be separately considered and determined on its own merits by a tribunal representative of the public interest. Not every application which is made should be granted. Not every rate should be increased above the figure charged before the war. No way should be opened whereby the existence of a war-time emergency could be made a cloak or cover for an effort to rehabilitate enterprises unprofitable and foredoomed to failure before the war started. No federal action should seek to prompt an increase greater than is commensurate with the burdens placed upon the particular utility by the war.

"It would seem equally clear that the need of an electric railway for a rate yielding more revenue than that afforded by the rate permitted in the existing franchise does not in itself establish that, through federal recommendation or otherwise, such a change in the franchise rate should be brought about without a change in other franchise terms. That, again, is a question as to which the merits and equities of the particular situation ought to be weighed and determined by those most competent to know of them and to deal with them."

FEDERAL AID SHOULD BE ONLY ADVISORY

In conclusion the committee stated its suggestions to President Wilson in the following words:

"The special war committee is of the opinion that there is no provision or decision of statute which can be construed to empower the federal government to fix the rates of utilities except where they are taken over and operated by the government as a war measure, and even in such cases the right of the national government to fix intrastate rates would be open to question. But at this time we are considering methods of administration rather than questions of authority. We feel that the national emergency calls for action.

"There is nothing objectionable in the suggestion that you appoint a national administrator of electric railways, whose power and duty shall be the crystallizing and expression of the national view and interest as to wartime conservation of this essential public service.

"Therefore we respectfully advise:

"1. A national administrator or board of three, with power of recommendation, advice or request to the state and municipal authorities.

"2. No disturbance of the rate and service powers of the state commissions or the contractual powers of the municipalities, except as the state or municipal authorities may subordinate these to the federal recommendations for the emergency, as we believe would almost universally be done.

"3. Use of the state commissions by the federal administrator or board for all purposes of inquiry, investigation, ascertainment and report of facts, and co-operation in recommendations, where needed, to the state or local authorities.

"Any increases granted should, of course, be for the war period only. The foregoing machinery as to increases in rates should be available also to accomplish betterments in service, to meet the needs of workers in war industries or for the general public."

"H" System Subway Service Started

On Aug. 2 the Interborough Rapid Transit Company in New York City began subway operation under what is termed the "H" plan. This involves such a combination and separation of the old and new subway lines as to form distinct East Side and West Side systems, furnishing through service north and south. Connection between the two is provided by a transfer shuttle service on Forty-second Street between Times Square and Grand Central Station, and the old through service via Fourth Avenue, Forty-second Street and Broadway is discontinued.

The inauguration of the new through services was celebrated by a meeting at the Hotel Astor on the evening of Aug. 1 after a special train carrying the guests of the Public Service Commission had made the circuit of the Fourth Avenue and Seventh Avenue lines from Grand Central Station to Times Square with Mayor John F. Hylan acting as motorman. The rapid transit situation in the city was covered from various angles in addresses by Charles B. Hubbell, chairman of the Public Service Commission for the First District; Mayor Hylan; Oscar S. Straus and William R. Willcox, ex-chairmen of the commission; George McAneny, former president of the Board of Aldermen; Theodore P. Shonts, president of the Interborough Rapid Transit Company, and A. E. Marling, president of the New York Chamber of Commerce.

Milwaukee Electrification Proceeding

The electrification of the lines of the Chicago, Milwaukee & St. Paul Railway, between Othello, Seattle and Tacoma, is proceeding so rapidly that service may be expected within less than one year, according to C. A. Goodnow, Chicago, vice-president in charge, who recently returned to Seattle.

The eight substations are nearing completion, and by Aug. 15 will be ready for the electrical apparatus. The stations will cost approximately $200,000. The trolley, transmission and other copper wires needed will be drawn at a new wire mill which has been constructed by the Anaconda Copper Mining Company at Great Falls. Stringing of wires will begin on Aug. 11 at Hyak, just east of the summit of the Cascade Mountains, and at Rockdale, just west of the summit.

It is expected the locomotives will be delivered during the spring of 1919. They will be tried out in the electric zone in Montana before being brought to the coast.

Wants Provision for War Workers

Two government officials appeared before the Council and citizens' advisory committee on street railways at Cincinnati, Ohio, during the week ended July 27 to urge that in the proposed revised franchise to the Cincinnati Traction Company, provision be made for ample facilities for accommodating munition workers, even at the expense of an increase in the rate of fare. They were Charles L. Harrison, district chief of the United States Ordnance Department, and Capt. T. F. Geraghty, of the Ordnance Department. They declared that good street railway facilities are necessary to keep production of munitions up to the standard.

The committee assured the officials that the revised ordinance would make it possible for the company to pay its men higher wages and thus insure the employment of a sufficient number to operate the cars. Company officials had complained of difficulty in securing men under present conditions.

News Notes

Wage Request Met.—The Montreal (Que.) Tramways has acceded to the request of its employees for higher wages. For a time it appeared as if the wage negotiations might fail.

Increase in Wages in Easton.—The conductors and motormen in the employ of the Northampton, Easton & Washington Traction Company, Easton, Pa., have received an increase in wages, amounting to 2 cents an hour. Under the new schedule the first-year men will receive 30 cents an hour. The five-year and over men will receive 36 cents an hour.

Wage Increase for Municipal Employees.—Employees of the municipal railway in Tacoma, Wash., have been conceded by the Tacoma Railway & Power Company, which operates the line, ten hours' pay for eight hours' work. Before the recent raise in wages, the employees working split shifts were allowed ten hours' pay for six or seven hours' work.

Week-End Industrial Conference.—A conference whose theme will be "Human Relation and Betterment in Industry and Transportation During the War" will be held at Silver Bay on Lake George, N. Y., Aug. 9 to 11. H. H. Westinghouse is chairman of the promotion committee. Horace E. Andrews, president of the New York State Railways, will preside at the meeting on the evening of Aug. 9.

Service-at-Cost Agitation.—A movement is on foot in the Twin Cities for a joint cost-of-service franchise for the Twin City Lines. The Mayors of Minneapolis and St. Paul and other officials do not seem to be very favorably disposed toward the Twin City Rapid Transit Company's request for a 6-cent fare and the whole matter is to be threshed out at conferences with the railway officials. The first joint municipal official conference has taken place.

No M. O. Planks in New York.—The New York Democratic State Convention rejected the Hearst plank declaring for public ownership of public utilities and recited merely that cities "ought" to have the right to enter upon public ownership if they desired. The Republican Convention was silent on the subject. Col. Theodore Roosevelt, who addressed the Republicans, declared it would be very unwise to disturb the present control of public utility properties.

Men Ratify Wage Agreement.—At a conference held recently at the office of H. S. Newton, manager, at Parkersburg, W. Va., between officials and representatives of the employees of the Monongahela Valley Traction Company the contract concerning the recent 20 per cent increase in wages allowed employees of the local division was signed by the men representing the employees with only a few minor changes. The contract has now been sent to Fairmont for the signature of the company officials, when it will become effective.

Seattle Inquiry Under Way.—The Public Utilities Department of Seattle, Wash., has begun an investigation of the books of the Puget Sound Traction, Light & Power Company to obtain data with which to determine the amount of increased earnings to which the company is entitled in the proposed plan of bettering railway service. Superintendent of Public Utilities Murphine will supervise the work, which will be done by employees of the city comptroller's office, aided by employees of Mr. Murphine's office. It is expected that two weeks' time will be required to complete the work. The plan under which this inquiry is being conducted was referred to at length in the ELECTRIC RAILWAY JOURNAL for July 27, page 166.

Butte Electricians at Fault.—The arbitrators appointed to adjudicate the differences between the Butte (Mont.) Electric Railway and the International Brotherhood of Electrical Workers, have found, that if the company violated the contract between it and the union in permitting a subforeman to remove and replace burned out coils at the Florence Street substation it was at most a technical violation. The arbitrators further found that the union in imposing a fine of $100 without prior notice to the company failed to conform to the provisions of its contract requiring that any difference arising over the interpretation or application of any part of the contract be referred to arbitration. The electrical workers shut off power and tied up the railway. Motormen and conductors had no grievance.

Storm Interrupts Service at Dallas.—Service on the Dallas-Fort Worth interurban line, operated by the Northern Texas Traction Company, was interrupted for twenty-five hours and considerable damage was done recently to the poles and lines of the company by a storm that passed between Dallas and Fort Worth. Nearly 2 miles of wire were blown down by the storm, and the high-tension line which supplies current from the power station at Handley for operating the cars of the Dallas Railway in Oak Cliff was broken. On this account, the Dallas Railway found its service badly crippled, as it had to cut its power from the lines east of the Trinity River over so as to supply part of this current for the Oak Cliff lines. This curtailed service on all lines in the city. Ordinarily there are about eighty cars in operation on the Oak Cliff lines, but during the period in which the damage was being repaired only thirty-six cars could be operated.

Financial and Corporate

Baltimore Costs Mount

Net Income of United Railways & Electric Company for 1917 Drops 21 Per Cent

Operating revenues increased $646,785, and net operating expenses, taxes and depreciation rose $816,668—such were the results of operation for the United Railways & Electric Company, Baltimore, Md., during the calendar year 1917. The net income amounted to $875,586 as compared to $1,108,124 in 1916, a loss of $232,538 or 21 per cent.

NO FLOATING DEBT

After paying dividends of 4 per cent or $818,448 on the common stock, $50,000 for Red Cross work and $25,536 for other war incidentals the company had a profit and loss surplus of $1,066,989 on Dec. 31, 1917. At the end of the fiscal year, the company had no floating debt and had cash on hand from current revenues amounting to $671,190.

For maintenance of way, structures and equipment, there was charged to operating expenses during the year 1917 $923,640, which with the $528,041 credited to depreciation reserve and included in operating expenses made a total of $1,451,682, an increase of $121,863.

TAXES AND PUBLIC CHARGES $1,260,712

The total taxes and public charges in 1917, including the park tax, cost of paving streets, track changes necessitated by regrading of streets and highways, widening of streets, etc., were $1,260,712, or about 24 per cent of the net receipts after paying operating expenses. This represented an increase of $102,123 over 1916. The park tax for the year was $671,711 as against $631,018 in 1916, an increase of $40,693. The total amount paid to the city of Baltimore in the park tax alone, since the consolidation of the railway lines in 1899, aggregates $8,567,676.

OPERATING RESULTS OF UNITED RAILWAYS & ELECTRIC COMPANY FOR YEARS ENDED DEC. 31, 1916 AND 1917

	1916	1917	Increase	Per Cent Increase
Operating revenues	$9,914,051	$10,560,836	$646,785	6.52
Operating expenses	$4,567,949	$5,267,395	$699,445	15.31
Depreciation	495,702	528,041	32,339	6.52
	$5,063,652	$5,795,436	$731,784	14.45
Taxes, licenses, etc.	994,840	1,079,723	84,883	8.53
	$6,058,492	$6,875,160	$816,668	13.48
Ratio of operating expenses to operating revenues:				
Operating expenses (per cent)	46.08	49.88	....	3.80
Depreciation (per cent)	5.00	5.00	....	
	51.08	54.88	....	3.80
Taxes, licenses, etc. (per cent)	10.03	10.22	....	0.19
	61.11	65.10	....	3.99

There was considerable shifting in the company's traffic loads during the last year. The large expansion in the industries and the number of men employed in and around Canton and Sparrows Point on the left of the harbor, and Curtis Bay and Locust Point on the right of the harbor, strained the capacity of those lines.

ONE HUNDRED NEW CARS

The company received in the early part of last year 100 new cars and in May ordered eighty more to meet the conditions stated. These cars were to be delivered in October, but not one car of this lot was received during the year. The failure on the part of manufacturers to deliver cars upon the dates agreed upon prevented the company from expanding its service as fully as planned. On a per capita basis the new cars would have been able to provide for 66,560 additional passengers a day.

Electric Roads Under Government

Among the electric railways definitely retained and made part of the government system according to recent announcements are the following:

Colorado Springs & Cripple Creek District Railway.

East St. Louis & Suburban Railway.

Fort Dodge, Des Moines & Southern Railroad.

Gallatin Valley Railroad.

Oregon Electric Railway.

St. Louis & Belleville Electric Railway.

Waterloo, Cedar Falls & Northern Railway.

New Orleans Net Falls

Higher Operating Costs More Than Absorb the Gains in Revenues for 1917

During the calendar year 1917 the New Orleans Railway & Light Company, New Orleans, La., suffered a loss of $69,126 or 9.60 per cent in net income. This was due mainly to the increase in operating expenses, for while the gross operating revenues gained $545,518 or 7.57 per cent the net operating revenue fell off $22,632 or 0.63 per cent.

OIL AND COAL INCREASE IN COST

The principal items of increased costs were oil and coal. The proportionate share of the railway department in the operating results of the company is shown by the tabulation below in this column.

COMPARATIVE INCOME STATEMENT OF NEW ORLEANS RAILWAY & LIGHT COMPANY FOR YEARS ENDED DEC. 31, 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Operating revenue	$7,746,259	100.00	$7,200,740	100.00
Operating expenses	4,172,010	53.86	3,603,859	50.06
Net operating revenue	$3,574,249	46.14	$3,596,881	49.94
Revenue deductions—taxes, etc.	816,901	10.55	781,841	10.84
Net operating income	$2,757,348	35.59	$2,815,040	39.10
Miscellaneous income and outside operations	64,186	0.83	68,391	0.95
Gross income	$2,821,534	36.42	$2,883,431	40.05
Income deductions—interest, etc.	1,944,000	25.09	1,907,196	26.49
Balance	$877,534	11.33	$976,235	13.56
Charges for renewals and replacements	226,308	2.92	255,883	3.55
Net income	$651,226	8.41	$720,352	10.01

The actual charges for maintenance during the year amounted to $883,755. In addition to this amount there was expended $346,694 for renewals and replacements, making a total charge of $1,230,450. There was reserved from surplus for renewals and replacements, $409,641, resulting in a net credit of $62,946 for the year.

DEPARTMENTAL SUMMARY OF NEW ORLEANS RAILWAY & LIGHT COMPANY FOR 1916 AND 1917

	1917	1916	Increase	Per Cent
Operating revenue:				
Railway	$4,669,389	$4,422,777	$246,612	5.5
Electric	1,618,552	1,433,814	184,738	12.9
Gas	1,458,316	1,344,149	114,167	8.5
Total	$7,746,259	$7,200,740	$545,518	7.5
Operating expenses:				
Railway	$2,686,362	$2,437,364	$248,998	10.2
Electric	886,161	635,358	250,803	39.5
Gas	599,486	531,136	68,349	12.8
Total	$4,172,010	$3,603,859	$568,151	15.8
Net operating revenue	$3,574,248	$3,596,881	*$22,632	0.6

* Decrease.

The expenditure for construction, improvements and betterments amounted to $1,070,538, divided as follows: Railway roadway and line, $130,567; electric line system and accessories, $583,393; gas distribution system and accessories, $93,355; plant equipment, $193,909; rolling stock and miscellaneous equipment, $9,685, and engineering and miscellaneous, $59,626.

Mr. Warburg on Utilities

Says War Finance Corporation Expects to Deal Only With Corporations that Are Solvent

Paul M. Warburg, discussing public utilities securities and their relation to war financing in the current issue of the *Journal of the American Bankers' Association*, takes the view that the national interest at this time requires that state governments and the municipalities do their utmost to find a *modus vivendi* for their public service corporations. Concerning the outstanding franchise and contractual obligations he says that in every instance the utmost care should be used to determine whether proposals for constructive new developments are essential to the successful prosecution of the war and the health and necessary comfort of the people. Mr. Warburg continues:

UTILITY CREDIT IMPAIRED

"The drastic shrinkage in the value of public utilities investments and the impairment of the credit of these corporations is a source of great danger to the general financial situation at this time. The credit of these companies must be maintained on account of innocent investors and the necessity for preserving the physical development of corporations whose operations are needed because of their direct and indirect effect upon the successful prosecution of the war.

"Franchises in many cases have become excessively onerous for such corporations, due to the fact that labor, coal, steel and copper can be secured only at exorbitant prices, while charges for services rendered often cannot be properly adjusted without the consent of the community.

"When the old Capital Issues Committee first undertook its work it arranged for a conference with public service commissioners representing the various states of the union. The committee was delighted to find that these state commissioners were not only open to suggestions made by the committee but that they were in fullest sympathy with its program and eager to cooperate in every respect.

"It is gratifying to know that a number of the leading municipalities have decided to make such equitable adjustments as to enable their public service companies to weather the storm, and it is hoped that their example will be emulated by all.

WHERE THE W. F. C. WILL HELP

"The thought may have occurred to many that the War Finance Corporation has been created to cope with this very problem. Without attempting to speak for the War Finance Corporation and restating only what its directors have publicly expressed, I may say that this corporation, in a majority of cases, expects to deal only with concerns that are solvent and able to provide a bankers' guaranty. The amount that may be advanced without that guaranty is strictly limited by law and it is safe to assume that, except where the public interest absolutely requires, the corporation will not consider itself warranted in making advances to companies on the brink of insolvency. Where advances from the War Finance Corporation are to be sought, it appears advisable, therefore, that the communities involved do their share in placing their public utilities companies on a self-sustaining basis."

North Carolina Reports Progress

The successful operation of the North Carolina Public Service Company, Greensboro, N. C., for the year ended March 31, 1918, is indicated by the fact that the gross earnings were $641,270 (the largest since organization) as compared with $580,491 for the previous year, an increase of $60,778. The net earnings credited to surplus were $99,082, as compared with $81,875 for the previous year, an increase of $17,206. During the year many economies were effected which resulted in large savings. Much of these savings, however, was offset by the increased cost of operation.

The electric railway department suffered on account of the increasing cost of supplies and labor. The total number of passengers carried during 1918 was 3,818,623 as compared with 3,936,827 the previous year. The decrease in the number of passengers carried is attributed to the privately owned automobiles. The gross earnings of this department for the fiscal year amounted to $172,876, as compared with $168,885 in 1916. By the operation of the light one-man cars recently delivered it is expected that a large saving will be effected.

During the past year it is said the management was greatly impressed by the fairness with which both the local and state authorities met their requests for increased rates or other needed relief and also the willingness of patrons to pay more in order that the company might continue to serve the community efficiently.

North Shore Improving

First Report Since Receivership Shows Substantial Revenue Increases and Capital Expenditures

The report of the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., for the period ended Dec. 31, 1917, shows gratifying progress since the company's receivership. The company acquired the properties of the Chicago & Milwaukee Electric Railroad on July 26, 1916, and owing to the change of accounting year by the Interstate Commerce Commission the present first report covers seventeen months.

The accompanying statement gives the operating results for the period to date, as well as some comparative figures for the calendar year 1917 as compared with the last full year of operation under receivership. It is said that earnings are improving monthly.

In the change from receivership operation to private operation there was required an expenditure of not only a great amount of labor but money in bringing the road up to the standard of maintenance and operation expected and demanded by both the public and the governmental authorities. Between July 26, 1916, and Dec. 31, 1917, the company expended $1,046,996 for betterments, additions and rehabilitation.

The road serves the United States Naval Training Station at Great Lakes, as well as Fort Sheridan. On account of the war the traffic to and from the Great Lakes Station has been very heavy, as a great number of men (approximating 25,000) are stationed there.

COMPARATIVE INCOME STATEMENT OF CHICAGO, NORTH SHORE & MILWAUKEE RAILROAD

	July 26, 1916 to Dec. 31, 1917	Jan. 1, 1917 to Dec. 31, 1917	*July 1, 1915 to June 30, 1916
Revenue from transportation	$2,227,482	$1,682,874	$945,088
Revenue from other railway operations	64,100	45,345	46,541
Total operating revenue	$2,291,582	$1,728,219	$991,634
Operating expenses:			
Way and structure	$209,193	$149,218	$101,531
Equipment	107,503	77,279	46,158
Power	334,660	250,548	165,221
Conducting transportation	486,681	373,950	180,458
Traffic	37,278	27,657	10,373
General and miscellaneous	293,309	227,154	115,884
Total operating expenses	$1,468,624	$1,105,807	$619,625
Net operating reveneue	$822,958	$622,412	$372,009
Taxes	118,648	92,679	63,538
Operating income	$704,311	$529,733	$308,471
Miscellaneous income	5,925		
Gross income	$710,236		
Deductions from gross income	364,767		
Net income	$345,469		

*Under receivership.

Director of 104 Companies

With the growth of management corporations a sort of multiple director has arisen in the utility field. A partner in one of these managing firms has, according to the *Directory of Directors*, a seat as director on the boards of 104 companies. Of these he is president of sixteen, vice-president of seventy-five, and director only of thirteen. Another partner is president of fifty, chairman of three, and director of sixty-six.

Financial News Notes

$150,000,000 Mortgage Filed for Record.—A mortgage for $150,000,000 was filed in the office of the Register of Kings County, Brooklyn, by the Brooklyn Rapid Transit Company on July 26. It was dated June 1. The mortgage was made to the Central Union Trust Company, New York, as trustee. It was issued as a result of a decision of the stockholders at a meeting in May in connection with the refunding of the company's notes mentioned previously at length in the ELECTRIC RAILWAY JOURNAL.

Would Abandon Part of Road.—The Westchester Street Railroad, White Plains, N. Y., has filed with the Public Service Commission for the Second District a petition asking for approval of the abandonment of a part of its line in the town of Greenburgh, which, it is claimed, is running behind. The company, it is said, has no means of financing operation or meeting the daily deficit. The commission will set an early date for a hearing. The New York, New Haven & Hartford Railroad, as owner of the Westchester road, has approved the proposed abandonment.

Stock Issue Approved.—The Capital Issues Committee has notified the Union Street Railway, New Bedford, Mass., that after due investigation into the purpose of the issue of new stock, it has determined that the sale thereof is not incompatible with the national interest. The company plans to issue $812,500 of new stock, the proceeds to be applied principally to paying for a new power house. The Massachusetts Public Service Commission has approved the issue. The proposed issue was referred to in the ELECTRIC RAILWAY JOURNAL for May 11, page 933, and June 29, page 1250.

Monongahela Plans $5,500,000 Issue.—Bankers representing financial institutions of New York, Baltimore and Washington spent July 22 and 23 in Fairmont, Clarksburg and Parkersburg, W. Va., going over the lines and various plants of the Monogahela Valley Traction Company, which is arranging to float a loan of $5,500,000. The proceeds of the loan will be used to refund about $3,000,000 of outstanding obligations and to complete a big power plant at Rivesville, a gas-producer plant at Lynn, an addition to the Hutchinson power plant, the development of several gas wells and the building of about 8 or 10 miles of pipe lines.

Successor to Dan Patch Line.—The Minneapolis, Rochester & Dubuque Electric Traction Company, Minneapolis, Minn., the former Dan Patch line, has been reincorporated as the Minneapolis, Northfield & Southern Railway. The new company has bought the 38 miles of the Dan Patch road to Northfield and the 14 miles from Automobile Junction to the Luce line junction, from which it runs over the Electric Short Line to the station at Seventh Street and Third Avenue N., Minneapolis. The purchase of the property was financed by T. B. Walker, W. O. Winston, and others. James H. Ellison, of Winston Brothers Company, railroad contractors, is president of the successor company. H. A. Whittier, Northfield, is vice-president, R. H. Benham is secretary and W. O. Winston is treasurer. The whole line is included in the deal, both from Fifty-fourth Street, Minneapolis, to Northfield and the cut-off to get into the downtown terminals.

Appeal to Alton, Granite & St. Louis Bondholders.—A circular addressed by the company to the holders of bonds of the Alton, Granite & St. Louis Traction Company says that the increased operating costs of the company together with fixed rates of income have resulted in the company being unable to pay the interest coupons due on Aug. 1. It is explained that applications are pending before the State Public Utilities Commission and the Interstate Commerce Commission for increases in rates, and that it is possible that before the note is received by the bondholders favorable action will have been taken. The company points out that it will be impossible to know the effect of such increases until after at least one month's experience, and that the net results of such increases will be affected by a possible increase in wages of employees through arbitration of the National War Labor Board. If the net results prove satisfactory, and the company is in position to pay the coupons, the holders of bonds will be notified. The company expresses the hope that both the bondholders and the trustees will be willing not to take any action under section sixteen of the mortgage securing the bonds until the management has had sufficient time to determine the effect upon the earnings caused by increase in rates and such changes in wages as may be awarded by the National War Labor Board.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$20,455	*$11,221	$9,234	$3,776	$5,458
1m., May, '17	17,792	*10,383	7,409	3,498	3,911
12m., May, '18	240,609	*125,228	115,381	43,939	71,442
12m., May, '17	221,329	*106,159	115,170	42,274	72,896

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$8,692	*$10,017	†$1,325	$1,386	†$2,712
1m., May, '17	9,586	*10,916	†1,330	1,222	†2,552
12m., May, '18	119,734	*122,492	†2,758	15,696	†18,454
12m., May, '17	125,193	*116,962	8,231	13,653	†5,422

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$38,916	*$27,740	$11,176	$6,535	$4,641
1m., May, '17	36,029	*25,167	10,862	6,683	4,179
12m., May, '18	483,028	*335,899	147,129	78,434	68,695
12m., May, '17	419,412	*245,679	173,733	78,741	94,992

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$101,017	*$38,403	$62,614	$33,004	$29,610
1m., May, '17	84,410	*33,300	51,110	28,244	22,866
12m., May, '18	1,166,369	*459,522	706,847	379,937	326,910
12m., May, '17	973,048	*369,711	603,337	341,975	261,362

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$94,395	*$53,320	$41,075	$13,052	$28,023
1m., May, '17	74,232	*43,957	30,275	11,674	‡20,333
12m., May, '18	996,074	*554,905	441,169	149,541	‡314,464
12m., May, '17	883,414	*477,162	406,252	115,991	‡293,491

EL PASO (TEX.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$105,575	*$73,101	$32,474	$6,645	$25,829
1m., May, '17	103,174	*66,437	36,737	4,652	32,085
12m., May, '18	1,277,199	*830,315	446,884	74,934	371,950
12m., May, '17	1,198,303	*751,061	447,242	60,554	386,688

* Includes taxes. † Deficit. ‡ Includes non-operating income.

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$25,122	*$17,118	$8,004	$5,009	$2,995
1m., May, '17	26,466	*16,291	10,175	5,117	5,058
12m., May, '18	339,555	*218,696	120,859	60,702	60,157
12m., May, '17	338,980	*196,938	142,042	62,387	56,975

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$83,210	*$55,601	$27,609	$16,822	$10,787
1m., May, '17	56,762	*38,673	18,089	15,754	2,335
12m., May, '18	776,083	*529,673	246,410	192,257	54,153
12m., May, '17	650,994	*438,689	212,305	186,459	25,846

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$247,016	*$156,341	$90,675	$28,172	‡$72,086
1m., May, '17	180,238	*109,050	71,188	29,151	42,037
12m., May, '18	2,999,061	*1,694,123	1,304,938	344,583	‡1,037,021
12m., May, '17	2,058,447	*1,212,833	845,614	348,814	496,800

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$919,763	*$590,677	$329,086	$207,170	$121,916
1m., May, '17	762,662	*460,938	301,724	191,344	110,380
12m., May, '18	10,329,753	*6,436,360	3,893,393	2,428,163	1,465,230
12m., May, '17	8,689,133	*5,290,270	3,398,863	2,248,576	1,150,287

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$93,022	*$62,857	$30,165	$25,106	$5,059
1m., May, '17	74,213	*52,139	22,074	24,144	†2,070
12m., May, '18	1,053,943	*705,680	348,263	295,166	53,097
12m., May, '17	877,833	*582,620	295,213	285,654	9,559

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$82,798	*$51,526	$31,272	$5,087	$26,185
1m., May, '17	82,012	*48,366	33,646	4,370	29,276
12m., May, '18	998,742	*578,020	420,722	59,982	360,740
12m., May, '17	992,882	*539,245	453,637	52,281	401,356

Traffic and Transportation

Portland Fare Agreement

Company to Charge Five Cents on Three Lines and Six Cents on Others, Zones Outside

An agreement between Attorney General Sturgis of Maine and William S. Linnell representing the Cumberland County Power & Light Company, Portland, on fares for the Portland Railroad brought the hearings on the increased fares asked for by the company in a petition to the Public Utilities Commission to an end on July 24, the company agreeing to the rates of fare suggested by Robert M. Feustel, acting as engineer for the State.

PLAN OF EXPERTS ADOPTED

The Public Utilities Commission on July 27 rendered a decision ordering the adoption of the fare plan previously agreed upon. The commissioners said in their decision:

"It is believed that no individual or body of individuals is likely to devise a scheme to meet the present situation with greater success than that so constructed. It is the work of a body of experts eminently qualified by training and experience and manifestly possessing the confidence of a wide clientage, and has the approval of counsel for the public who have devoted great labor and fidelity to the interests intrusted to them. While it does not promise the amount of revenue to which the company deems itself entitled, the latter has expressed its willingness to undertake to operate under it in the hope that it may tide over the present emergency, and that this concession may be accepted by the public as an earnest that it is not insistent upon any particular plan or upon any relief which is not absolutely necessary.

SUMMARY OF PLAN

"It is not necessary to describe the plan at length—the order will be very explicit. It is sufficient to say that it retains the 5-cent base rate for three lines in Portland characterized by the greatest density and largest percentage of short rides; exacts 1 cent for a transfer from a 5-cent car, and retains the free transfer system otherwise. Outside of these three lines it fixes 6 cents as the minimum cash fare; inaugurates the 2-cent zone system beyond the minimum cash fare limit except in a few cases where it did not seem practicable to divide into such units; makes appropriate concessions in some instances, notably that of Westbrook, in consideration of the density of travel and the recent withdrawal of reduced rate tickets; removes certain discriminations now existing as to comparative haul on different lines for the same fare; recognizes to some extent the claims of distant communities built up on the present low fares; and retains the principle of reduced rates for school tickets.

"The plan thus presented and indorsed by all of the parties will be adopted. All parties agree that its actual results can be told only by a reasonable trial. It may provide less revenue, or more, than is anticipated. It may work out entirely fair to all, or inequalities and hardships may develop. It is necessarily an experiment, as all such radical departures are, and either the company or the public may appeal to this commission for a revision or modifications after a fair trial has been given it. But a reasonable trial should be given before complaints are entertained."

Wheeling Fare Case Presented

The hearings on the applications of the Wheeling Traction Company and the Panhandle Traction Company for fare increases were held before the Public Service Commission of West Virginia during the week ended July 27. The two companies consolidated their claims for rights to increase fares 20 per cent.

Attorney M. L. Brown asked whether the company expected to be permitted to increase fares in the State of Ohio. In reply Attorney McCahill said, in his opinion, the increase in Ohio might have to be obtained through the Interstate Commerce Commission. The question then arose whether the whole matter was not one for the Interstate Commerce Commission to decide, since it involved the proposal that a passenger from Martins Ferry, Bridgeport or Bellaire to Wheeling would enjoy 5-cent transportation, as at present, while the passenger from Wheeling Island to Wheeling would be obliged to pay a 6-cent fare. Mr. McCahill said that out of courtesy to the State commission the companies had made the application for the West Virginia increase direct to the State authorities rather than go before the Interstate Commerce Commission

Attorney Everett Moore of Moundsville made a plea before the commission for improved service, as did also Attorney Brown of McMechen. The attorneys for the companies replied that the commission was familiar with the efforts they were making to improve the service. Fifty-two new cars have been promised for delivery soon and four are already in operation.

With the closing of the companies' plea, attorneys opposing the application moved its dismissal on the ground that the need of the increased fare had not been proved. The commission asked for additional statements from the companies.

Boston Accepts Gracefully

Newspaper Comment Shows Disposition to Accept Without Question the Seven-Cent Fare

Public opinion in Boston as judged by newspaper comment shows a general realization of the need of the company for going to the 7-cent fare put into effect on Aug. 1 and a willingness to accept the decision of the board of trustees as sound and in conformity with public interest. The significant fact, of course, is that the board found the statements and claims of the company to be true; that the need for an immediate increase in fare was imperative and that in this particular case an increase to 6 cents would not meet the situation. Looked at from the broad viewpoint of the industry as a whole it would seem that this finding by a public board representing no investment but only the good of the general public can hardly be without importance to companies elsewhere, struggling desperately with problems similar to those which confronted the Boston company. Space limitations make impossible the publication of extended extracts from the editorials, but the following quotations show the trend of the comment:

"GLOBE"

"The affairs of the elevated are in the hands of men whose first consideration is not corporate, but public, interest. They have taken their action only after careful study of the elevated situation. The best we can do is to trust to their judgment."

"TRANSCRIPT"

"There will be general agreement that the trustees, in taking this course, have acted according to the necessities of the situation. Their earliest surveys of the elevated finances proved only too plainly the drastic nature of the relief which must be applied if Boston's surface and rapid-transit lines were to cease giving service at less than cost and to begin operations on the sound, economic basis described in the public control act."

"POST"

"So let us pay the extra 2 cents cheerfully in the vast and cheering hope that we shall soon get our money's worth of service on a rehabilitated and satisfactory system of transportation."

"AMERICAN"

"The need of more revenue for the road is immediate and imperative, and the trustees, in announcing the coming fare increase, have only done what they were ordered to do by the Legislature in the act which placed them in control of the line."

Later the *American* replied to an anonymous communication in which the writer took the paper to task for its comment on the new fare. The editor replied in a 24-in. editorial which he concluded by reiterating his plea to the readers to be patient.

Company to Decide for Itself

Milford, Attleboro & Woonsocket Company Given Choice of Seven-Cent Fare or Modified Zone System

The Milford, Attleboro & Woonsocket Street Railway, one of the properties controlled by the New England Investment & Security Company, has been authorized by the Public Service Commission of Massachusetts to establish a new schedule of increased fares, in a finding dated July 15. The road operates about 30 miles of single track in the territory southeast of Worcester and near the Rhode Island line, and connects with the lines of the Rhode Island Company. Fares have not been changed materially since operation began. The unit is 5 cents, and there are seven zones ranging from 5.4 to 1.3 miles in length.

The company proposed to establish a mileage system with twenty-eight zones averaging about 1 mile length each, making the rate 2.5 cents per zone, with a minimum fare of 5 cents good for a ride in any two adjacent zones. When the total fare computed shows a half-cent, the company proposed to collect the full cent. The cash fare under this plan for a ride of three zones would thus be 8 cents, rather than 7.5 cents; but provision was to be made for the sale of ten tickets for 25 cents. It was estimated that the new tariff would yield a total increase of 76.3 per cent in revenue (from $96,810, as in 1917, to $170,643 for 1918).

The company hoped to earn 7 per cent on its stock investment by this change in rates; and the commission concedes that under the circumstances this rate would not be unreasonable in normal times. A 5 or 6 per cent return, the board holds, should be regarded as very satisfactory under present war conditions. The increase in fares proposed by the company averages 96 per cent, and between twenty typical points the fare total is $5.10 by the proposed rates as compared with $2.60 under the present schedule.

The company's estimate of the revenue to be derived from the new schedule was based upon traffic conditions covering only one day; but the board is of the opinion that the estimate that the increase in revenue would amount to about 76 per cent if the traffic loss were not more than 10 per cent is not far wrong. Estimates of the gain in revenue from increases in rates, however, are most unreliable, in the experience of the commission. This company has little steam road competition, and few jitneys have operated in its territory; but the effect of a jump in rates ranging from 25 to 200 per cent is beyond calculation.

The towns in which the road operates are not opposed to a fare increase, but are all hostile to the proposed mileage system of charging. They urged that the present zones be retained and the fare unit raised from 5 to 7 cents, contending that the mileage zone system, with its violent and disproportionate increases in the rates between the various centers, would destroy the good feeling previously existing, discourage travel, encourage every feasible form of competition and prove of little financial benefit. It was urged that there would be general willingness to pay 7 cents.

The commission concludes that the company needs additional revenue, but suggests that it be obtained either by reducing the number of zones planned between Milford and Franklin and the Rhode Island boundary, where the traffice is heaviest, and not changing the present rates; or by the adoption of the 7-cent fare unit. The advantages of the mileage zone system in relation to the development and retention of short-haul traffic are important, the commission points out, for the stimulation of short-distance travel by a low minimum fare is highly desirable.

On the other hand, a straight 7-cent fare has less disadvantage on this road than on many others, for the proportion of short-haul traffic is low and the riding is mainly between centers of population some distance apart. The commission points out that much of the trackage runs through sparsely settled territory; that the communities are accustomed to the present system of charging, apparently are satisfied with it, and by retaining this system the company could not only preserve the good feeling now existing but also save the trouble and expense of a rather complex and experimental new method of fare collection.

Upon the evidence the commission is inclined to favor giving the 7-cent fare unit a trial. It says:

"A friendly community is a better asset for a street railway than an anticipated gain in revenue, which, however reasonable it may be, is still largely a matter of uncertain speculation. However, the local management is better able to judge this question of expediency than we are. * * * The towns which the company serves ought not to forget that they have been receiving service at less than cost, including a reasonable profit to the stockholders, ever since the road began operation, and they ought not to oppose any plan which is likely to increase its prosperity and enable it to secure the credit which it will presently need."

Explains Matters to the Editors

Joseph K. Choate, chairman of the special committee on ways and means to obtain additional revenue, representing the electric railways of New York State, addressed to the editors of the daily papers throughout the State on July 31 a statement in which he said that the situation confronting the electric railways of the State was "one that must give alarm not only to the owners and operators of these properties, but to the public as well."

Mr. Choate reviewed very briefly the trend of regulation from the passage of the public service commission laws in 1907, and pointed out the chaos which has followed the decision of the Court of Appeals in the so-called Rochester case. Mr. Choate says that the idea in establishing the commissions was to remove public utility regulation from politics, but that the effect of the decision of the Court of Appeals in the so-called Rochester case is to make regulation again a matter of politics.

As a result of the decision of the court, questions of increases in fares are now before the common councils of various cities. None of these governing bodies has the machinery or the facilities for such impartial and technical investigation of the fare question as will alone provide the proper solution of the matter.

Question of Authority Raised

Kansas City, Kan., Contends City Has Sole Right to Negotiate Any Change in Fare

Out of the effort which officials of Kansas City, Kan., are making to prevent the charging of a 6-cent fare by the Kansas City Railways has grown a controversy between the city and the Public Utilities Commission of Kansas which may have far-reaching consequences. On Aug. 8 the Supreme Court at Topeka will decide whether or not the Public Utilities Commission can hold a hearing in Kansas City, Kan., on the application of the railway for an increase in revenue in that city. Before the commission had arranged for the hearing, the city officials of Kansas City, Kan., secured a temporary injunction from the Wyandotte County Court preventing the commission from considering the facts in the case. Later E. L. Fischer, district judge, ruled out a demurrer of the utilities commission and automatically the temporary injunction was granted, and continues in effect till the case is settled in the Supreme Court. The fact that the Supreme Court recently refused to issue a writ of mandamus against Judge Fischer, maintaining that the District Court had jurisdiction in the matter, gives the city officials confidence that the decision rendered will be favorable to the city.

The commission contends that it was created by the State legislative body, and has the power to go into any county or city in the State for the purpose of holding a hearing to determine what action, if any, should be taken. It maintains that having been created by the State for the specific purpose of passing on questions of this nature, the District Court has no jurisdiction in such matters. The commission declared that the restraining order should have been against an order and that no order was issued. The indirect result would be that future acts of the commission might be set at naught and the body shorn of its power as a rate-fixing commission.

On the other hand, the Commissioners of Kansas City, Kan., contend that the city has a franchise contract with the railway which does not expire for five or six years, in which the fare is fixed at 5 cents. They also maintain that the utilities commission has no power to come into Wyandotte County and hold a hearing to change the rates, and that as a party to the contract, the city should hear the application.

Seeks Further Increase

Springfield Street Railway, After Short Zone Trial, Will Increase Basic Fare to Six Cents.

Three months' trial of the zone system of fares on the Springfield (Mass.) Street Railway has convinced the management that the existing 5-cent fare in the central zone will have to be increased to 6 cents. A tariff embodying this change will shortly be presented to the Public Service Commission.

The present zone limits are to be retained, but various other changes in tickets and rates are scheduled. The 8⅓-cent tickets now entitling the holder to ride from any point within the inner zone to the limit of the outer zone are to be abandoned, and the 6⅔-cent tickets, used between points in the inner zone and the midpoints of the outer zone will be replaced by tickets costing 8½ cents.

It is planned to increase the rate from 2 to a basis of 2½ cents per mile on the rural lines radiating from Westfield and Palmer, but the existing 6-cent fare unit in Westfield is to remain unchanged. The new rates will probably go into effect on Sept. 1.

The Public Service Commission authorized the company to establish a zone system with a central 5-cent fare unit, in a decision issued in March, 1918, and estimated at that time that the company's annual earnings should be increased $400,000. The quarter's trial of the zone rates shows that the maximum increase to be expected is at the rate of $300,000 a year, and this increase will be absorbed in the recent wage increase granted the employees by Henry B. Endicott, executive manager of the Massachusetts Committee on Public Safety, who arbitrated the wage question between the union and the company and authorized increases estimated at a total of $400,000 a year.

The company plans to sell tickets good for a 6-cent fare at the rate of seventeen for $1. These, with the 8½-cent tickets, would be on sale at central points throughout the city, but would not be vended by conductors. The 8½-cent ticket, replacing the present 6⅔-cent ticket would be honored only on the line for which it was sold. In general, the new tariff will establish a fare of 6 cents on present 5-cent lines; 8½-cents on 6⅔-cent lines, and 11 cents on 10-cent cash and 8⅓-cent ticket lines.

New Boston & Worcester Schedule

Massachusetts Interurban Authorized by Public Service Commission to Charge Rate of 2.5 Cents Per Mile

A new rate schedule based upon a charge of 2½ cents per mile will shortly be approved by the Public Service Commission of Massachusetts for use by the Boston & Worcester Street Railway. The company has been notified that if it files a schedule amended according to a decision of the board dated July 16 it will be allowed to go into effect upon short notice.

Since Oct. 1, 1917, the road has been operating under a mileage zone system which was substituted for the former system of irregular and overlapping zones, in each of which the cash fare was 6 cents. The later schedule is based upon a rate of 2 cents per mile, the zones being about 1 mile long in each case, with a minimum fare of 6 cents for a ride covering three zones or less. One-hundred mile books are sold for $1.70, round-trip tickets are sold at a discount of 15 per cent, and in Marlborough special workingmen's tickets are provided at the rate of thirty for $1.

The Public Service Commission also required the sale of twenty-trip tickets, limited to the person named, and good for one month, enabling the purchaser to ride between any two designated points on the road at a rate of 50 per cent in excess of the old cash or trip-ticket rate. It is estimated by the company that the new rates would increase revenue about $74,000 a year.

TRIAL FOR SIX MONTHS

This schedule was approved for a six-months' experimental period. The new tariff, approved in general by the commission, leaves the mileage zones unchanged except in the increase of the base rate to 2½ cents, and makes a similar increase in all reduced-rate tickets except the workingmen's tickets in Marlborough. The minimum fare of 6 cents for a ride of three zones or less is retained. It is estimated that this new tariff would increase passenger earnings not more than $146,830. The results from the schedule effective last fall have been disappointing, but in the company's opinion this is due to the weather conditions last winter and to changes resulting from the war.

There are some apparent inconsistencies in the new schedule. One is the minimum fare of 6 cents for a ride of three zones or less, as a result of which the fare jumps suddenly in the fourth zone from 6 to 10 cents. The commission intimates that a more logical minimum would be 5 cents for a ride of two zones or less. The company states, however, that in view of its high-speed operation it would be difficult to collect fares within a space of two zones on certain portions of the line.

The principal change in the tariff required by the commission is in connection with fares between Chestnut Hill and the Overbrook section of Wellesley. The company proposed to establish a cash fare of 20 cents per ride, a mileage rate of 17 cents, and a twenty-ride monthly ticket rate of 14⅓ cents. The present monthly ticket rate is 11¼ cents. This is the only section served by the road in which commutation business is a main factor in the travel, and the commission feels that commutation rates should be retained between points where the present twenty-trip tickets are available, selling these tickets, however, on the basis of fifty rides instead of twenty rides per month. This will confine their use more certainly to the regular riders to whom it is reasonable to make this concession, and while the sale of such tickets is a departure from the logical mileage zone system, it meets a real need, especially in view of the federal railroad administration's disinclination to raise commutation rates by radical amounts.

Wants Ten-Cent Cash City Fare

The Ithaca (N. Y.) Traction Corporation recently filed with the Public Service Commission for the Second District of New York a supplemental petition in which it asks that "the rate, fare or charge to be received by your petitioner within the limits of cities and incorporated villages shall be 10 cents per passenger or that received by the sale of ticket representing twelve for $1."

The commission will give a hearing upon the petition.

The Ithaca Company, in 1917, asked permission to increase its rate of fare in Ithaca from 5 cents to 7 cents. There were no restrictions in the franchises held by the company and the commission on Nov. 21 approved an increase to 6 cents.

Accompanying the petition just filed were statements by the company giving the value of the property used in the public service, income, schedule of prices of labor and material from 1910 to March 1, 1918, and other information upon which it makes its petition for a 10-cent fare.

Cities Attack Fares in Court

The hearing of the appeals of the cities of St. Louis and Kansas City from the Public Service Commission rulings granting increased rates from 5 to 6 cents to the United Railways, St. Louis, and the Kansas City Railways, were begun at Jefferson City, Mo., on July 22 before Judge John G. Slate. The two cases are being heard at the same time.

Both cities are attacking the jurisdiction of the Public Service Commission, their arguments being that the commission has no right or authority to increase street railway fares.

Six Cents for Fishkill

Permission to charge a 6-cent fare was granted by the Public Service Comsion of the Second District of New York on July 25 to the Fishkill Electric Railway. The company operates in Beacon to Fishkill with a branch extending to the foot of Mount Beacon. The road is divided into two fare zones. A 5-cent fare has been charged in each zone, but under the commission's order, effective on five days' notice, the zone fares will be increased to 6 cents. The commission holds that present rates of fare "are unjust and unreasonable for the reason that they are insufficient to yield a fair return on the value of the property used in the public service."

The investigation by the commission disclosed that there were no franchise restrictions fixing rates of fare and no opposition to the company's petition developed. In concluding its finding the commission said:

"While the increase of fare asked for will probably not permit of any dividends to stockholders, it should be granted, and although the method by which the determination is arrived at can hardly be said to be strictly scientific, it will probably afford temporary relief and permit this road to continue to serve the public in these abnormal times."

Hearing on New York City Fares

The committee on franchises of the Board of Estimate of New York City on July 27 heard argument in favor of the application of the New York Railways for permission to charge 6 cents on its lines during the war and for one year thereafter, should the Public Service Commission give its assent.

Henry J. Smith, counsel for the company, was questioned by Mayor Hylan, chairman of the committee, and by City Comptroller Craig concerning rents paid to underlying companies. These he explained after the fashion of Mr. Shonts, president of the company, in the statement published in the ELECTRIC RAILWAY JOURNAL for July 27, page 171. Mr. Smith said that the rate of fare received by the company was only 3.6 cents instead of 5 cents, because of the transfers that the company was compelled to issue. The Mayor suggested that the company use its influence with the stockholders of the leased lines to accept lower rentals.

Timothy S. Williams, president of the Brooklyn Rapid Transit Company, read a statement to the effect that if the company was not allowed to charge a 7-cent fare on its surface lines it would be compelled to go back to the zoning system. If the zoning system was restored it would cost as much as 15 cents to make a trip in Brooklyn where the cost now was 5 cents.

Assemblyman Mark Goldberg appeared in opposition. He stated that the American Federation of Labor was against the increase and that the company's employees did not accurately represent the sentiment of workingmen.

Transportation News Notes

Skip Stops in Springfield.—The skip-stop system will be adopted in Springfield, Ill., according to an announcement from the office of the Springfield Consolidated Railway.

Five-Cent Fare for Rockford.—The Public Utility Commission of Illinois has authorized the Rockford City Traction Company to charge a straight 5-cent fare for adults. School children will pay a fare of 2½ cents.

New East St. Louis Fare Suspended.—The Public Utility Commission of Illinois has suspended until Nov. 18 the proposed increase in fares asked by the East St. Louis (Ill.) Railway. The company asked a rate of 7 cents.

Nashua Tariff Suspended.—The Public Service Commission of New Hampshire on July 11 notified the Nashua Street Railway that it has suspended until Sept. 1 the increase in fares and schedule changes of the road, proposed to be put into effect on July 13 pending a hearing.

Steam Rates Allowed.—Authorization of the Director General of Railroads to the Electric Short Line St. Paul, Minn., to increase its rates to accord with those charged by the steam lines under federal control has been approved by the Railroad & Warehouse Commission of Minnesota.

Court Prevents Interference With Fares.—Federal Judge H. C. Niles has issued an order restraining the city officials of Meridian, Miss., from interfering with the Meridian Light & Railway Company in raising fares to 7 cents, and increasing the electric light and power rates 28 to 40 per cent and gas rates 30 per cent.

North Shore Appeals to the I. C. C.—Permission to increase its ticket fares from 2 to 2.6 cents per mile and to increase its cash fares to 3 cents per mile between points in Illinois and Wisconsin, was asked of the Interstate Commerce Commission on July 19 by the Chicago, North Shore & Milwaukee Railroad, Highwood, Ill.

Law Stands in Way of Fare Increase.—On applying to the Commissioners of Franklin County, Ohio, for an increase in the rates of fare, the Columbus & Southern Traction Company was referred to Assistant Prosecuting Attorney J. H. Summers, who advised that the law does not permit the commissioners to change the terms of franchises.

City Will Not Object.—The City Council of Boulder, Col., on July 16 decided not to interfere in the application made by the Denver & Interurban Railway for the right to increase fares between Boulder and Denver. The Council also will not insist upon running the full number of cars required by the company charter, which will be quiescent during the war.

Albany Southern Tariff Put Over.—The Albany (N. Y.) Southern Railroad on July 22 filed with the Public Service Commission for the Second District, notice that its increased rate schedule, which it intended to put into effect on Aug. 4, will not become effective until Sept 1. The schedule, filed on July 5, increased one-way and round-trip fares between Albany and various points on the road.

San Antonio Wants Fare Increase.—The San Antonio (Tex.) Public Service Corporation is planning to make application to the City Council for a permit to increase its railway rates to 6 cents or establish the zone system, limiting the distance to be traveled on a single 5-cent fare. Notice of this fact has been conveyed to Mayor Bell by W. B. Tuttle, vice-president and general manager for the company.

Buffalo Fare Referendum on Aug. 20.—The special election on the 6-cent fare agreement with the International Railway will be held on Aug. 20. The date was fixed by the City Council on July 24 after the petition for a repeal of the fare resolution was denied. The proceedings which resulted in the fare matter being submitted to a vote have been reviewed from time to time in the ELECTRIC RAILWAY JOURNAL.

Must Show Proof.—The Western New York & Pennsylvania Traction Company, Olean, N. Y., will be asked to show proof of necessity in the matter of the proposed increased fares at a hearing before the Public Service Commission for the Second District. The company is seeking to increase its city fares in Olean from 5 cents to 7 cents. The investigation was asked by the Common Council of Olean.

No Women in Des Moines.—The Des Moines (Iowa) City Railway is giving little attention to using women as conductors. The franchise which the company secured a few years ago provides that the cars shall be operated by two men, and as long as the labor situation does not become any more critical than it is at present no attempt will be made by officials of the company to secure relief from this feature of the franchise.

Zone Modifications in Providence.—In compliance with petitions filed by patrons, officials of the Rhode Island Company, Providence, R. I., have agreed to extensions of the 5-cent fare limits on three lines of the road. The objections to the previous limitations on the distance which the 5-cent fare represented were chiefly that hardship was imposed upon passengers living just beyond the zone line and required to pay an extra 2-cent fare.

Skip-Stop Results in Des Moines.—The first month's trial of the skip-stop plan on the Sixth Avenue line has been entirely satisfactory to the Des Moines (Iowa) City Railway. According to the report submitted to the City Council by Car Supervisor Smock two minutes have been cut from the running time of the cars on the Sixth Avenue line during the regular hours, and during the rush hours the plan has provided car capacity for eighty more passengers per hour.

Hearing on Transfer Charge Postponed.—The Public Utilities Commission of Illinois has postponed until Sept. 23 the hearing on the petition of the Peoria Railway to charge 2 cents for transfers. The company wished to proceed with the case at once, but after conference between counsel, it was decided to delay the hearing. The granting of a straight 5-cent fare to the company was noted in the ELECTRIC RAILWAY JOURNAL for July 20, page 135.

Skip Stops for Chicago.—Skip-stop operation for the Chicago Surface Lines was approved by the City Council on July 17, and is scheduled to go into effect within a few weeks. It is estimated that the plan will eliminate about 30 per cent of present stops. The ordinance provides for eight stops per mile, the places being where house numbers are "100" or multiples thereof. A penalty of from $10 to $25 is fixed for any person or corporation violating the ordinance.

Class and Express Rates Advanced.—The Reading Transit & Light Company, Reading, Pa., on July 23 filed with the Public Service Commission a supplement to its tariff of class and express rates, becoming effective on Aug. 12, and making the following changes: All class rates increased 25 per cent, minimum express charge increased, rates for milk in cans increased. Maximum weight of express shipments under graduation changed from 50 lb. to 20 lb.

A. C.-Ventnor Fare Six Cents.—Clarence I. Cole, receiver of the Atlantic City & Shore Railroad, has notified the authorities of Ventnor, N. J., of the company's intention to increase the fare from Atlantic City to Ventnor City from 5 cents to 6 cents on Aug. 6. He says the railroad wants to increase the income so that the receivership can be lifted. The company some time ago agreed to extend the 5-cent zone system twelve blocks further down the beach after a lapse of ten years.

Mr. McCarter's Statement Reproduced.—The Montreal (Que.) Tramways reproduced as an advertisement in the Montreal *Gazette* of July 24 the statement on the preservation of utilities which was made by President Thomas N. McCarter of the Public Service Railway, Newark, N. J., chairman of the American Electric Railway Association War Board, to the ELECTRIC RAILWAY JOURNAL and published in this paper for July 13, page 43. The advertisement was three columns wide and a full page in depth.

Feels Vote Necessary.—It was announced on July 22 that the City Commission of Kalamazoo, Mich., would not grant the Michigan Railway permission to increase its fares on the Kalamazoo city lines to 6 cents. This action was taken after a committee from the commission investigated the railway's claims. It was found that while an advance may be warranted at this time, the commission was not authorized under the new city charter to grant such an advance without the proposition going to a vote of the people.

Complete Control of Jitneys Recommended.—Mayor Ole Hanson, Seattle, Wash., recently received a report of the committee which he appointed to investigate jitney conditions in Seattle. The committee report asks city regulation of all jitneys, and suggests that the work be placed under direction of some city department subject to approval of the Board of Public Works. The committee prepared its report after six public hearings had been held, and thorough investigation made into the jitney and traffic situation in Seattle.

Fare Petition Withdrawn.—The Public Service Commission for the Second District of New York on July 25 granted the request of the Corning & Painted Post Railway to withdraw the petition asking for a 6-cent fare in cities and incorporated villages in which it operates. The company operates in Corning and Painted Post under franchise fare limitations coming within the decision of the Court of Appeals in the Rochester rate case and for this reason the attorneys for the road requested permission to withdraw the increased fare petition.

Still Fighting at Columbus on Service.—At the regular meeting of the City Council of Columbus, Ohio, on July 22, a resolution was unanimously adopted providing for the appointment of two car inspectors, whose duty will be to check up the cars and ascertain whether the Columbus Railway, Power & Light Company is operating according to the terms of the franchise. The company has been insisting upon an increase in the rate of fare for some time in order that it may give full and sufficient service and make such improvements as are necessary.

Abolition of Tickets Upheld.—The Supreme Court at Olympia, Wash., recently held that the Public Service Commission was within its legal rights when it abolished the 4-cent tickets in Seattle. The Supreme Court's decision states that the Public Service Commission has no authority to change or to relieve the company of franchise provisions not relating to rates, but that the commission law gives power to fix reasonable rates. The commission could not interfere with paving or bridge provisions or with the gross revenue tax, but can regulate rates up to 5 cents.

Twin City Lines Will Run Jitneys.—The Minneapolis (Minn.) Street Railway has been authorized to operate the jitney buses in Minneapolis and has acquired the thirty-nine buses in operation at a reported cost of $200,000. Except on request of a majority of citizens on the street no new jitney license will be granted for five years. It is not proposed to duplicate travel by having jitneys on the same streets as trolley cars, but the North Side, which is now reached in a roundabout way by several lines, will profit by the new jitney service. Transfers will be given.

Jamestown Transfer Arrangement Canceled.—The Chautauqua Traction Company, Jamestown, N. Y., in a new tariff schedule filed with the Public Service Commission for the Second District of New York, will cancel all transfer arrangements between the company and the Jamestown Street Railway beginning on Aug. 1. The traction company will not accept transfers from nor give transfers to the Jamestown city lines of the Jamestown Street Railway. The Chautauqua Traction Company operates an interurban line along the shores of Chautauqua Lake between Jamestown and Mayville and other Chautauqua County points.

Slight Fare Change Approved.—The Public Utilities Commission of Illinois has announced an increase in fares on the St. Louis-Alton interurban line of the East St. Louis & Surburban Railway. It changes the rule of charging a fixed fare from one station to another, and places the fare on a mileage basis. The rate will be 2 cents a mile for persons who buy tickets and for persons who pay cash fare when getting on at stations where there are no ticket offices. Those who board cars where there are ticket offices, and fail to buy tickets, must pay a cash fare at the rate of 3 cents a mile. The commission deferred a 10 per cent increase on commutation books until Nov. 21.

Trenton Fare Briefs Submitted.—Briefs for and against the application of the Trenton & Mercer County Traction Corporation, Trenton, N. J., for the elimination of six-for-a-quarter tickets and the charging of a 6-cent fare were submitted to the Board of Public Utilities Commissioners on July 16 by the company and by the city. The city's brief was filed by Charles E. Bird, city counsel, and George L. Record, special counsel for the city. The company's brief was filed by Frank S. Katzenbach, Jr., and Edward M. Hunt for the company. The final argument in the case was reviewed in the ELECTRIC RAILWAY JOURNAL for July 20.

Special Industrial Service With Women.—Women conductors made their appearance in Indianapolis on the morning of July 15, running between the downtown district and the plant of the Nordyke & Marmon Company. Arrangements have been made between the Indianapolis Traction & Terminal Company, operating the local lines in Indianapolis, and the Nordyke & Marmon Company whereby ten cars are to be used on the Kentucky Avenue line, the crews to be paid for by the Nordyke & Marmon Company. The cars will be in service from 6.15 to 8.15 o'clock in the morning and from 4.30 to 8.30 in the evening. The motormen will be selected from employees of the Nordyke & Marmon Company who have had railway experience.

Personal Mention

R. I. Brown has been appointed commercial manager of the Little Rock Railway & Electric Company, Little Rock, Ark., to succeed A. E. Smith.

W. H. Curtis has been appointed master mechanic of the Little Rock Railway & Electric Company, Little Rock, Ark., to succeed A. R. Koonce.

Thomas M. Paterson, president of the Fresno (Cal.) Interurban Railway, has also been appointed general manager of the company to succeed J. J. Mahoney.

F. L. Farrell has been appointed claim agent and general freight and passenger agent of the Fresno (Cal.) Interurban Railway to succeed M. I. Dohner.

J. A. Walden has been appointed general freight and passenger agent and claim agent of the Ocean Shore Railroad, San Francisco, Cal., to succeed I. N. Randall.

N. D. Moore, formerly chief engineer of the Pacific Coast Railway, Seattle, Wash., has been appointed first vice-president of the company to succeed W. M. Barnum.

George P. McNear, treasurer of the Petaluma & Santa Rosa Railway, Petaluma, Cal., has also been elected first vice-president of the company to succeed E. T. McMurray.

J. M. Sims, superintendent and general freight and passenger agent of the Pacific Coast Railway, Seattle, Wash., has also been appointed claim agent to succeed H. M. Watkins.

James T. Price has resigned as master mechanic and roadmaster of the Lincoln (Ill.) Municipal Street Railway to become connected with the Vesta Battery Company at Pittsburgh, Pa.

F. A. Riehle has been appointed secretary of the Los Angeles & San Diego Beach Railway, San Diego, Cal., to succeed W. R. Lyon, who retains the title of vice-president and purchasing agent.

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., has resigned as a member of the New Jersey Bridge & Tunnel Commission because of the pressure of other business. Governor Edge has accepted the resignation.

H. M. Watkins, formerly auditor and chief engineer of the Pacific Coast Railway, Seattle, Wash., has relinquished his position as claim agent, and in addition to being auditor has been appointed secretary of the company to succeed J. W. Smith.

D. C. Green, vice-president of the Fort Smith-Oklahoma Light & Traction Company, Fort Smith, Ark., has also been appointed general manager of the company. The office of general manager was formerly held by R. E. Ballard in conjunction with his duties as president of the company.

J. J. Caufield, general superintendent for the Twin City Lines, Minneapolis, Minn., on Aug. 1, also became superintendent of the St. Paul City Railway, taking over the duties of G. O. House, who has been appointed to the Northern States Power Company as noted in the ELECTRIC RAILWAY JOURNAL for July 27.

George W. Buchanan has resigned as assistant secretary and assistant treasurer of the Chattanooga Railway & Light Company, the Lookout Incline Railway and the Lookout Mountain Railway, Chattanooga, Tenn., effective on Aug. 1, to accept a position with the Wright-Martin Air Craft Corporation at New Brunswick, N. J.

C. M. Marsh, recently appointed general superintendent of the Wheeling (W. Va.) Traction Company, has been connected with the company and its predecessors since 1888, when he entered the service as a shopman. Later he served as motorman and then as conductor. In 1902 he was appointed dispatcher. In 1904 Mr. Marsh became superintendent of transportation. He continued in that capacity for twelve years and was then made assistant general superintendent, from which post he was advanced to general superintendent.

Samuel H. Ordway, New York City, has been named by Governor Whitman as a member of the Public Service Commission for the First District of New York to fill the vacancy caused by the resignation of Oscar S. Straus. Mr. Ordway was formerly president of the State Civil Service Commission, under appointment of Governor Whitman. Before holding that office he was chairman of the executive committee of the State Civil Service Reform Association. Mr. Ordway was a member of the law firm of Spencer, Ordway & Wierum, and has been active in civil service reform work for several years.

Charles Bulkley Hubbell has been designated by Governor Whitman as chairman of the Public Service Commission for the First District of New York to succeed Oscar S. Straus, resigned. Mr. Hubbell was born in Williamstown, Mass., on July 20, 1853. He was graduated from Williams College in 1874, and then practiced law in New York until 1913, when he retired. In 1889 he was appointed to the Board of Education. He served three terms, and became president of the Borough Board of Education. He has served on three subway commissions, and has made a close study of rapid transit problems.

E. E. Lillie, for several years superintendent of the Spokane traction division of the Spokane & Inland Empire Railroad, Spokane, Wash., has been attached to the Portland office of the Spokane, Portland & Seattle Railway as assistant federal manager. Mr. Lillie was formerly superintendent of the telegraph and car service for the Spokane, Portland & Seattle Railway, taking that position when the line was built. Later he was made superintendent of the Inland Empire line. Subsequently he was made superintendent of the telegraphic service for the Great Northern and again went back to the Inland Empire as superintendent.

F. S. Elliott has been elected president of the Spokane & Inland Empire Railroad, Spokane, Wash. He will have his office at the Spokane terminal, coming from Portland to assume charge. This brings the president of the Inland Empire System to Spokane for the first time since Jay P. Graves sold his control and resigned the presidency. This condition has resulted from the fact that the president of the Spokane, Portland & Seattle Railroad, who is also president of this line, has always been stationed at Portland. Mr. Elliott was formerly general superintendent of the lakes district for the Great Northern, with headquarters at Superior, Wis.

Milan V. Ayres has resigned from the division of valuation, Interstate Commerce Commission, to become a major in the National Army. Mr. Ayres was born in Kansas in 1875 and was graduated from the Massachusetts Institute of Technology in 1898. He is well known in electric railway and electric light circles through his connection with the Boston & Worcester Street Railway, the Rockland Light & Power Company and Ford, Bacon & Davis and through his affiliation with the American Institute of Electrical Engineers, American Electric Railway Association, American Statistical Association, New England Street Railway Club and the New England Railroad Club.

Obituary

Thomas J. Marlow, for thirty years superintendent of track construction for the Des Moines (Iowa) City Railway, died on July 20 from cancer of the stomach. Mr. Marlow was fifty-seven years of age. He had lived in Des Moines for forty-five years.

First Lieut. Warren Harries, son of General George Herbert Harries of Washington and Louisville, Ky., was killed in an automobile accident, on July 25, in France where he was on duty. Lieutenant Harries has been acting as an aid on the staff of his father, Brigadier-General George Herbert Harries, who has charge of one of the debarkation zones for American forces in France.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Franchises

Los Angeles, Cal.—The City Council of Los Angeles has granted a franchise to the Pacific Electric Railway over a short strip of land between 116th and 117th Streets and over a portion of Vermont Avenue, connecting its track with those of the Los Angeles Railway.

Track and Roadway

Muscle Shoals Traction Company, Florence, Ala.—A contract has been awarded by the Muscle Shoals Traction Company to the firm of Waddell & Son, consulting engineers of Kansas City and New York, for the survey and for the supervision of construction of the line the company proposes to build from Huntsville to Florence, via Athens, 65 miles. They will also aid in financing the enterprise. A branch line will be built to Lexington, 12 miles, and will furnish transportation facilities to the site of Dam No. 3. Construction will be begun at both terminals. It is estimated that the main line will be completed within a year. Preliminary surveys are now being made. The consent of the United States Railroad Administration will have to be obtained before the work can be begun. Thurston Allen, Florence, secretary. [March 2, '18.]

Tucson (Ariz.) Rapid Transit Company.—An extension will be built by the Tucson Rapid Transit Company of its University Avenue line from its present terminus at the University campus main entrance, along Park Avenue to East Sixth Street, along Sixth Street to North Fourth Avenue, and south on North Fourth Avenue to and through the subway, connecting with the South Fourth Avenue line.

Municipal Railways of San Francisco, San Francisco, Cal.—The Board of Public Works of San Francisco has awarded a contract to A. J. Raisch for the construction of the Taraval line of the Municipal Railways.

***Baton Rouge, La.**—Following the passage of an act by the Legislature at its recent session empowering municipalities in Lousiana to combine and co-operate with each other in the construction, ownership and operation of interurban railways, John B. Rucker, manager of the traffic bureau of the Baton Rouge Chamber of Commerce, has taken steps to effect organization of the business and commercial interests of the different cities and towns in order to lay the groundwork for the construction of interurban lines throughout the State as soon as the war situation adjusts itself so that bonds can be floated and material secured for construction purposes.

Indian Head, Md.—It is reported that a contract has been awarded by the Bureau of Yards and Docks of the United States Navy Department, Washington, to the New Jersey Cement Construction Company, Newark, N. J., for the construction of the proposed railway from White Plains to Indian Head, 14½ miles. [July 6, '18.]

Public Service Railway, Newark, N. J.—The Public Service Railway is laying new tracks and making other improvements on the court house division at Somerville.

Westchester Street Railroad, White Plains, N. Y.—Application has been made by the Westchester Street Railroad to the Public Service Commission for the Second District of New York for its approval of the abandonment of a part of its line in the town of Greenburgh.

Tidewater Power Company, Wilmington, N. C.—It has been announced that financing has been arranged for the construction of an extension by the Tidewater Power Company to the new shipbuilding plant.

Toledo Railways & Light Company, Toledo, Ohio.—Plans are being made by the Toledo Railways & Light Company for the construction of an extension to the proposed site of a new nitrate plant at Ironton.

South Bethlehem & Saucon Street Railway, South Bethlehem, Pa.—A report from this company states that during the next three weeks it expects to place contracts for 1 mile of signal equipment, 1 mile of brick paving and 1 ton of railway spikes.

South Carolina Light, Power & Railways Company, Spartanburg, S. C.—An extension will be built by the South Carolina Light, Power & Railways Company to Whitney and Converse.

Mount Vernon & Camp Humphries Railway, Mount Vernon, Va.—Construction work has been begun by the Mount Vernon & Camp Humphries Railway on its line from Mount Vernon to Camp Humphries, and it is expected that the line will be completed in about a month. James R. Caton, Alexandria, president. [June 8, '18.]

Seattle (Wash.) Municipal Railway.—The City Council of Seattle recently passed an ordinance authorizing the Board of Public Works to spend $9,500 in double-tracking the municipal street car line from Twentieth Avenue N. W. and Leary Avenue to Twenty-second Avenue N. W. and West Sixty-fourth Street. The Council also authorized the expenditure of $1200 for rehabilitating the Loyal Railway division of the municipal line.

Shops and Buildings

Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md.—Work will soon be begun by the Washington, Baltimore & Annapolis Electric Railway on the construction of a new freight terminal on the property recently acquired by it at Eutaw, Lombard, Howard and Pratt Streets.

Interborough Rapid Transit Company, New York, N. Y.—Bids will be received by the Interborough Rapid Transit Company at the office of the chief engineer, 165 Broadway, until Aug. 9 for completion of the passenger station electric lighting and electric heating systems for portions of a rapid transit railroad in the boroughs of Brooklyn and Manhattan, as follows: Portion of Clark Street, Eastern Parkway line and Nostrand Avenue lines. Further information, specifications, etc., may be obtained at the above office. George H. Pegram is chief engineer.

Wheeling (W. Va.) Traction Company.—Bids will be asked by the Wheeling Traction Company for the construction of a new carhouse at Wheeling Island in place of the one destroyed by fire on Feb. 4. At the same time the company will ask for bids for the construction of a one-story shop about 125 ft. square, to be built at its Wheeling Island station.

Power Houses and Substations

Pine Bluff (Ark.) Company.—Contracts will be placed during the next thirty days by the Pine Bluff Company for two 500 or 600-hp. high-pressure water-tube boilers, with stokers.

Philadelphia & Western Railway, Upper Darby, Pa.—This company reports that during the next three weeks it expects to place contracts for the construction of two new substations and will purchase seven 750-kw. rotaries complete.

Charleston-Dunbar Traction Company, Charleston, W. Va.—Excavation work has been begun for the foundation of a new power house for the Charleston-Dunbar Traction Company, the old power house of the company having been destroyed by fire in December, 1917. The new structure will have a floor space of 50 ft. x 92 ft., and will be fireproof. The company has arranged to increase the capacity of the plant in order to take care of increased business on the traction line and to meet a heavier demand for the electric lighting system of Dunbar. It is expected the plant will be completed by Nov. 1.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Shortage of Spools and Reels for Wire and Cable

Explanations of Low Stocks—Trade Accumulations Fail to Meet Demand—Metal Devices Substituted

Attention was recently called to what may be considered a minor but is yet an important phase of the electrical trade in the rather acute shortage of spools for magnet wire. The shortage is ascribed to various causes. A great deal of magnet wire has been exported, but the spools were not expected to be sent back, as is the custom in the domestic trade. The war created a heavy demand abroad, but the restraints recently placed on exportations, even to neutral countries, has reduced this business to a minimum. Attempts to ship magnet wire in coils proved a failure and were abandoned, as the insulation was affected by moisture during the sea voyage and the rough handling in stowing and discharging cargo. Spools had therefore to be employed with the package wrapped in a metal casing.

The practice is to charge the full value of spools in the invoice, with credits given when they are returned. Ordinarily the spools were shipped back within a few weeks, but with the freight congestion six months and more would pass before they reached their destination. A year ago the spool shortage was more acute than now. Conditions at the present time, however, are such that the market is being combed to obtain a sufficient supply. Some wire manufacturers and distributers are experiencing more difficulty than others in gathering a sufficient assortment of spools to meet the demand, and this may possibly lead to a higher price for magnet wire.

Substitutes for basswood and pine spools are being used with marked success. Two large Eastern manufacturers are using a copper-plated steel spool with a welded reinforced head, which far outlasts the wooden kind and is claimed to be safer and more economical in the long run. A compressed-paper spool has also been tested, but, though answering for small weights of about 5 lb., those who have given it a trial say it does not serve for 50 lb., the usual quantity sold the trade.

A shortage of reels for lead cable also exists in some quarters of the manufacturing field. As the government now controls the output of lumber, assertions are made that this is the basic reason for the curtailment in the supply. A recent government order called for reels made up on special specifications for which a priority order had to be obtained to secure the particular lumber designated. It has been said, moreover, that the government is buying cable reel and all. As a result the reels are not as a rule returned to the jobber.

Higher Prices of Traction Material

Malleable Iron Situation Serious—Frogs, Switches, Crossings, etc., on a Rising Market

In their applications for an increase of fares to public service commissions and other state boards and officials, traction road managers and executives have submitted tabulated increases of cost in the price of rolling stock, general equipment and every class of material necessarily entering into the practical operation of their properties, several of which have appeared in this department of the ELECTRIC RAILWAY JOURNAL. On many items the advances have been startling. Increases are still being made and, judging from what the manufacturers say, there is no end in sight of these revisions upward.

On July 25 frogs, switches and all overhead material were advanced 15 per cent by a Middle Western company. Bonds went up 7½ per cent three weeks ago. Deliveries are being made out of stock. Another company announced an advance on frogs and crossings of 25 per cent on July 1. The last increase in switches was made about four months ago, the average being 25 per cent over the quotations in the spring. The shortage in malleable iron for line material is making for higher costs of production and consequently in the selling price. The government has taken over the entire output of three malleable iron foundries, and therefore the needful requirements of the manufacturers of railway equipment are accordingly restricted.

Just what will be done with prices on car window glass no one seems to be sufficiently informed to venture an opinion. Sales at present are slow at figures which have prevailed since February last. The production of window glass for 1918-1919 is likely to be further restricted. With the continuation of the war the plants might be forced to close down entirely, excepting at isolated works where the labor and transportation difficulties are not so acute. There is every indication that the current high prices will continue, owing to the scarcity of stock in the hands of jobbers—the main avenue of railway trade distribution—and the lack of reserve at the plants.

Restriction of Rattan Imports Affects Car Seatings

Also Track Sweepers and Brooms—War Trade Board Revokes Shipping License Aug. 5

By a ruling of the War Trade Board on July 26 rattans and reeds are placed on the restricted import list. All outstanding licenses have been revoked as to ocean shipments made after Aug. 5, 1918. Hereafter no licenses for the importation of rattans and reeds will be issued, except for shipments from Canada or Mexico by other than ocean transportation and except, further, for shipments coming as return cargo from convenient European ports or from convenient Mediterranean North African ports, and then only when coming from a convenient port where loading can be done without delay.

In effect this means a sharp curtailment of the supply of rattan for car seatings or webbing, revolving brushes for snow sweepers and track brooms, with probably an advance in price. The last increase made by the manufacturers of rattan seats for electric passenger cars, and also brushes and brooms, was made in March last, when 10 to 15 per cent was added. Rattan, in a year's time, has gone up more than 100 per cent. Normally the price is 14 to 15 cents a pound; now it sells for 33 to 35 cents.

The ruling of the War Trade Board came as a surprise to the makers in the lines specified, and it is probable a representation will be made to the authorities either to modify the order or rescind it altogether. Rattan, the major portion of which comes from Singapore, Straits Settlements, a British possession, is used in various ways besides in the manufacture of car seats and track cleaning equipment. When the British government prohibited the shipping of rattan the car seat manufacturers and other industries interested succeeded in having the restriction removed.

Conservation of tonnage is the objective of the War Board ruling, and, of course, on this score its action may not be reversed. Inquiry has disclosed that while the market for rattan and reed has recently been extraordinarily active, car seating manufacturers have strong stocks in warehouse and heavy shipments en route to American ports. The other lines are not so fortunately placed, but their requirements are smaller. With the retrenchment in the purchase of cars, especially within the past six months, the greater part being orders emanating from the United States Shipping Board Emergency Fleet Corporation, buying has been comparatively quiet on the part of the electric railways.

Of course, the ruling has caused some concern in car building and supplies circles, but unless a brisk demand springs up for rolling stock between now and the close of the year the manufacturers are reported as being in a fair position to meet the supply. The other branches will not be hit so hard, although they are already making inquiries for rattan stock. Substitutes are generally being discussed as the inevitable result of the threatened shortage, in the event that rattan should become impossible to obtain, excepting at prohibitive figures.

Conversion to War Work of Less Essential Industry

Regional Organizations Present New Requirements in the War Program as They Arise

A great many classes of manufacturers are by their very nature in what might be termed a less essential group. Some of these are automatically suffering a decrease in output owing to decreased demand. Others are having their output curtailed because the government will permit them to use only a limited amount of fuel and is making it difficult for them to obtain raw materials.

In either case it will be of particular interest to a number of manufacturing concerns engaged in producing electric railway materials to note that the government has taken steps through regional organizations in the twenty regions into which the country has been divided to permit plans thus slowed down to continue to operate by diverting their machinery to more essential work.

The object of these regional organizations is to furnish the government with the necessary knowledge of national conditions in providing new resources and converting industries to war work. As the various departments of the government develop new requirements in the war program, they are presented to the business men of the country through these regional organizations.

As an indication of what is possible in the conversion of industry to meet war requirements and of the changes which can be made in the product of a factory, a few radical instances may be related. For instance, a Pennsylvania factory that formerly made lineoleum in now machining 4.7-in. shells. A Duluth horseshoe manufacturer is turning out trench picks for the army, and a New Jersey terra-cotta tile concern is making dummy drop bombs. A Milwaukee factory, the former output of which was rowboat motors, is making hand grenades and trench pumps. In Rhode Island a manufacturer of finger rings has turned his activities to making adapter plugs. A Detroit stove concern is producing trench bombs and anchor parts. Instances of this sort might be multiplied indefinitely.

Output of Coal Is Holding a High Record

Shipments of Bituminous and Anthracite Increasing—Object of the Fuel Administration

The weekly report on the production and shipments of bituminous and anthracite coal, compiled by the United States Geological Survey, ending July 27, indicates that bituminous production during the week of July 20 while not equaling the record week of July 13 was higher than any previous week. The output during the week ended July 20 (including lignite and coal made into coke) is estimated at 12,950,000 net tons as against 13,273,000 net tons during the week preceding or a decrease of 2.4 per cent; and as against 11,230,000 during the current week of 1917 or an increase of 15.3 per cent. The average production per working day during the week of July 20 is estimated at 2,159,000 net tons as against 2,212,000 tons during the week previous and 1,872,000 tons for the week in 1917.

Anthracite shipments during the week ended July 20 declined 1755 carloads or 4.2 per cent compared with the week preceding, the total movements amounting to 40,664 carloads.

The United States Fuel Administration issues the following: "The aim of the United States Fuel Administration to accomplish the movement of two-thirds of the annual anthracite allotment to New England before the winter season begins is being steadily realized. For the months of April, May and June shipments into New England amounted to approximately 3,250,000 gross tons. The total allotment for the New England States for the year amounts to 10,331,000 gross tons.

"Equalization as between communities and dealers will not be difficult once the coal moves through the New York 'bottle necks.' New York City received during April, May and June slightly more than its allotment for the three months." So far eight months' shipping has been accomplished in seven months, with indications of continued improvement.

Rolling Stock

Schuylkill Railway, Girardville, Pa., expects to purchase GE-247 motors.

Southern Cambria Railway, Johnstown, Pa., expects to purchase one double-end control for a 25-ton freight car.

Portland Railway, Light & Power Company, Portland, Ore., has purchased a lot of new Birney one-man cars.

Monongahela Valley Traction Company, Fairmont, W. Va., as mentioned in last week's ELECTRIC RAILWAY JOURNAL, ordered four express or interurban cars from the Jewett Car Company, the specifications of which follow:

Number of cars ordered	2
Builder of car body	Jewett Car Co.
Type of car	Express—All steel
Weight:	
Trucks	15,500 lb.
Equipment	7000 lb.
Bolster centers, length	25 ft. 0 in.
Length over all	45 ft. 0 in.
Truck wheelbase	73 ft. 0 in.
Width over all	8 ft. 4 in.
Body	All steel
Interior trim	Plain
Roof, arch or monitor	Arch
Air brakes	Westinghouse A. M. M.
Axles	A. E. R. A.—E. A.
Bumpers	Steel
Center and side bearings	Plain
Conduits and junction boxes	Plain
Control	Westinghouse "HL"
Couplers	M. C. B.
Gears and pinions	Nuttall "BP"
Hand brakes	Peacock
Heater equipment	Consolidated Car Heating Co.
Headlights	General Electric Co.
Journal bearings	Plain
Journal boxes	4¼ x 8 in.
Lightning arresters	Westinghouse
Motors, type and number	Westinghouse 306-CV-4, inside hung
Paint, varnish or enamel	Stain
Sanders	De France
Slack adjuster	Automatic
Springs	Semi-elliptic
Trolley catchers or retrievers	Ideal No. 2
Trolley base	Nuttall
Trucks	Baldwin class 73-22-K
Wheels	Carnegie 34 in.

Sand Springs Railway, Tulsa, Okla., is building three new 60-ft. four-motor cars in its own shop.

South Bethlehem & Saucon Street Railway South Bethlehem, Pa., expects to purchase fenders, electric heaters, registers and two single cars.

Columbus (Ga.) Electric Company has been advised by the builders, with whom it recently placed an order for six new Birney cars, that they will be shipped, according to a local report, some time in November.

City of San Francisco, Cal., has awarded the General Electric Company, Schenectady, N. Y., a $40,000 contract for furnishing electric locomotives for the Hetch Hetchy water property enterprise. This is the new source of water supply to San Francisco in the Yosemite Valley.

Richmond Light & Railroad Company, New Brighton, S. I., N. Y., through the United States Shipping Board Emergency Fleet Corporation, has ordered twenty new cars from the Cincinnati Car Company, for delivery along in October or November. It is reported that the specifications as to cars and equipment are a duplicate of the rolling stock purchased by the Public Service Railway, Newark, N. J., which appeared on page 1217 of the ELECTRIC RAILWAY JOURNAL of June 22.

Seattle (Wash.) Municipal Street Railway has ordered six safety or one-man cars from the American Car Company; Thomas F. Murphine, superintendent of public utilities, St. Louis, Mo., recommends that the city of Seattle purchase twenty-five cars for use on its new line. Twenty of the new cars are desired for operation over the city's proposed new elevated line, and the other five are for increased business of the present municipal lines. It is expected that the completion of the elevated will increase traffic over other municipal lines. The cars which Mr. Murphine proposes to buy are secondhand to cost $6,611 each, a bid given by the United Logging & Railway Supply Company. Twenty new double-truck cars have also been ordered for the system.

Wheeling (W. Va.) Traction Company in January, 1917, placed an order for fourteen double-truck passenger cars. There was a long delay in delivery. Four of the cars have now been received and the remaining ten are expected soon. These cars are 50-ft. body, seat fifty-two passengers and have Baldwin M.C.B. trucks. Williston Fish, senior vice-president, in furnishing this report to the ELECTRIC RAILWAY JOURNAL, under date of July 27, adds that on Feb. 4, 1918, the company lost twenty-nine double-truck passenger cars by a fire which burned one bay of its Wheeling Island carhouse, noted in the ELECTRIC RAILWAY JOURNAL of Feb. 9. The loss was complete. The company before the end of February made contracts for replacing the twenty-nine cars. Practically all the equipment has been delivered and the Cincinnati Car Company is about ready to begin delivery of the car bodies. These cars are also 50 ft. over all, 8 ft. 9 in. wide, seat fifty-two, with Hale & Kilburn seats and Brill trucks. The weight per car complete will be about 34,500 lb. At the same time that the order for twenty-nine cars was placed the Wheeling Traction Company also ordered nine double-truck passenger cars with which to inaugurate a new through line between Wheeling, W. Va., and Steubenville, Ohio, a distance of about 26 miles. These cars are 56 ft. over all, center-entrance, and seat seventy persons, and are equipped with Brill trucks, Westinghouse motors and couplers. The company will shortly order one snow sweeper, in addition to the cars above mentioned.

Trade Notes

Economy Electric Device Company, Chicago, Ill., announces that the Sangamo Economy Railway watt-hour meters have been specified on the six safety cars and twenty double-truck cars which are about to be built for the Seattle (Wash.) Municipal Street Railway.

Consolidated Car Fender Company, Providence, R. I., through Wendell & MacDuffie is equipping the twenty new cars ordered by the Richmond Light & Railroad Company, New Brighton, S. I., N. Y., with its H-B life guards or fenders. The cars are being built by the Cincinnati Car Company.

Metal & Thermit Corporation, New York, N. Y., announces that the address of Anton Lucas, its representative in that part of the country, is now 2542 Troost Avenue, Kansas City, Mo. As Mr. Lucas spends considerable of his time traveling, however, it is recommended that communications be addressed directly to the company's offices in New York City, in cases that need prompt attention.

New Advertising Literature

W. N. Matthias & Brother, St. Louis, Mo.: Catalog-handbook No. 9, furnishes additional information about the firm's pole line accessories.

Armstrong Cork Company, Pittsburgh, Pa.: Illustrated, four page folder, in colors, descriptive of the company's Nonpareil insulating line.

Joseph Dixon Crucible Company, Jersey City, N. J.: Illustrated catalog descriptive of Dixon's standard graphite productions. New prices are furnished on application.

Steel City Electric Company, Pittsburgh, Pa.: Catalog No. 33, the first edition, cancels and supersedes all previous bulletins from No. 21 to 32. It illustrates, describes in detail and gives prices of the company's long list of products.

Sprague Electric Works of the General Electric Company, New York, N. Y.: Bulletin No. 48,938, superseding No. 902, entitled "Electric Grab-Bucket Hoists." Illustrations of the hoists, accompanied by detailed specifications of the various types, are given.

Green Engineering Company, East Chicago, Ind.: Sixteen-page booklet entitled "Capacity," describing and illustrating "Sealflex" arches, which are designed to increase the boiler rating. The booklet tells the story of the development of these arches and illustrates features of their construction.

NEW YORK METAL MARKET PRICES

	July 24	July 31
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.62½	8.23
Tin, Chinese*, cents per lb	99	94
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	July 24	July 31
Heavy copper, cents per lb	23½	23¼
Light copper, cents per lb	20	20½
Red brass, cents per lb	22	22
Yellow brass, cents per lb	14	14
Lead, heavy, cents per lb	7	7
Zinc, cents per lb	5¾	5¾
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	July 24	July 31
Rubber-covered wire base, New York, cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	36.75	32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	37.50	37.50 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross tons	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4¼	4¼
Rails, girder (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste, cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.82	$1.86
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.83	$1.88
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	66	63

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 52 New York, Saturday, August 10, 1918 *Number 6*

Does Commission Control Remove the Hazard of Investment?

THIS pertinent question is raised this week in the editorial columns of the *Engineering News-Record.* The paper points out that for years the public service commissions have stood on the principle that commission control removed the hazard of investment and that the public service corporations thus protected must therefore be content with a smaller rate of return; but it inquires whether the commissions are living up to their pronouncements at present. It admits that conditions are abnormal and that some measure of relief has been accorded in many cases, but thinks that the general question can be answered only in the negative. The most that can be claimed is that the regulatory authorities are trying to maintain credit of the companies, or perhaps their effort could more fairly be characterized as one to prevent bankruptcy. It then says that if the commissions, from considerations of policy or lack of power, have abandoned their intent to remove the hazard of investment in public utilities, the public is entitled to a frank admission of the facts. The corporations should not now be denied full relief from their extraordinary burdens and later on, in normal times, be limited again to a return restricted by the doctrine that commission control removes the hazard element.

The Fire Stop Is Obsolete

ONCE upon a time, as Hans Christian Andersen used to say, the electric car was the only horseless vehicle upon the street. Indeed, at one time in its history its speed appeared so terrific that every newspaper reader missed something in his daily life if he did not come across some headline like: "Modern Moloch Murders More." It was in those quiet days, vehicularly speaking, that a number of municipalities ordained that the untamed trolley car must come to a full stop at every street on which a fire station was housed near by.

In the fullness of time have come the automobile and motor truck which are at liberty to career and careen hither, thither and yon. For them there is neither a fixed track nor a fixed stop. They come and go as they list except for such regulation as may be imposed by a traffic officer. Then, too, the fire department vehicles have also changed in character. As most are motor-driven instead of horse-drawn, it is possible to steer them around corners and elsewhere with far greater ease than before. Why then should the street cars of this country have to continue to make thousands upon thousands of utterly useless fuel and time-wasting stops every day when the street car is actually the most sober vehicle on the city streets—the only one that literally stays in its tracks. Surely no survey of needless stops is complete without listing these fire stops and requesting permission to abolish them in the cause of better service.

Is the One-Cent Fare Zone the Answer to the Fare Question?

IN A STATEMENT published elsewhere in this issue, Peter Witt, former street railway commissioner of Cleveland, sets forth his belief in the 1-cent fare zone as a solution to that most perplexing problem—the fare question. Briefly, his argument is that the low zone fare will encourage short-haul and off-peak riding and effectively combat jitney competition.

There is no question that zone systems in one form or other are receiving serious study these days from both railway managers and governmental regulative bodies. Statements by prominent railway men and recent decisions by public service commissions attest this. Likewise there can be no question, when it is viewed from the standpoint of the cost of service, that the old flat fare is not logical in that it does not proportion the charge for the transportation furnished to the cost of supplying it. But the same is true of the flat zone fare. It costs more per mile to carry a passenger 1 mile than to carry him 2 miles, so that even under the zone system a fairly large minimum charge can be justified on the basis of cost. In a way the problem is analogous to that of passenger interchange time. Just as the loading time per passenger is greater for one passenger than for a ten-passenger group, so is the cost per zone of transport for one zone greater than that for ten zones. In each case there is a certain fixed or constant quantity involved. In the fare problem, for example, platform time during the stop, increased energy consumption caused by the stop, fixed charges on equipment, etc., each item small in itself in the aggregate, forms an appreciable part of the cost of carrying a passenger for one zone. Where the passenger travels through a number of zones the subdivisions of the fixed charge become less and less as the number of zones increases, and the total zone cost approaches the actual carrying cost. As we understand it, Mr. Witt agrees in principle to this thought but favors a low initial fare and many zones with a reduction to the long-haul rider rather than fewer zones and a higher initial fare.

Will the 1-cent fare zones increase traffic? Undoubtedly, but to what extent it is hard to say. In fact, unfortunately, our knowledge as to the relation between traffic volume and fare variations, to say the least, is incomplete. While in a number of cases fares have been increased within the last year, either definite data relative to the effect of the increases on traffic volume are not yet available or local conditions have been so changed by war-time exigencies as to render present conditions incomparable with those of previous years. If we may judge from such reports as are available, an increase in fares is followed by a greater or less decrease in the traffic. Conversely, it might be expected that a decrease in fare would increase the traffic, thus supporting, in a measure, Mr. Witt's contention that a low-rate zone fare would increase short-haul traffic, particularly in downtown sections. Such increases while highly desirable during off-peak periods would be just as highly undesirable during the peak periods.

The physical difficulties and cost involved in the collection of, and accounting for, zone fares has always been one of the strongest objections to them from the standpoint of the operating man. Mr. Witt presents a method in which all passengers make their exit past the conductor. Whether it could be applied to types of cars from which passengers leave the car from either end and could be conducted speedily, is hard to say.

The ideal fare should be just in a financial way to both the average rider and the railway. It should also be easily collected and accounted. These requirements seriously conflict. We have worried along with the old flat trip fare for years. Many of us are pretty well agreed that a change is necessary. The advocacy of short low-fare zones by Mr. Witt which prompted this discussion emphasizes the necessity of further study and experimentation in methods of fare collection with the zone system.

Why the Seven-Cent Fare Produced No Riots in Boston

IN VIEW of the long and acrimonious battle in Boston over fares, the calm way in which it was accepted on Aug. 1 points a moral. Thomas Dreier, of Boston, who has had a great deal of experience in electric railway matters, writes of the installation of the 7-cent fare as follows:

"A year ago there would have been riots in Boston if the management of the Elevated had suggested that 6-cent fares would be charged beginning on a certain definite day of the month. There was no excitement at all this year when it was announced that 7-cent fares would be charged. The people have just stepped up and paid their little 7 cents for tickets in strips of five, and there has been no excitement and apparently no kicking whatever.

"All this, mind you, in a congested community like Boston. The Boston Pipps are pretty well advanced."

How can one account for this phenomenon? It is simply because the public believes in the State officials. It believes that the service is going to get the benefit of the increased fare. It does not believe that the increase is going to be used for any peculiar or subterranean purposes.

This is the attitude of mind which must exist in any community before the electric railway company of that community can be successful. The case of the company must be laid before the public with such complete frankness and convincing sincerity that the people will have the same faith in the company and its purposes which they now have in their public officials.

This takes courage, and, truth to tell, courage is the quality which, in its dealings with the public, street railway companies have shown the least of. It also takes faith and confidence; but the expression, on the part of the company, of these qualities—courage, faith and confidence—inevitably produces a reaction of the same qualities. Each then comes to a state of mind in which it can believe in the other.

"I Did Not Realize"—or "The Education of Mr. Pipp"

"THE education of Mr. Pipp" goes merrily on. Certain of the public officials are really beginning to appreciate that there are things in relation to the finances and operation of electric railway companies of which they have never dreamed in their philosophy.

For instance: The Cumberland County Power & Light Company of Portland, Maine, applied last February for an increase in its fare. A campaign for the governorship was about to begin. Instantly the political bees began to buzz. By direction of the Governor, who was a candidate for re-election, Attorney General Sturgis intervened "on behalf of the people."

Other politicians intervened "on behalf of the people." The weary weeks of obstruction dragged along. Spring passed by and summer came. But finally the Public Service Commission found for the street railway company.

Attorney General Sturgis in connection with this finding made a statement to the public. In it he said, in part:

"*I did not realize* that there should be taken into consideration a normal depreciation reserve charge.

"Other things, too, made me look at this matter from a different point of view. As, for example, I have learned that the company has had to pay an increase of $65,000 in wages.

"We have found that it costs the company $122,000 more now than it did to meet actual expenses. *They have a right to pay expenses.*"

Attorney General Sturgis has both honesty and courage. Many have one or the other, but the combination is rare.

In fact, some of the public officials are really beginning to realize that electric railway companies have a right to pay their expenses. The public had begun to suspect that even before the public officials did.

But the educational progress is by no means complete. In Buffalo, for instance, the Common Council recently passed a resolution in favor of a temporary 6-cent fare for the International Railway. It is to bridge over the emergency until the Public Service Commission can determine the rate for the full war period and six months thereafter. A referendum election is to be held on Aug. 20 to determine whether the commission shall be empowered by the city to establish the fare.

But, meanwhile, the councilors, quite aware of popular prejudices, inserted the following paragraph in the resolution which is to be voted upon:

> Provided that no part of this fund (the added fare) shall be applied to the payment of any interest or dividend on any stock or obligations of either the International Railway Company or the International Traction Company.

In Massachusetts better headway is being made. On the first day of August, the Board of Trustees, appointed by the State, announced a 7-cent fare on the Boston Elevated (which includes all of the surface, subway and elevated lines). The trustees are operating this road under a law which provides for a return upon the investment. The education of Mr. Pipp, in short, in Massachusetts has proceeded to a quite satisfactory point.

It might be a good idea if all the public officials could be assembled in one school so that numerous Mr. Pipps could be educated all at once. Better yet, perhaps, would be to put the various Mr. Pipps in charge of a street railway company.

What the Wage Award Means

"YOU can't get blood out of a turnip," said President Mahon of the Amalgamated Association in a recent statement on the critical situation brought about by the appeal of union trainmen for a living wage. And promptly came the pronouncement of the War Labor Board that the employees of twenty-three companies must have their pound of flesh even though in giving it the employers may be bled to the last drop.

The award of the federal board which has had these cases under advisement for several weeks was referred to in last week's issue of this paper. It brings to the verge of bankruptcy more than one of the companies which will be required to comply with its terms. While the wage increases are retroactive in most cases and immediately effective in the others, there is no provision for prompt financial assistance with which to meet the added expenses. True, the chairmen of the board have recommended to the President that Congressional action be taken or that local authorities give relief with a view to saving these companies from disaster. The President has, however, already expressed his disinclination to interfere, and the companies are not at all cheered at the prospect of waiting on local bodies for aid.

Not alone in the fixing of minimum and maximum wages does the War Labor Board add to the financial burden of the companies. Perhaps the hardest blow aside from this—at least for many of the companies—is the shortening of the period required for the men to reach the maximum pay. Heretofore, this has been at least five years for the average company and ten or fifteen years in other cases. The Board has declared in all the cases before it that maximum pay is to be reached after one year's apprenticeship.

Time and again arbitrators in various parts of the country have held that a training period of five years or more was necessary to bring a conductor or motorman to the point of highest efficiency warranting the maximum pay. Accident records of large railway companies have frequently been introduced to prove that new men are most costly to the management, and that there is justification in withholding the highest rate of pay until the fifth year or even later. Companies which have a considerable number of men in the intermediate classes of seniority will find this section of the award a costly one to comply with.

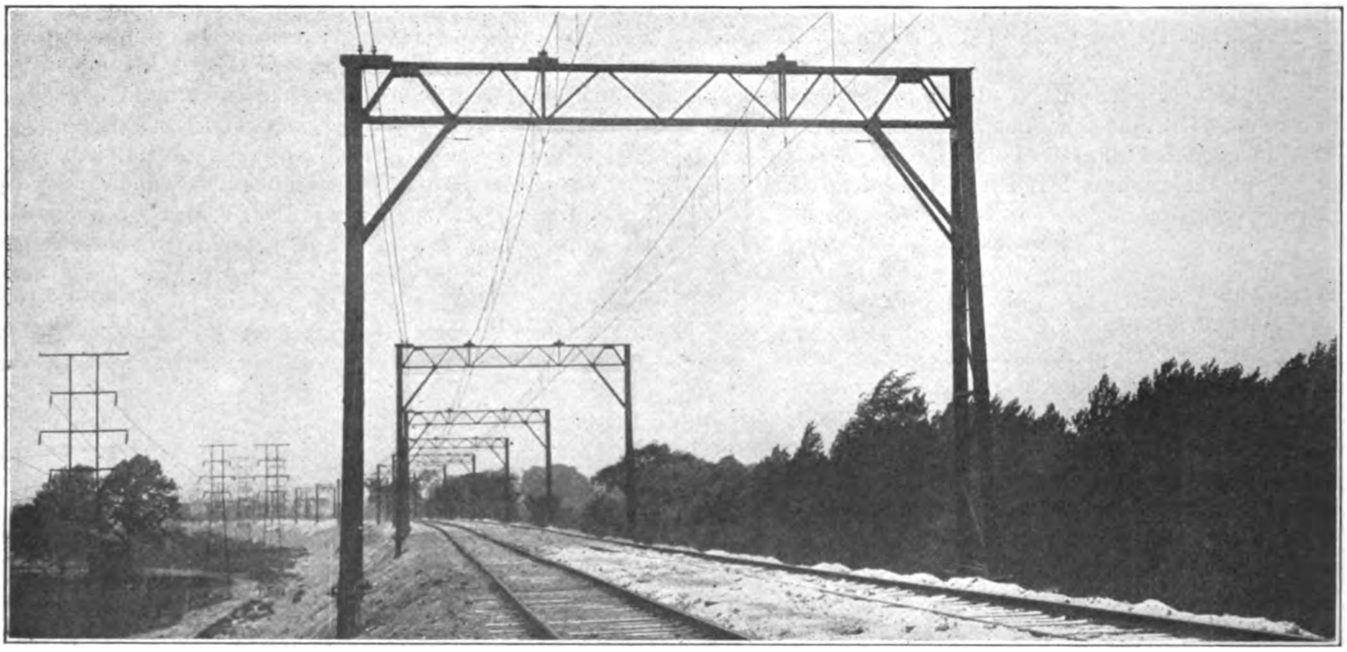
The unavoidable "spread of hours," which is peculiar to the street railway business, is also to prove a costly necessity for the companies under the ruling of the board. Under the operation of the nine-in-eleven-hours law, certain Massachusetts companies have been penalized for several years past for working the trainmen more than a spread of eleven hours. This has been a hardship because of the difficulty of preparing timetables to meet the traveling needs of the public without having the "outside time" exceed the legal limit.

Few other companies have had to contend with such restrictions, although all operating officials with the welfare of employees at heart have insisted that their comfort be considered in every possible way when arranging schedules. The War Labor Board decision penalizes all runs with a spread of more than thirteen hours. Most companies have a large proportion of their runs within this limit at present, but to the extent that it is necessary to provide service by swing runs with a greater spread the service will be burdened with the extra cost.

Labor wins three other points of more or less value. Individual contracts are declared to be contrary to the principles of the board as constituting an interference with the free right of men to organize. The decision also protects "workers in the exercise of their right to join trade unions without fear of molestation by the employer." In the Columbus case the board also sustains the right of the men to wear the union button. While this last concession may appear trivial, it is a forceful weapon in the hands of organizers during the early days of unionizing a property, when intimidation is frequently attempted on men not wearing the union insignia. Individual contracts are in effect on various properties where the employees have rejected the attempts of Amalgamated organizers to alienate them. It has been contended in behalf of these employees that in signing such contracts they have exercised their own free right to prove their loyalty to the management rather than submit to the dictation of outside business agents.

While the board has evidently thought it necessary to appease labor so that disturbances shall be minimized during the war period, there appears to be an injustice in fixing of standard wages without due regard to other compensating features of certain contracts. In some cities the working conditions already call for payments of bonus for meal relief, reporting and settling up time and similar items. To the extent that these concessions are continued those employees will have an annual income higher than that prevailing in cities classed by the board as being in the same grade.

After all, the whole proposition turns on the ability of the companies to meet the situation before disaster overtakes them. There is no disputing the right of the men to a wage which will provide for health and comfort. The companies will pay that wage cheerfully if they have the means with which to do so. The railways must be kept in operation and must give good service, and one means for securing this is a contented group of employees. But still another essential is the financial integrity of the properties. Unless this is promptly assured, the award will be disastrous to the nation which needs good service. State bodies move slowly and the logical solution of the difficulty is federal action, such as the appointment of an electric railway administrator, which indeed has been asked by the National Association of Railway & Utility Commissioners. The men who have been benefited by the award should approve the plan of enabling the companies financially to pay the wages granted. We believe the public also is ready to sanction the plan of higher fares. It is a time for prompt and united action.



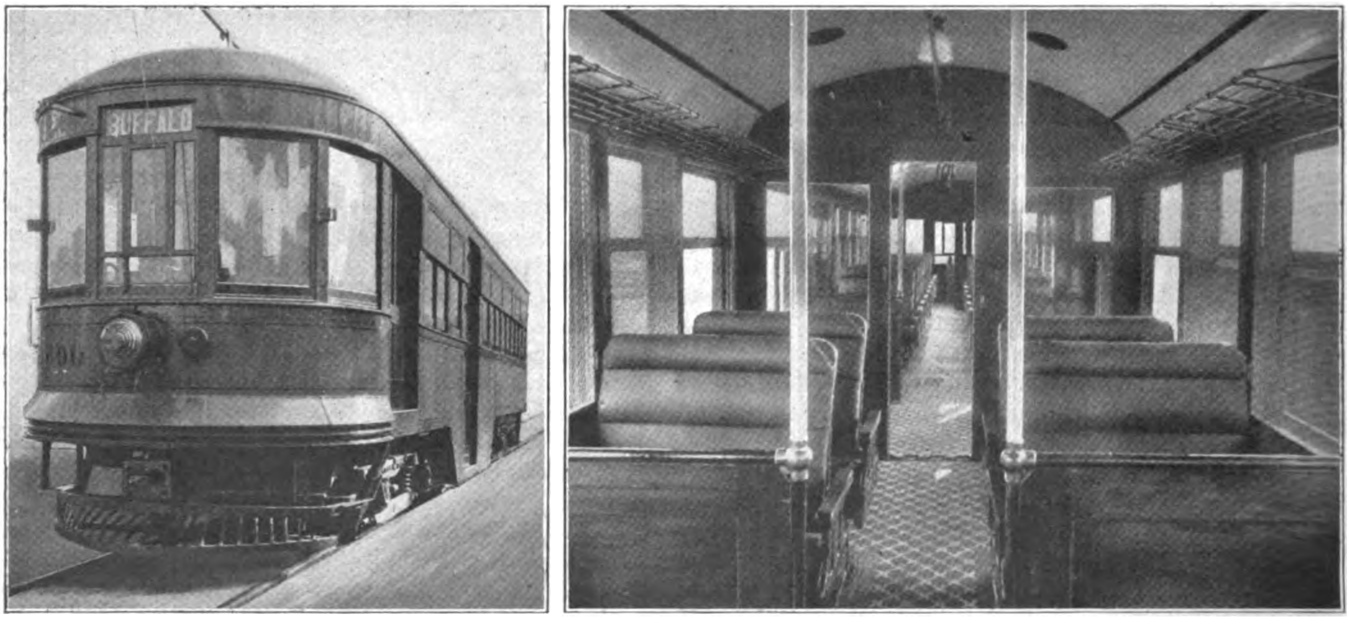
TYPICAL OVERHEAD CONSTRUCTION ON FILL—POWER COMPANY'S TRANSMISSION LINE AT LEFT

Quick Service Between Buffalo and Niagara Falls

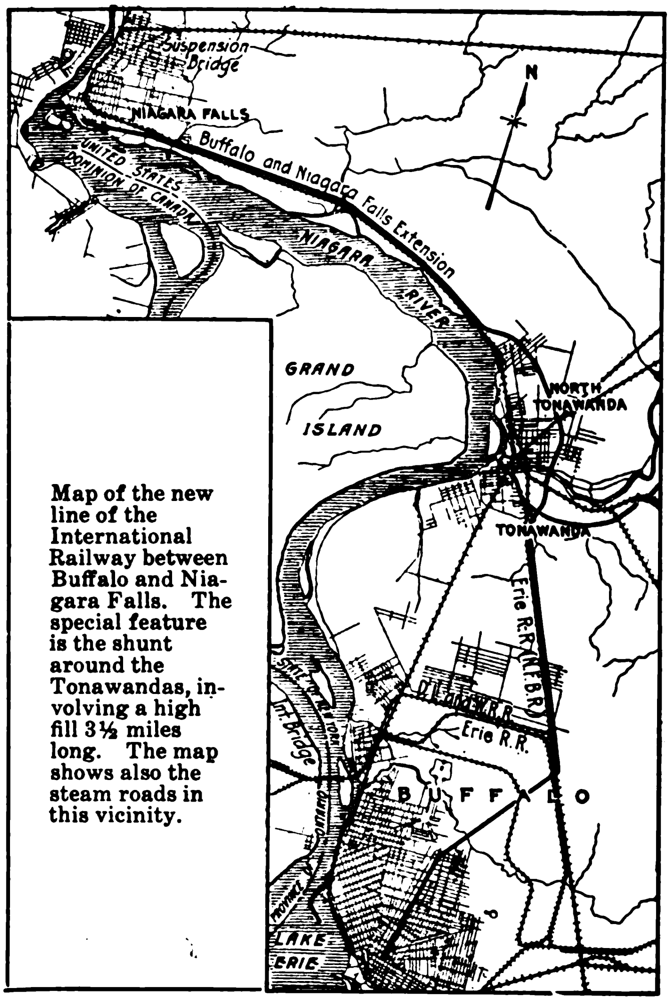
High-Speed Line Is Now in Full Operation—Salient Features Are Catenary Construction with Heavy Overhead Bridges, a Long, High Fill to Obviate the Necessity for Numerous Grade Crossings and a Type of Car Especially Well Adapted to the Conditions

FOR several weeks full hourly service has been given over the high-speed line of the International Railway between Buffalo and Niagara Falls, N. Y. Many of the structural features of the line were covered in advance in the issue of the ELECTRIC RAILWAY JOURNAL for March 3, 1917, page 378. The completion of the job has permitted the taking of some pictures showing the construction better than could be done at that time. It was intended officially to open the line on Memorial Day of this year but this proved to be impracticable and it was actually opened some weeks later. The photographs of the completed construction were taken on May 31.

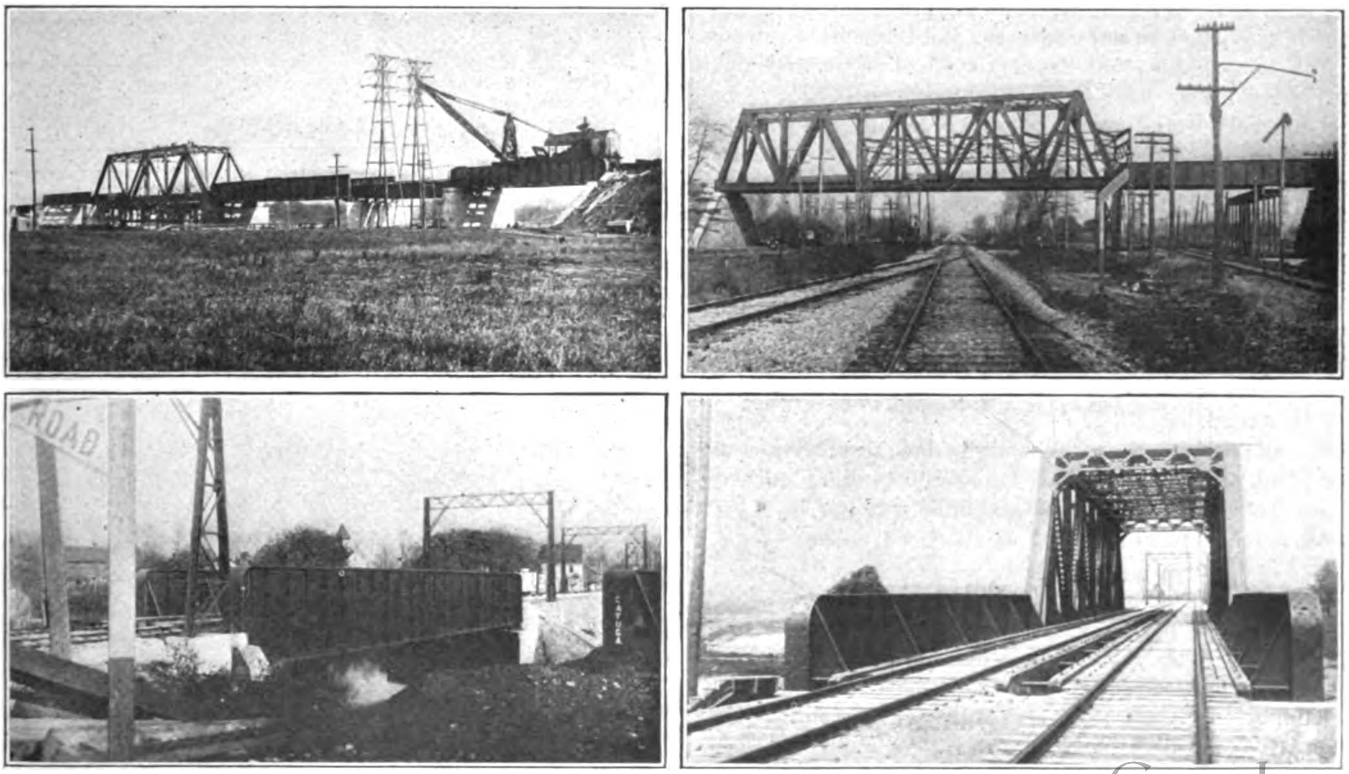
While most of the details of the design were taken



EXTERIOR AND INTERIOR OF CENTER ENTRANCE AND EXIT HIGH-SPEED-LINE CAR up in the preceding article, some additional facts are now available and a brief general survey of the project seems appropriate. That this new line was needed is evident from the fact that the earlier line between the two cities, constructed in 1896, has become so congested with traffic that in the busy season a five-minute headway is necessary upon it. The time required for the through trip, also, is excessive. On the new line but one hour is required. The high-speed line follows the right-of-way of the Frontier Electric Railway, which is owned jointly and will be developed by the Pennsylvania Railroad and the Delaware, Lackawanna & Western Railroad. The route is shown on the accompanying map. The line is about 22¾ miles long, three-quarters of it being upon private right-of-way. It connects Main Street, Buffalo, and Portage Road, Niagara Falls, passing en route through Tonawanda, North Tonawanda and La Salle. One of the outstanding features of the high-speed line is the big Tonawanda fill. East of that city the line crosses two railroads, about 7000 ft. apart, and nine streets. It was out of the question, if safety and speed were to be secured, to cross the steam lines at grade and it was undesirable to cross the streets at grade for the same reason. To cross the steam lines overhead with the remainder of the line at the natural level would have involved several steep grades. It was finally decided to construct a fill 3½ miles long with a maximum depth of 26 ft. and containing 600,000 cu.yd. of material. Several of the illustrations for this article were taken on or near this fill. The necessary material was secured from a near-by hill involving but a short haul. The only incident marring this part of the job was a sudden settling at one point due to the presence of a quicksand which absorbed the fill and raised the ground surface correspondingly. The track was laid on a sub-grade 29½ ft. wide with sides sloping 1½ to 1. On this 85-lb. rail was placed on standard-size white oak ties,



Map of the new line of the International Railway between Buffalo and Niagara Falls. The special feature is the shunt around the Tonawandas, involving a high fill 3½ miles long. The map shows also the steam roads in this vicinity.



TYPICAL VIEWS OF TRACK BRIDGE CONSTRUCTION ON BUFFALO-NIAGARA FALLS HIGH-SPEED LINE on 2-ft. centers. These were joined with Abbott plates, the joints being bonded with Ohio Brass No. 0000 compressed terminal bonds, with ⅞-in. terminals. When the fill thoroughly settles the track will be ballasted with crushed stone, but slag is being used temporarily. This fact accounts for the rather unfinished appearance of the ballast, noticeable in the pictures.

NEARLY 3000 TONS OF STEEL IN THE TRACK BRIDGES

The use of the fill increased the number of bridges necessary, a total of 2850 tons of steel being used in their construction. The largest single span is 184 ft. A group of pictures on page 227 shows the structural features of these bridges. At Tonawanda the through plate girder type was used, and over the Tonawanda Creek the bridge has five spans. Three of these are through girders, one is a truss and the fifth is a deck girder. This bridge may at some time be changed to a bascule drawbridge, and the plate and deck girders have been designed to provide for such a change with little difficulty.

It is interesting to note that in putting in the piers for the Tonawanda Creek bridge the deepest single-wall sheet piling used up to that time was a feature of the construction. The coffer-dam made of the Lackawanna Steel Company piling is shown in an accompanying illustration.

STANDARD BENT FOUNDATION UNITS ON THE BIG FILL

The overhead construction throughout involves the use of heavy bents and trusses, which were furnished and erected by the American Bridge Company. The design shown in the illustrations was standard as far as form is concerned but the weights of the members were varied to suit conditions. There were four of these weights, the lightest for use on tangent track, the heaviest for dead-end towers, and intermediate weights for curves and strain towers. All were built much heavier than necessary for the immediate purpose as it is possible that transmission line bonnets will be added later.

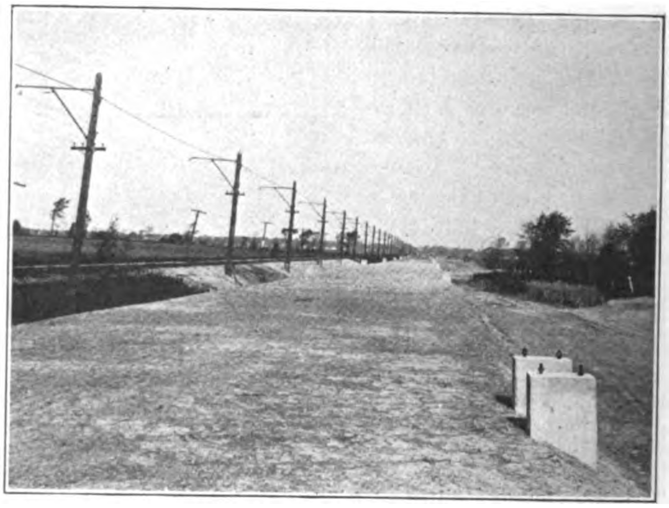
On level ground the usual concrete footings, four to a bent, were employed, but on the fill it was considered desirable to support the bents from solid ground. Hence, before the fill was made, concrete footings were molded in the ground and a structural-steel framework was carried up above the track level. To permit the use of standard units in the frames the concrete footings were varied in height. Two pictures are reproduced to show the footing construction, and in other pictures the method of attaching the bents to the foundation can be discerned.

In all 420 of the overhead bridge structures were installed, their total weight being 800 tons, or an average of 3800 lb. each. The standard spacing is 200 ft. with a minimum of 90 ft. on sharp curves.

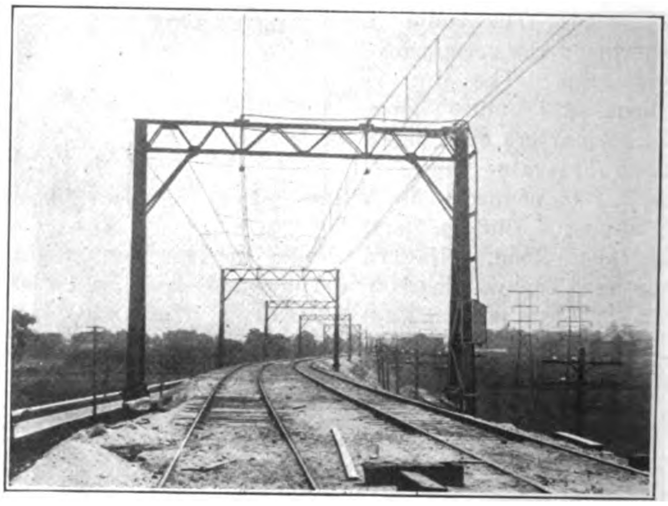
TWO SOURCES OF POWER SUPPLY

The No. 0000 hard-drawn grooved contact wire is hung from a 500,000-circ.mil hard-drawn copper cable by loop hangers placed 10 ft. apart. The messenger is supported on most of the trusses on porcelain spools mounted on rolled steel shafts resting in iron socket bearings. This mounting provides for expansion and contraction in the messenger and insures uniformity in tension. Pin-type insulators here and there act as messenger anchors.

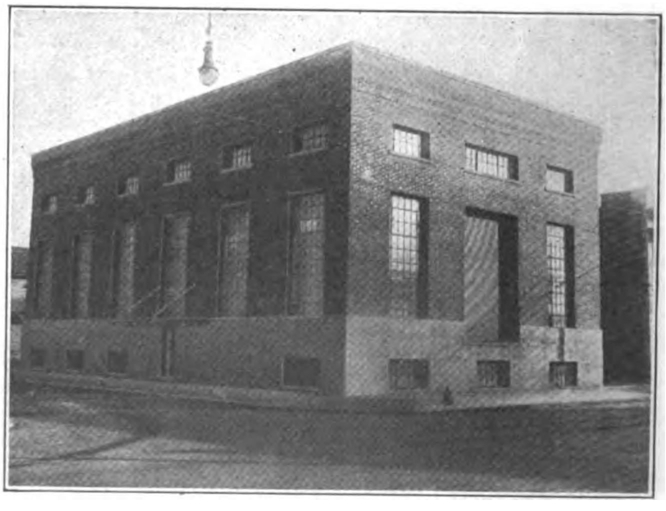
The main source of power is the Niagara Falls Power Company which furnishes it, under a "firm power" contract, at 25 cycles and 11,000 volts. Supplementing



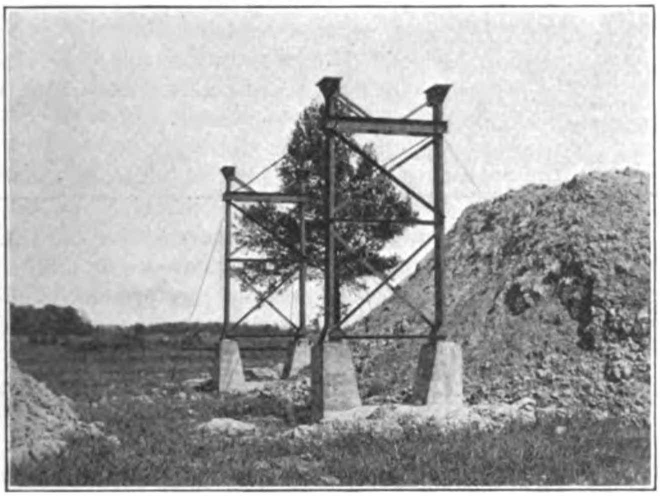
SUB-GRADE WITH TOWER FOOTINGS READY FOR TRACK AND OVERHEAD

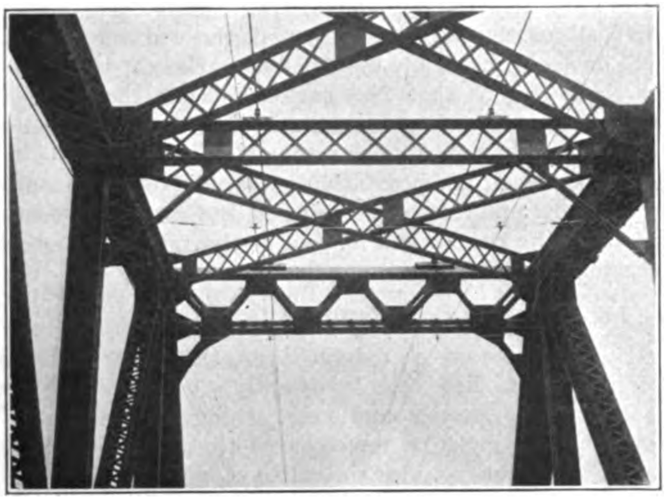


OVERHEAD CURVE CONSTRUCTION, SHOWING PULL-OFFS —FEEDER SWITCH ON BENT IN FOREGROUND



NEW SUBSTATION AT TWENTY-FOURTH STREET AND ALLAN AVENUE, NIAGARA FALLS this source is the famous old Niagara Street plant in Buffalo which has been remodeled for the purpose. A 5000-kw. steam turbine has been put in (see ELECTRIC RAILWAY JOURNAL for July 13, 1918, page 44), together with the necessary accessories. This turbine has now been in operation for several weeks.


FOUNDATIONS FOR STEEL BENTS, TONAWANDA FILL


CLOSE-UP VIEW OF OVERHEAD SUSPENSION AND STEADY SPAN ON BRIDGE

SHEET PILING COFFER-DAM FOR BRIDGE PIER, TONAWANDA CREEK

The substation layout has also been considerably modified, including the addition of a new substation at Niagara Falls. The exterior of this is shown on page 228. The details of its design, together with those of the changes in the other substation, will be made the basis of a later article. Suffice it to say that the whole equipment has been selected to permit an increase at any time to 22,000 volts. Thirty-three thousand-volt GE-H-3 switches have been used throughout with this idea in view.

At Niagara Falls there are two new 1000-kw. G.E. rotary units and three old 400-kw. units removed from the former local substation. At Payne Avenue, Tonawanda, three 1000-kw. machines have replaced the same number of 400-kw. units, and at Fillmore Avenue, Buffalo, one 200-kw. machine has been put in, in place of a 400-kw. unit.

At Niagara Falls, by the way, oil-cooled transformers have been used in place of air-cooled ones, to obviate possible evil effects on insulation due to the fumes from the neighboring chemical factories.

The rolling stock for the high-speed line, most of which has been in operation on other parts of the system for some months, was fully described in the previous article referred to and in the issue of this paper for Jan. 6, 1917, page 61. The cars were furnished by the G. C. Kuhlman Car Company.

What Vehicular Obstruction Does at Seattle

AS OF JUNE 14, 1916, G. A. Richardson, general superintendent of railways Puget Sound Traction, Light & Power Company, prepared the following estimate of time lost on downtown streets due to vehicles obstructing street cars on week-days between 7 a.m. and 7 p.m. The average time lost during these hours is from two to three minutes per one-way trip.

	Round Trip 7 a.m. 7 p.m.	Time Lost at Six Minutes per Round Trip, Minutes	Time Lost at Four Minutes per Round Trip, Minutes	Time Lost at Two Minutes per Round Trip, Minutes
Western Avenue	234	1,404	936	468
First Avenue	1,392	8,352	5,568	2,784
Second Avenue	1,268	7,608	5,072	2,536
Third Avenue	1,297	7,782	5,188	2,594
Total	4,191	25,146	16,764	8,382
Car time lost in hours		419	280	140
Passenger time lost in hours at twenty passengers per car		8,382	5,600	2,800
Trainmen's time lost at two men per car, in hours		838	560	280
Cost of trainmen's time lost at 40 cents per hour		$335	$224	$112
Eliminating these delays will improve service on these streets with same number of cars in service, approximately		10%	7%	3½%

The asphalt plant of the San Francisco-Oakland Terminal Railways enabled that company during 1917 to make asphalt at a price considerably below that quoted to the Oakland municipality. Thus the cost of binder on the job was 34 cents per cubic foot to the railway and 45 cents per cubic foot to the municipality.

A three-car train, the first ever operated on the division, ran between Detroit and Camp Custer on the Detroit, Jackson & Chicago Railway division of the Detroit (Mich.) United Railway on June 16 and proved immensely popular with a large number of Detroiters who visited the big military camp.

Automatic Rate System Is Fair to All

A Year's Experience with a Service-at-Cost Franchise in Westerville, Ohio, Shows Desirability of Flexible Fares Automatically Adjusted

By HAROLD W. CLAPP
General Superintendent, Columbus Railway, Power & Light Company, Columbus, Ohio

THE franchise of the Columbus Railway, Power & Light Company suburban line to Westerville, 13 miles from Columbus, is based upon the premises, first, that a community should say what it wants in the way of service, and second that it should pay for such service. An abstract of this franchise, which has been in operation about a year, was published in the ELECTRIC RAILWAY JOURNAL, of July 21, 1917, page 102. Briefly, the company is allowed under this franchise to earn 6 per cent upon the value of the investment fixed by arbitration, and 8 per cent upon new capital. The County Commissioners, acting through a street railway commissioner, have the right to prescribe conditions of service, and the company is in duty bound to provide the prescribed service.

FLEXIBLE FARE AUTOMATICALLY ADJUSTED

A sliding scale of rates of fare is provided, automatically adjusted with the fluctuations in the working capital, as was provided in the Tayler ordinance in Cleveland. In fact, the Westerville franchise is in general based upon the Tayler ordinance, which provides a most logical and workable mechanism for insuring a fair return upon the investment in electric railway properties with the exception that it imposes a fixed maximum fare. The recent law enacted by the Massachusetts Legislature, by the way, eliminates this weakness by always insuring four steps in the fare scale above or below the step established at any time.

In the case of Westerville, the sliding scale of fares is as follows:

(a) Four tickets for 10 cents, or 2½ cents fare.
(b) Five tickets for 15 cents, or 3 cents fare.
(c) Ten tickets for 35 cents, or 3½ cents fare.
(d) Five tickets for 20 cents, or 4 cents fare.
(e) Ten tickets for 45 cents, or 4½ cents fare.
(f) Five tickets for 25 cents, or 5 cents fare.
(g) Ten tickets for 55 cents, or 5½ cents fare.
(h) Five tickets for 30 cents, or 6 cents fare.

The cash fare is 5 cents a zone except under (f), (g) and (h), when it is 6 cents a zone.

Operation under the franchise began on Aug. 1, 1917, under schedule (d) with a ticket fare of 4 cents or five tickets for 20 cents. Soon afterward a commutation book was provided for six and seven-day regular riders, giving them two rides each week day or every day, as the case might be, at 3¼ cents a zone. The only limitation on the use of this book was set by the dated tickets, each coupon bearing the date upon which it might be used.

The public control of the service on the Westerville line lies in a street railway commissioner, appointed by the body that originally granted the franchise, the County Commissioners. His salary is paid by the car riders of the Westerville line, as it is charged against them in the operating costs.

The control of the service includes the right on the part of the street railway commissioner, acting for the public, to fix and alter car schedules, increase or diminish the service, propose extensions, betterments and permanent improvements, and approve or disapprove the same when proposed by the company. In short, he represents the car riders in all things affecting service and the cost thereof.

Operations under the Westerville franchise have been carried for more than a year. At the end of the eleventh month, which was June 30, 1918, the working capital had shrunk from $25,000 to $15,087.69. This would indicate that the rate of fare maintained was too low. It is altogether likely that by Sept. 1, at the very latest, with all accrued accounts adjusted, the working capital will have shrunk below the $15,000 mark. At that time or thereafter as that fact can be officially determined from the reports of operation, the fare will automatically increase to the next higher rate, which in this case is 4½ cents per zone. Commutation rates will follow the upward trend and instead of being at the rate of 3¼ cents per zone the tickets will be sold at the rate of 3¾ cents per zone.

LOCAL STREET COMMISSIONER IS DOING HIS PART

During the past year John Scott, the street railway commissioner, has been constantly "on the job" of watching the service and making inquiries and suggestions. It must be remembered that this road is a small operation, as electric railways go, and that Mr. Scott as commissioner took hold of it at a time when it had been a going concern for twenty-five years. The possibilities for suggested changes are not so numerous as they would be on a more extensive transportation system. Nevertheless, Mr. Scott has found opportunity to serve the public most efficiently. He has taken particular pains on many occasions to go to Westerville, which is 13 miles from Columbus, and hold meetings and conferences with the city commission and with the Chamber of Commerce and with them go over the reports rendered him monthly by the company. These reports, by the way, show the financial results for the previous month; they are made in great detail to the commissioner by the 15th of the following month and follow the official classification as to form. A condensed statement from this report is printed on a bulletin and hung in a neat frame in the Westerville cars each month and also sent to the Columbus newspapers and to *Public Opinion*, the Westerville local newspaper. Publicity is the real watchword of such a plan of operation.

In the early part of the year the commissioner made special efforts to see how the newly-arranged zone worked out so far as accommodation of car riders was concerned. He called for only one change during the year and that was in the case of a church located 600 ft. from the end of one zone, and he ordered the cars to change this zone limit on Sundays for the church goers only. The use of the line as a freight line by the merchants of Westerville would be greatly increased if a better located terminal for receiving freight could be had at the Columbus end. The company had been for a long time trying to find such a terminal but in vain. Mr. Scott has been striving to the same end. In many other minor ways Mr. Scott has made suggestions and inquiries. He is just at this time commencing the most important move for his car riders, in attempting to get the taxes assessed against the Westerville line reduced to a more equitable basis. The Westerville car riders are paying about $9,000 a year taxes when in all fairness they ought to be paying about $3,000. Mr. Scott has the county commissioners and the county attorney behind him in the fight that he is planning on this point.

Railway managers might as well face the fact that the time is here when the public ought to, and is going to, dictate electric railway service. The public is going to insist, in fact is insisting, upon saying when, how and where cars shall be run. I say, let the public do so if only it pays for the service.

There would be no trouble about this phase of it except for franchise restrictions on rates of fare. There's the rub! No progress is possible until the old contracts are voluntarily abrogated or rendered null and void by the rulings of commissions, when such bodies have rights superior to those of municipalities in this matter. Where municipalities alone have the right, they must act.

ZONE SYSTEM ONLY JUST PLAN FOR LARGE CITIES

Zone operation is necessary on a line like the Westerville line, but whether it is advisable in city operation must depend upon many local conditions. The shape of a city and the springing up of sub-business centers have more to do with this question than mere population. Real estate developments, usually allowed to locate without regard to anything except the profits of their promoters, often produce abnormal situations where the installation of the zone system is necessary. I have observed that when an American city gets above say 500,000 in population, the zone system is the only just one for both public and company. It is likely, in my judgment, to make headway in this country in the years immediately after the war, when it may be found that a much higher price level will exist than is popularly predicted now. The zone system will make it possible to place upon the shoulders of those getting the benefits the cost of operating lines that would be unprofitable as part of a flat-rate system.

But whether a flat rate or a zone is used, the fare ought to be flexible or follow a sliding scale. The time has gone by when cities or companies are going to get each other by the throat with a fixed fare. Any community is interested in service first—what it shall be and how it shall be rendered. The public is also learning that it is interested, for selfish reasons, in the ability of its electric railway to provide that service, and to grow not only with the town itself but also with changing methods of conducting transportation. It begins to be apparent to both sides that the price of service cannot be, safely for either side, fixed for a term of years.

The provision for a sliding scale in Westerville takes care of fluctuating costs, downward as well as upward. It is done in this way: A total of $25,000 of the capital of the line was in cash and was termed the "working capital fund." All the surplus at the end of each month, after paying operating costs, maintenance, taxes and interest at 6 per cent on the capital invested ($300,000 in this case) is paid into this fund. When the working capital fund increases to $35,000, the next lower rate on the schedule may be ordered into effect by the street railway commissioner; when it shrinks to $15,000, the next higher fare may be installed by the company.

GET AN AUTOMATIC SYSTEM NOW

The whole matter of fares is complicated at present by the fact that many of the electric railways do not appear to know what they want in the way of a permanent settlement. One company asks for an increase of 1 cent, and another for 2 cents. A third wants a charge for transfers, and a fourth prefers the zone system. It is understood in all cases of appeal for emergency relief that any relief given now will be temporary if operating conditions continue to become more and more strenuous. Obviously as wage increases are constantly demanded, as material prices mount skyward, as interest rates go up, there must come a time when another increase of fare will be asked for. On the other hand, it is conceivable that prices might go down, leaving the rate of fare too high. Then the public must go through a process the reverse of that instituted by the companies when they appealed for higher fares.

In other words, under the present general plan there will be a seesawing up and down, with somebody always appealing for something. Why not take the bull by the horns and throw him—that is, make now the effort necessary to institute an automatic system, fair to everybody, and dispense with all this appealing, which is a constant source of irritation?

If this plan is followed it may, in many cases, be necessary for holders of stock to consent to a considerable reduction in its volume. It is better, however, to have less stock of a marketable and dividend-earning character than the greatly depreciated, sluggish stock which characterize so many properties and which a man would be called a fool for buying. In Cleveland, where the stock total was cut, the stock is now owned by many times as many stockholders as formerly, and it is a gilt-edged investment.

The only way out, in my opinion, is a service-at-cost system. This plan removes the veil of mystery from the finance and the operation of a public utility. The community immediately realizes that the utility stock is a safe investment because the community has in effect guaranteed the security. Being aroused to an interest in its public utility, the community thereafter invests its savings in it, and the final step is a long move toward co-operative ownership and a boosting instead of a knocking community.

Is this not what the management of public utilities should be trying to secure?

Meeting the Nation's Transportation Needs

Some Details of the Ways in Which the Extra Transportation Burdens of War Days Are Being Carried by Florida, Georgia, Texas and Washington Railways

THE past year has been a strenuous one for electric railways situated in the vicinity of cantonments, war manufacturing plants, shipyards and other seats of abnormal activity and greatly augmented conconcentration of population. Nevertheless, in spite of money and man shortage the demands of the hour have been met, partly with federal aid. The situation in a number of centers has been taken up in recent issues of the ELECTRIC RAILWAY JOURNAL. This week the series of articles is continued with accounts of electric railway expansion and adaptation at cities as widely separated as Jacksonville, Fla., and Tacoma, Wash., and at some points between.

Serving Soldiers and Shipyards at Jacksonville

Company Has Built 3-Mile Extension to Camp Johnston and May Add 1½ Miles—Man Shortage Is a Problem

AS THE result of war activities, the population of Jacksonville, Fla., and vicinity has increased from 80,000 to 100,000 or more. This has not made it necessary, however, for the Jacksonville Traction Company to purchase new cars, for the business to-day has simply gone back to where it was before the depression of 1914. Except in the case of Camp Joseph E. Johnston, the company has not needed to build new track and give special service.

$160,000 TO PROVIDE TRANSPORTATION FOR 20,000 AT THE GREAT QUARTERMASTERS' CAMP

The big problem of the company to date has been to take care of Camp Joseph E. Johnston, the great Quartermasters' camp of the country where thousands of men are trained for work from shoeing horses to writing shorthand. This camp is 10 miles from the heart of Jacksonville. Its personnel runs as high as 20,000. As in the case of other cantonments, the travel is spasmodic and variable in amount.

The nearest line which the company had for serving the camp was the Ortega line. This was extended 3 miles and opened for service on April 15. To do this, any rail that came to hand had to be used, from 56 lb. T to 122 lb. girder. The latter, of course, will be replaced with T-rail and used in the city when times have changed for the better.

Even with this extension, the railway does not go through the camp. It merely reaches the entrance, at which point government-controlled autobuses carry people through the grounds. The fare on the street cars is 15 cents; on the buses, 10 cents. The government is now urging the company to extend its line another 1½ miles in order to serve the entire camp for the same 15-cent fare.

This fare is charged any passenger who boards the camp cars. These are distinctly marked as giving through express service to Camp Johnston for a 15-cent fare. The condition is a peculiar one, because up to the end of the old Ortega line the fare is only 5 cents. The restriction is necessary, however, to separate effectively the local rider from the through passenger.

FACILITIES FOR TEN-MINUTE SERVICE

Although the extension is single track for unit-car operation, every curve is double-tracked and there are six passing tracks within the 3-mile distance. If necessary, therefore, a ten-minute service could be given. At present a thirty-minute service is run between 5 a.m. and 12 o'clock midnight, except that four outbound cars to camp are added between 5 a.m. and 6 a.m., and four inbound cars between 5 p.m. and 6 p.m. To avoid dead mileage, these four cars stay at the camp all day while the crews are at work elsewhere or on leave.

The camp has no prepayment area, but from 4 p.m. to 7 p.m. a man is stationed at the terminal to sell tickets in advance at 15 cents straight. In this way, the loading is greatly facilitated, as making change for a 15-cent fare is painfully slow. To assist the company in the safe and orderly loading of cars, the government also furnishes a platform guard who is relieved by a second soldier about 3.30 p.m.

Owing to the low voltage, the 10-mile trip now requires an hour instead of forty-five minutes. Soon there will be in operation, however, a 500-kw. Westinghouse motor-generator placed in a corrugated shed, 1 mile from the terminal. This will raise the voltage sufficiently to permit the run to be made in forty-five minutes, or in one hour if the 1½-mile extension through the camp is built. The total cost of the substation and of the 3-mile extension already built will be about $160,000.

While the company has not had to buy any cars, it is changing some open cars for one-way operation by the simple expedient of cutting off one running board and screening the side so that it will be impossible for passengers to jump off.

MUCH SHIPBUILDING UNDER WAY

Most of the shipyard work at Jacksonville is on the opposite shore of the St. John's River. The employees from the yards go *via* ferry to Jacksonville, where they board cars for various lines. The largest single shipbuilding enterprise is that of the Merrill-Stevens Company, which has six 6000-ton and four 10,000-ton steel vessels on the ways. Another of the five Jacksonville plants has twelve ways for wooden ships, and it is building three 5000-ton vessels. Still another plant is building submarine chasers. A big project on the Jacksonville side of the river is that of the Marine Railway & Drydock Company, to be operated by the Emergency Fleet Corporation in connection with a private shipbuilding plant.

In all from 6000 to 8000 men are employed in shipbuilding at present, although the Marine Railway & Drydock Company alone expects to employ at least 5000 men eventually. Its site, if thus built up, would call for a ¾-mile extension. Housing has not yet presented any problem. One reason is that from 5000 to 6000 negro laborers were taken out of Jacksonville last year.

TRYING TO MEET THE MAN SHORTAGE

Like so many other electric railways, the Jacksonville Traction Company finds it hard to compete with the tremendous wages paid by the shipyards and other war industries. Matters actually reached the point where the employment agent of the shipbuilders promised to take no more railway men, for he realized that this would simply hurt shipbuilding interests more than it would aid them.

Since America's participation in the war, the company has raised wages three times. It is also saving large sums of money for its men by selling groceries to them at cost. The business amounts to $3,000 a month for 350 men. This policy is carried to the point of competing with the credit grocer, for if the railway man lacks the cash he can get a $5 coupon book, provided he has an equivalent amount of cash coming to him.

The salesroom adjoins the carhouse. It has no running charges of importance except $50 a month for the boy in charge. The service originally included delivery, but this was found too costly. All business is now done over the counter, either with the men themselves or with their families.

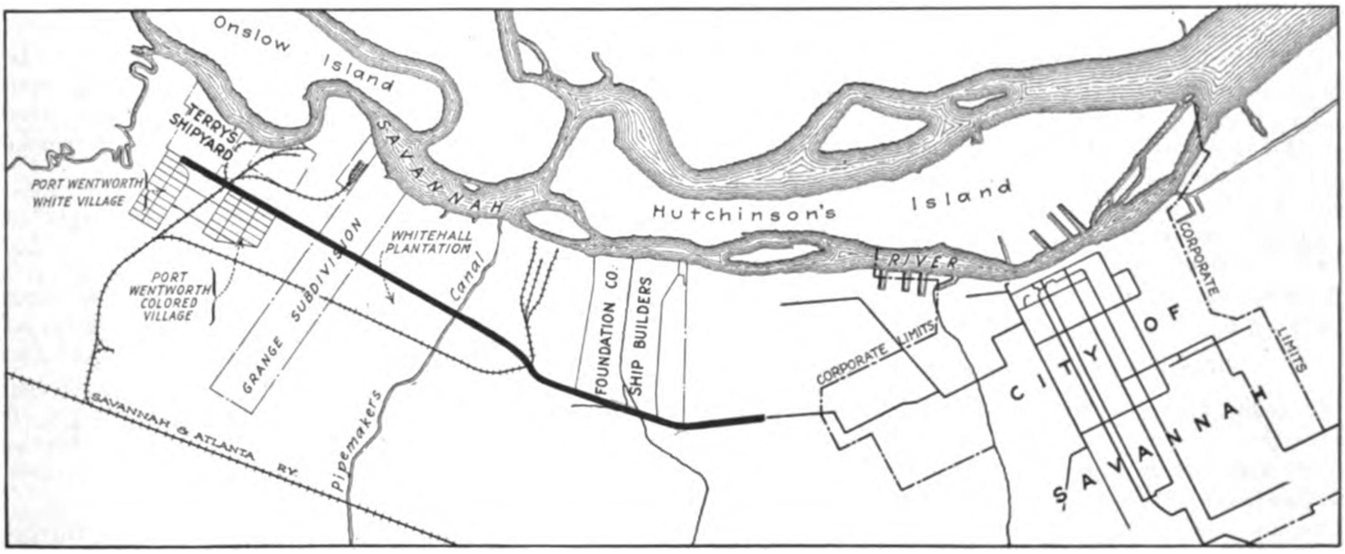
Because of the shortage of men, however, the company recently published an advertisement for four weeks in seven county papers. This has brought in country boys, some of whom are only seventeen years of age. In fact, war conditions have also forced the company to engage men over fifty years of age. It is not improbable that women will be tried this autumn. If so, they will be put on lines in high-grade residential districts.

New Five-Mile Savannah Line

Extension to Government Shipyards Is Well Under Construction—Ten Open-Bench Cars Are Being Inclosed

THE county of Chatham (Savannah) has planned a concrete road about 5 miles long, with an electric railway extension, to open up an immediate approach to the yards of the Foundation Company, now in course of erection on grounds almost contiguous to Savannah, and also to the yards of the Terry Shipbuilding Corporation at Port Wentworth, 8 miles out. The accompanying map shows the route. The new facilities would also serve intermediate interests, such as the Savannah Warehouse & Compress Company, Savannah Sugar Refinery, Globe Machinery & Barrel Factory and the Atlantic Paper & Pulp Company.

For a time the work was held up through delay on the part of the owners of the Whitehall plantation in granting a right-of-way, but recently the Emergency Fleet Corporation secured the necessary land. Now the Savannah Electric Company is building the single-track (eventually a double-track) line which it has a right to lay on the left-hand side of the road for a width of 25 ft. The subgrading is now 50 per cent to 75 per cent completed for the remainder of the distance, and the steel laying is practically finished.



NEW FIVE-MILE CONCRETE ROAD AND EXTENSION OF SAVANNAH ELECTRIC RAILWAY TO SHIPYARDS

At present transportation to the Terry assembling plant is effected by a Savannah & Northwestern steam train, by boats and by automobiles—all of which have proved to be insufficient, roundabout and expensive. The Terry people have stated that with regular electric transportation, for which the fare would be 10 cents, the yards would be able to attract from 15 to 40 per cent more men. The Savannah Electric Company would give a twenty-minute headway during rush-hour operation, with a forty-minute headway in off-peak service. In order to be ready to give this service it is inclosing ten forty-passenger open-bench cars, and it is installing a substation.

At this time the railway is serving morning and night only 2000 employees of the Foundation Company, which is building thirty-six steel mine sweepers. The

Foundation Company has installed at its own expense a 1-mile spur so that its men can have direct service with a minimum of walking. The fare is 10 cents, although a mile walk reaches the present Mill-Harper line and a 5-cent fare limit.

Traffic Up 50 per Cent at San Antonio

Five-Mile Extension, Thirty New Motor Cars and Fifty-four Home-Made Trailers Added to Handle War Business

THE pre-war population at San Antonio, Tex., was 130,000. Now a harried postmaster asserts that 300,000 people are addressed *via* the City of the Alamo. Be that as it may, about 80,000 men have been added through Kelly Field (America's greatest aviation school), Brooks Field, Balloon School, Camp Travis and Fort Sam Houston. In addition the city now holds the dependents of many of these men and a large number of Mexican refugees. The general increase in population has resulted in a 50 to 60 per cent gain in traffic. For the twelve months ended April 30, 1918, the San Antonio Public Service Company carried more than 37,000,000 passengers.

The company faced a serious problem in providing for this increased traffic. Operating expenses have been going up enormously, fuel has more than doubled in cost, and the cost of other supplies, when obtainable, has increased in an even greater ratio. New equipment practically could not be procured, both because of war conditions and because of the lack of money to purchase it.

HANDLING THE INCREASED TRAFFIC

A year ago the company was operating eighty-two motor cars and no trailers; to-day it is operating 100 motor cars and as many as fifty-four trailers. In view of the impossibility of getting new cars quickly, the company was fortunate in having received thirty new motor cars just before the rush began.

The entire track system of the company has been rehabilitated and extended, the last of the work having just been completed. In order to provide adequate service to Kelly Field about 5 miles of new track had to be built.

The increased business is handled during rush hours by trailers on the Hot Wells, Kelly Field and Army Post lines; and by trippers on the other lines. The charge for service is 5 cents. A 5-cent bus line, however, giving a ride up to two miles, connects with the electric railway at Fort Sam Houston in order to give service to Fort Travis. Army traffic is extremely difficult and expensive to handle, as heavy peaks occur at uncertain times.

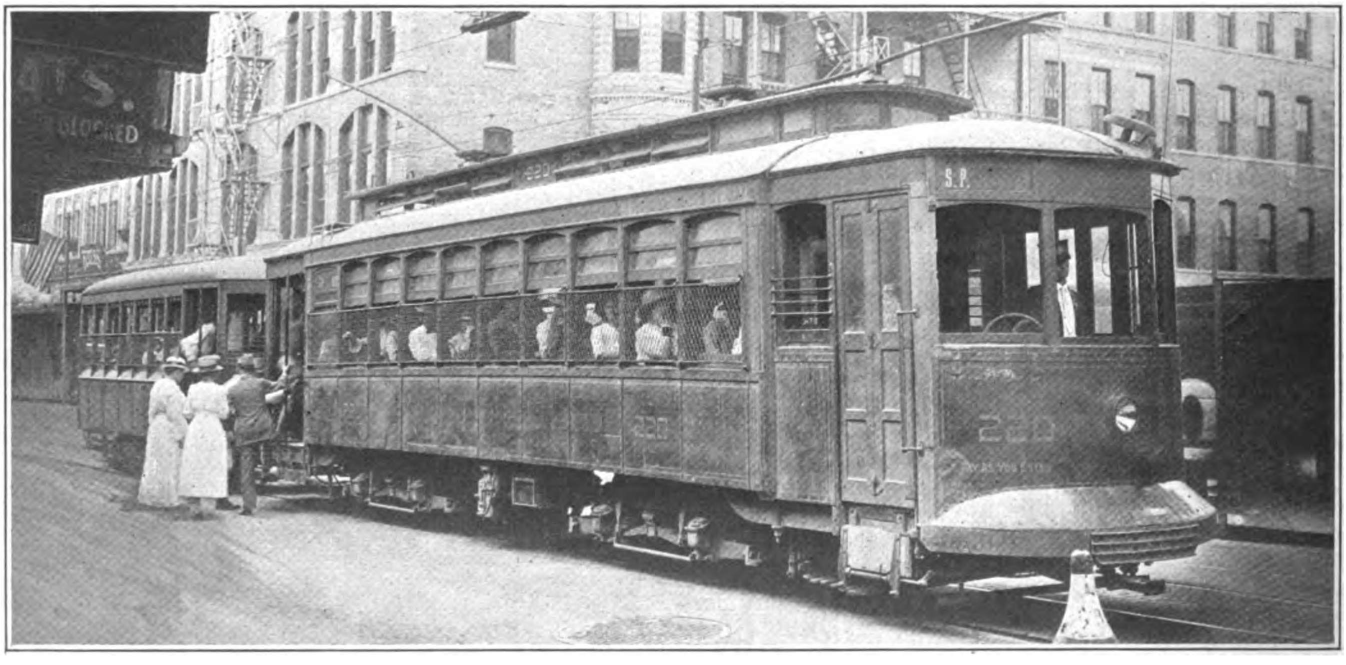
The Army Post line of the company, covering Fort Sam Houston and Camp Travis, has seven and one-half and five-minute headways, while the West End-Alamo Heights line service serves the same district in part with fifteen and ten-minute headways. The Hot-Wells line to Brook Field has ten and five-minute headways and the South San Antonio line has a twenty-minute all-day headway which is changed when special conditions require.

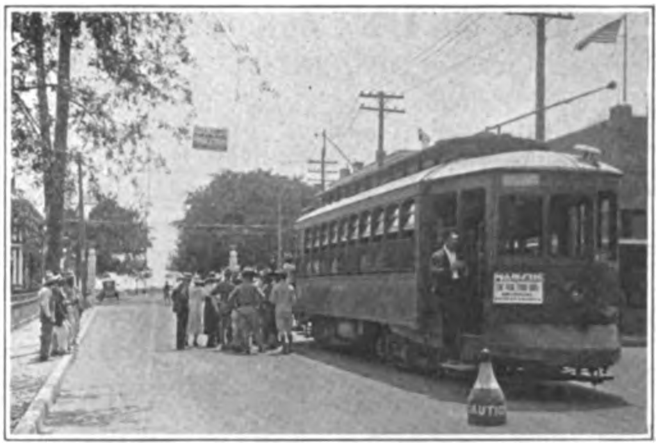
As has been found by other electric railways to be the case, it is difficult in these days to hold the men even by wage increases. The wages in San Antonio were increased 5 cents an hour on April 1. Men for tripper service are taken from the extra list.

THIRTY MOTOR CARS WITH NON-PARALLEL AXLES AND 12-FT. WHEELBASE

The thirty motor cars which have been in use since the spring of 1917 have car bodies 22 ft. 3 in. long, 34 ft. 3 in. over the dashers and 35 ft. 3 in. over the bumpers. One of the most notable features is the use of non-parallel axle trucks. Fifteen of the cars are on Brill "Radiax" trucks and fifteen on St. Louis trucks with non-parallel axles, the wheelbase in both cases being 12 ft.

Fully equipped, these cars weigh 22,600 lb. for thirty-six seated passengers, or only 626 lb. per seat. The


TWO-CAR TRAIN OPERATION DOWNTOWN IN SAN ANTONIO



AT LEFT, ONE OF THE LATEST MOTOR CARS IN OPERATION IN SAN ANTONIO; AT RIGHT, LOADING SOLDIERS IN SAN ANTONIO

construction, except part of the superstructure, is of steel. Half the cars were built by the American Car Company and half by the St. Louis Car Company. The equipment includes Westinghouse 512 C motors, K-36 J control and Westinghouse M-W I airbrakes.

Fifty-four Home-Made Trailers Were Pressed Into Service

In order to meet the traffic demands, the company resorted to the use of trailers during the rush hours. Twenty-four of the trailers were old trail cars. These were reversed for front instead of rear entrance, so that as in the case of the other trailers passenger movement will be concentrated at two adjacent entrances. The other thirty trailers were built up from the substructure of work cars. The wheelbases of the original Bemis 6A trucks were extended from 6 ft. 6 in. and 6 ft. 7 in. to a uniform spacing of 8 ft. The 33-in. wheels were replaced by 24-in. wheels, so that the vestibule is flush with the body floor. The bodies were built of wood, with an arch roof covered with No. 8 duck.

A two-leaf folding door at the front provided for entrance and exit. The windows were not glazed but were protected against the weather by awning material. Longitudinal wooden seats were used, but if desired these could readily be changed to transverse seats. Instead of straps, a horizontal pipe, a convenient height and stiffened by vertical stanchions, was installed the length of the car. Signal buzzers for the passenger were also provided.

7000 Camp Gordonites Are Handled Daily

To Reach This Camp, 12 Miles North of Atlanta, the Local Company Has Built a 4-Mile Extension—15-Cent Fare Is Charged

ONE of the great cantonments of the south is Camp Gordon, which is located 12 miles north of Atlanta, Ga. The number of soldiers at the camp has been as high as 30,000, and civilians have totaled about 800. Ordinarily, the Georgia Railway & Power Company gives to the camps a service with ten cars under a twenty-minute headway, but during the rush periods on Wednesdays, Saturdays and Sundays it operates as many as forty-five cars.

The travel is largely of the twice-a-day kind. The inbound morning travel from regular riders is largest when the outbound camp travel is at its height, and *vice versa*. Cantonment employees come at 6.30 a.m. and leave with a rush at 5 p.m. About 7000 passengers are handled daily.

The line to the camp is an extension of the Bulkhead 10-cent suburban line. When the route was extended another 4 miles the fare for the full ride became 15 cents. The fare, however, is paid according to the number of zones instead of the maximum being imposed at one time. In this way ordinary passengers to the intermediate 2-mile zone are not kept off the camp cars, for their travel is not enough to justify a separate service.

The extension, which comprises 5.36 miles of single track, was financed by the company at a cost of $225,000. The 90-lb. T-rails were purchased from a broker, while most of the other supplies except ties came out of the stock which the company had purchased for work later deferred.

Substation Equipment and Cars Needed Transferred from Other Lines

Two substations were erected to handle the camp load, one containing two 500-kw. rotaries and the other one 2000-kw. rotary. These machines were taken out of other stations.

The cars in use have been taken from other lines. They are of various types, seating from twenty-eight to fifty-six passengers. Single trailers are attached as needed. The company was unable to secure suitable second-hand cars, and it is therefore converting to closed trailers some cars which were open above the belt rail. Twelve trailers, seating forty each, are also being built for camp or other suburban service. These cars will have steel underframes and steel sides, and will weigh 20,500 lb. each. All of the trailers will be fitted with Hale & Kilburn slat seats of the Walkover type.

Besides five multiple-unit cars now in use, twelve motor cars are being fitted with Westinghouse HLD control. The original Westinghouse 68-C motors are being retained. The Brill 22-C maximum traction trucks, however, are being altered to take swinging bolsters. These cars also seat forty, and they weigh 26,000 lb. each.

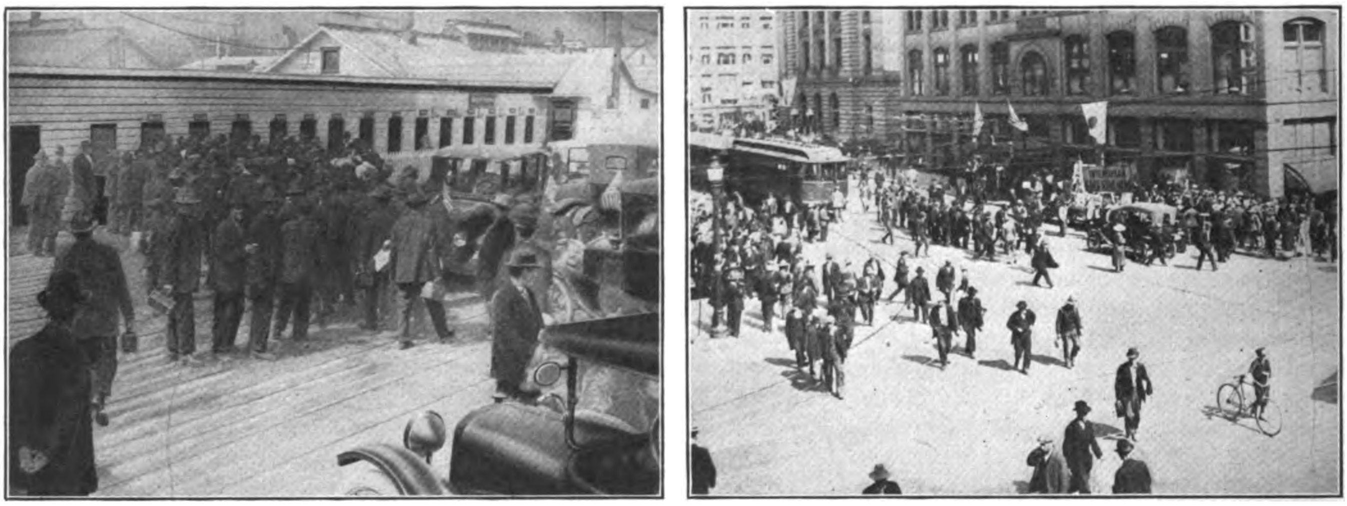
Tacoma Uses Zone Fares to Shipyards

Municipal Railway Sells Tickets for 6 Cents and 7½ Cents Over Extensions to Industries on the Tideflats—8000 Shipbuilders Handled

TACOMA, WASH., is doing its share and more to carry Uncle Sam's men and Uncle Sam's wares. Within less than a year there has sprung from an insignificant beginning a force of 8000 shipworkers employed by six shipbuilders.

The great bulk of Tacoma's war development lies in a filled-in and recently enlarged section known as the Tideflats. Tacoma proper is built on the sides of steep hills and does not offer much space for docks and shipways. The Tideflats district is purely industrial, so that travel to and fro at any time of the day except when working shifts change is very small. Obviously, this is not the kind of traffic which most railways are seeking, especially when it comes as the extension of a 5-cent ride already exceedingly liberal. This fact was recognized by the city when the industrial development began, and it solved the problem by constructing its own line to the Tideflats. Owing to its straitened finances, however, the city has asked the Emergency Fleet Corporation to help complete the double tracking which is imperative to insure satisfactory service even now.

NOT EVERYONE OF TACOMA SHIPBUILDERS DEIGNS TO RIDE HOME IN ELECTRIC CARS



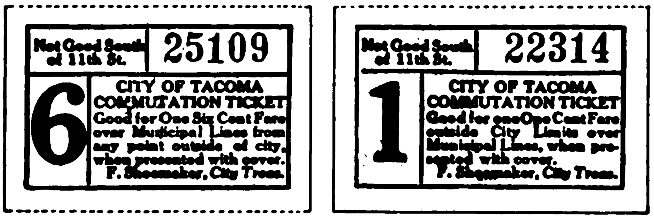
AT LEFT, A LINE-UP OF TACOMA'S SHIPWORKERS READY FOR THE DAY'S PLEASURABLE TASK. AT RIGHT, UNLOADING THE SHIPWORKERS FROM THE MUNICIPAL TIDEFLATS LINE FOR TRANSFER TO THE TACOMA RAILWAY & POWER COMPANY LINES AT ELEVENTH AND A STREETS

The regular rate of fare in Tacoma is 5 cents to any point inside the city limits on the lines of both the Tacoma Railway & Power Company and the Tacoma Municipal Railway. The municipal line extends from the center of the business district through the industrial district on the Tideflats to the city limits, a distance of 1⅔ miles, with two extensions beyond the city limits. One of these is 1⅓ miles in length and the other 1⅔ miles. A passenger not provided with tickets pays an extra 5 cents for a ride beyond the city limits. By the purchase of tickets, however, a passenger from the center of the city can ride to the end of the shorter extension for 6 cents and to that of the longer extension for 7½ cents. Tickets for rides solely outside the city limits are provided for 1 cent and 1½ cents respectively. All the tickets are sold in books of twenty each.

Transfers are exchanged between the municipal line and the line of the Tacoma Railway & Power Company. The city redeems its transfers from the company for 3 cents each, while the company pays only 2 cents to get back its transfers. The company operates the municipal line under a two-year contract which began on Nov. 1, 1917, with equipment and facilities furnished by the city. The city is billed at cost for the expenses of operation, and it assumes all liabilities for accidents on its track.

At present the Municipal Railway is equipped with such second-hand cars as could be purchased, including four closed cars, ten open cars, one locomotive, four trailers and ten closed single-end cars just bought from the Twin City Rapid Transit Company. The ultimate plan is to use multiple-unit trains of three and four cars each for the rush periods and smaller units during the light-traffic periods. The line has loops at both ends so that single-end cars or single-end-control trains can be operated satisfactorily.

Considerable congestion exists in the Tideflats district at the end of the working day, but an effort has recently been made to reduce this by staggering the hours. Another difficulty has come from shortage of labor, for more than one-third of the former employees of the Tacoma Railway & Power Company have gone into the shipyards.


Not Good South of 11th St. 25109
6
CITY OF TACOMA
COMMUTATION TICKET
Good for One Six Cent Fare over Municipal Lines from any point outside of city, when presented with cover.
F. Shoemaker, City Treas.

Not Good South of 11th St. 22314
1
CITY OF TACOMA
COMMUTATION TICKET
Good for one One Cent Fare outside City Limits over Municipal Lines, when presented with cover.
F. Shoemaker, City Treas.

TICKETS USED ON TACOMA MUNICIPAL LINE

The Municipal Railway handles all the freight outside the city limits going to the several industries on its line, and it collects $5 a car for switching. This freight business has proved most profitable and is increasing as each additional industry is started in this district.

A Cantonment Almost Within City Limits

Camp Bowie's Presence Has Brought An Increase In Travel to Fort Worth of From Thirty to Forty Per Cent

NOT 3 miles from the center of Fort Worth is Camp Bowie, located on the Arlington Heights line of the Northern Texas Traction Company. This cantonment has had more than 28,000 men, the number varying from week to week as the men come and go. The presence of this camp has stimulated riding on practically all of the city lines by 30 to 40 per cent.

As for the Arlington line itself, the last 2 miles of route have been double-tracked. While the service to the end of the line is given under a fifteen-minute headway, the camp normally has a 10-minute headway, with any desired increase in emergencies. At present the motor-trailer combination in use have to operate to the loop at the end of the line, 5.2 miles out, but cars will soon be turned back at the camp.

To meet the needs of the Arlington line, ten open cars were leased from the Dallas Railway. Five single-truck and six double-truck trailers were leased from the El Paso Electric Company, and three cars from the Galveston Electric Company. Six closed-car bodies were bought from the East St. Louis & Suburban Railway, and were equipped in Fort Worth, and six trailers were bought from Colorado Springs.

There are also three aviation camps near Fort Worth: Hicks, 15 miles to the north on the Fort Worth & Denver Railway; Benbrook, 9 miles to the west on the Texas & Pacific Railway, and Everman, 12 miles south on the Cleburne interurban line of the Tarrant County Traction Company. The last camp is the only one reached by electric railway. Connection to the camp is made at Aviation Junction, from which a spur 0.8 mile long runs to the camp. The track for the spur was built by the International & Great Northern Railway, but the poles and wire were furnished by the electric railway. A shuttle car running between the camp and the junction takes care of all aviation camp traffic.

One-Cent Zones Advocated

Peter Witt Urges the Merits of the Zone System of Fare Collection But Thinks that Zone Fares Should Be One Cent

"WERE our street railways on a competitive basis they would have been driven to adopt the zone system long ago. Now the pressure of war-time operating costs has made the zone system practically inevitable."

These opinions were recently expressed to a newspaper man in Cleveland by Peter Witt of Cleveland, former traction commissioner of that city. Mr. Witt then explained that by the zone system he meant "putting the fare on a mileage basis" and not a 5-cent or 6-cent interior zone with exterior 2-cent or 3-cent zones. He believes in the 1-cent zone with adjustments of length of zone to suit the traffic and income. According to Mr. Witt the low zone rate would greatly encourage off-peak riding as well as short-haul riding. Thus on the Euclid Avenue line in Cleveland, where all lines loop at the Public Square, he would establish the 1-cent zone boundary at Fourteenth Street, fourteen blocks from the square. This is the boundary of the most crowded shopping and business district, and as cars come from town people begin to get off there. Continuing, Mr. Witt said, in part:

ONE-CENT RATE WOULD INCREASE TRAFFIC

"If there were a 1-cent rate for passengers boarding and leaving within the zone, the company would get for every car many passengers who now, rather than pay a nickel, will walk. The company would be increasing its net income, and the long-haul passengers would not be compelled to pay any different fare from that which they will pay anyhow under the necessity of the companies to raise their unit rate to 6, 7 or even 8 cents.

"With cars going out from the Square, the conditions would be the same. The car does not get its full load before it reaches Fourteenth Street. All along the route there are a certain number of short-haul passengers. Thoughtful study of the situation and careful experiment will determine what zone arrangement will produce the maximum revenue.

"Night and morning the cars run crowded into or out of the central zone. But these are the very hours when potential traffic wholly within the zone is comparatively light. On the other hand, all through the middle of the day the downtown district is jammed with thousands of people—not only women shoppers, but business men and transients—who would patronize the cars at a 1-cent rate per zone and who now will not pay a nickel or 6 cents for a ride only one-tenth as long as the ride to the end of the line which they could have for the same rate. Anybody who has studied the currents of women shoppers through the streets will agree on the increase of business which they alone, trained nickel-savers as they are, would give to the cars at a penny fare per zone.

"More than this, I would divide each zone in half, making thus two sub-zones. A passenger boarding a car in the last half of the one zone should be able to ride into the first half of the following zone for 1 cent instead of having to pay 2 cents as he would under a rigid zone system.

"Each passenger when he enters the car would receive an identification slip. It would be lettered and numbered to indicate the point where he boards the car. Thus, a slip numbered 1-A would indicate that the bearer boarded the car in the first half of the first zone. Slip 1-B would indicate the second half of the first zone. At the point where he left the car the passenger would deliver his identification check to the conductor and it would be easy to determine instantly the rate of fare he must pay.

"With modern front-entrance pay-as-you-leave cars, the process would be still simpler in that the motorman who is unoccupied while the car is stopped could deliver the identification slips to the entering passengers while the conductor was busy collecting fares from alighting passengers.

"Take a car running on a 10-mile line and costing 30 cents per mile to operate. Its operating cost is $3 every trip. It must carry sixty passengers every trip just to meet expenses alone. No car on such a line carries that number every trip. But under the zone system, without losing any of its long-haul riders, and without losing the money which they now pay at the 5-cent fare or the higher fare which is bound to come, that same car would increase its revenue considerably on the short-haul riders. In the rush hours these cars under the present system make up their losses in the off-hours. Under the zone system they would still make their big rush-hour revenue and they would build up their off-hour revenue as well.

ZONE SYSTEM NOT CAUSE OF CONGESTION

One objection which has been advanced to the zone system is that it produces congestion in housing conditions in the center of the city. In other words, the policy of the uniform fare is said to be to tax the short-haul rider in order that poor people may live in the suburbs and get to work cheaply. But that is not the way it works out. As soon as you give cheaper-than-cost fare to an outlying district, realty values jump in that district, and the landowner absorbs the benefit which was intended for the poor man. We have never had anything but a unit rate of fare in this country, yet it has not prevented congestion. Crowded slum districts still center in the very region from which you would like to eradicate them. As it works out, the poor man lives well within the city limits, and himself is the short-haul rider. He pays the tax. And the comparatively well-to-do man lives in the suburbs, profiting by the cheaper-than-cost fare. The very family you pretend to help by the unit fare is the one you in fact penalize.

"The problem of congestion is a grave one. But it cannot be solved by a flat rate of fare on our car lines. Other conditions cause it, including fundamentally the land question, and it must be solved by changing those conditions—not by attempting to palliate them with the profitless and inefficient system of a flat unit rate of fare.

WILL PROTECT AGAINST JITNEYS

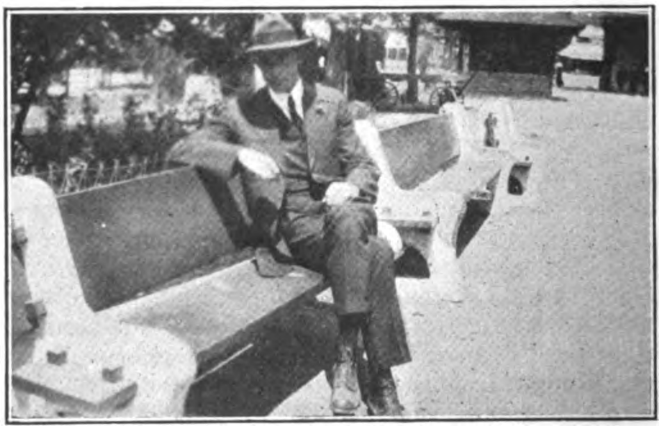
"Competition by the jitneys is still another factor which is going to render the 6 or 7-cent rate of fare ineffectual. The higher the fare goes, the more people will be driven to make use of other forms of transportation for short hauls. 'We can't compete with the jitneys,' cry the street railway companies. Therefore they have tried to legislate them out of existence. It can't be done. But the plain fact is that the street railway companies can compete with the jitneys, if they would only wake up to the zone system. You cannot carry people as cheaply on rubber tires as you can on steel rails. You cannot carry them as comfortably that way, either. Only you must meet the jitney price and beat it. By the zone system that can be done. The jitney only takes the short-haul traffic. At a moderate fare per zone you can not only grab all of the passengers away from the jitneys, but kill the jitneys as well—as they should be killed. Competition with a natural monopoly is an economic waste which the riders in the end must pay for.

"The zone system is therefore fair, feasible, effective. It will give the greatest revenue and the best service. And it will give the public the cheapest fare per mile compatible with good service. The zone system must come if we are to save the street railways from collapse. But it must be a system such as I have outlined here and not the anomaly of a 5 or 6-cent inner zone and a 2 or 3-cent outer zone which most companies now contemplate."

Durable Benches for Outdoor Service

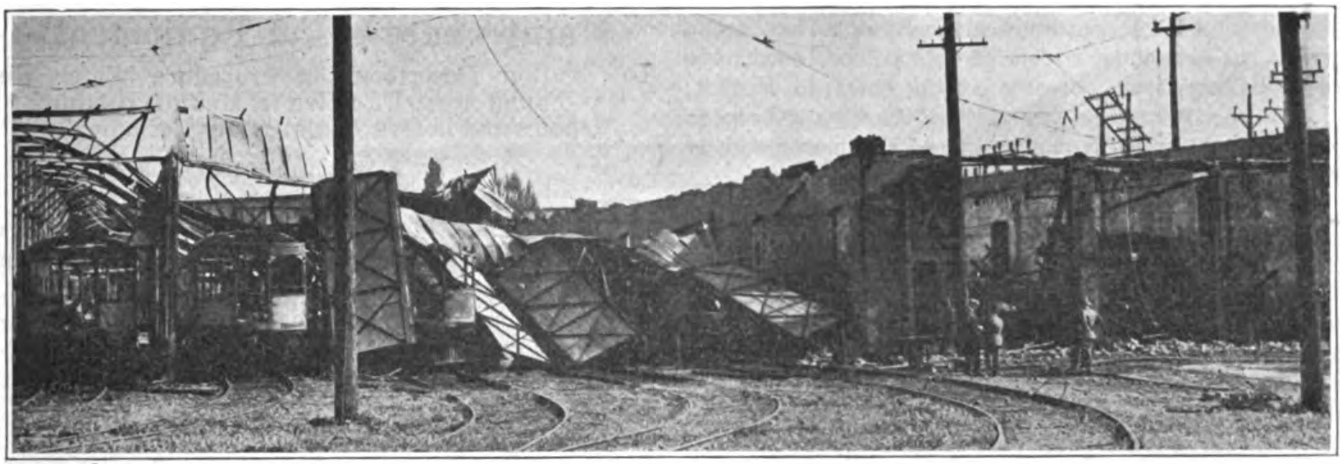
THE Southern Pacific system has adopted a simple and durable form of bench for outdoor service in the West that is used on both steam and electric railways. The design is varied somewhat but, in general, consists of two concrete standards used to support two 2-in. x 12-in. planks, one serving as seat and the other as back rest, as shown in the illustration.

These benches can be assembled in the shop or along the line, whichever is most convenient, the only tools required for assembly being a chisel to fit off-size wedges or holes and a hammer to drive the pieces together properly.



DURABLE BENCHES WITH CONCRETE STANDARDS USED BY SOUTHERN PACIFIC SYSTEM

The seat and back planks are held in place by wedges driven through holes just outside the concrete standards, four wedges being used to each plank. The concrete standards are made about 4 in. thick. The fact that the benches are rather heavy is an advantage in that they are not easily overturned and are not likely to be carried away.



FRONT END OF CARHOUSE AFTER THE FIRE. THE SUBSTATION WHERE THE FIRE STARTED IS LOCATED ON THE EXTREME RIGHT

Some Lessons from a Disastrous Carhouse Fire

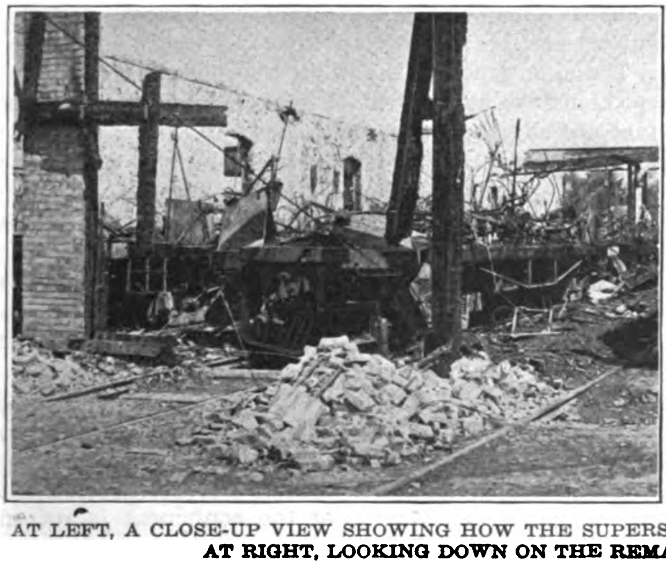
The Carhouse and Fine Interurban Cars of Bamberger Electric Railway Were Recently Destroyed and Service Was Badly Crippled for Time

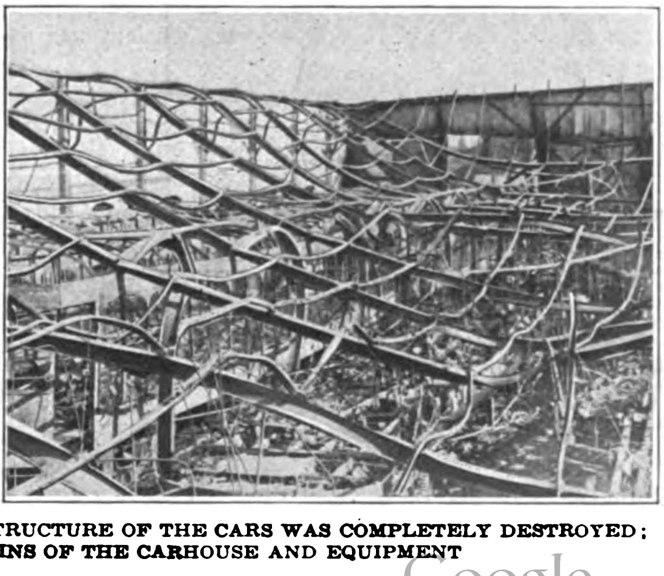
A FIRE on May 7 in the carhouse of the Bamberger Electric Railway at Ogden, Utah, destroyed one 40-ton electric locomotive, ten 56-ft. motor cars, four 56-ft. closed trailers and six 61-ft. open excursion trailers. These latter were nearly new, having been in service but slightly more than a year.

The fire started from an explosion in one of the tanks of a 44,000-volt lightning arrester in a substation located at one side of the carhouse. The explosion broke a large window between the substation and the carhouse and the burning oil from the lightning arrester scattered over the first row of cars and the roof of the carhouse. All of these immediately caught fire and this was rapidly communicated to other rows of cars and to the roof of an adjoining carhouse. The d.c. system grounded immediately after the explosion, cutting off all power for moving the equipment from the burning building. Of the company's fine interurban equipment nothing was left but trucks and charred underframes.

This fire serves to illustrate the soundness of the recommendations made by the committee on buildings and structures and the committee on equipment of the American Electric Railway Engineering Association, incorporated in the 1915 Proceedings. These recommendations for proper construction in order to prevent excessive damage from fires were worked out in conjunction with the National Board of Fire Underwriters.

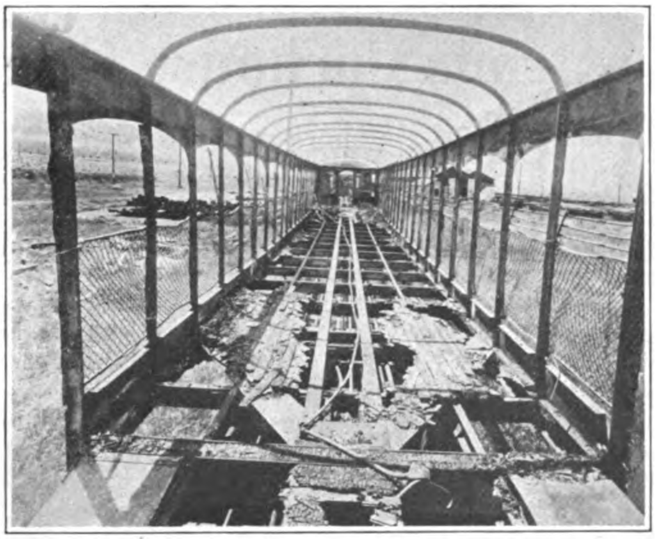
Some of these recommendations may be properly referred to in connection with this fire. A paragraph on lightning arresters states "If the voltage of the circuit is in excess of 6600 a special fireproof room, compartment or building shall be provided to contain such arresters." Further recommendations provide that windows and skylights must be provided with wired glass and standard metal frames. The roof construction must be of non-combustible material and have non-combust-





AT LEFT, A CLOSE-UP VIEW SHOWING HOW THE SUPERSTRUCTURE OF THE CARS WAS COMPLETELY DESTROYED; AT RIGHT, LOOKING DOWN ON THE REMAINS OF THE CARHOUSE AND EQUIPMENT ible coverings of approved composition. The feeder system for each compartment of the carhouse must have an individual circuit breaker at the entrance so that, in case of a ground on one section, the circuit breaker controlling this section can be opened and power still be made available for removing cars in other sections.

The best construction provides that there shall be no inter-communicating windows between adjacent buildings. The wall between the substation and this carhouse should thus have been without windows and, in case openings were necessary, these should have been equipped with standard fireproof doors. Another method for providing necessary protection is to provide a cut-off wall between substation and the carhouse. This should be a blank wall without openings constructed of brick, stone or reinforced concrete and rising not less than 2 ft. above the roof.



AN INTERIOR VIEW SHOWING THE RESULTING DAMAGE TO ONE OF THE OPEN EXCURSION TRAILERS

At the time of this fire a hand sprinkler system was in the course of construction but was not yet in operating condition. Such a sprinkling system is not favored by the Board of Fire Underwriters, which recommends that all sprinkling systems must be automatic. Any hand system necessitates the entering of the building and turning on the cocks in case of emergency, and often the fire and smoke will prevent efficient use of such a system.

In order to maintain its service the Bamberger Electric Railroad leased temporarily some steam railroad coaches. A new concrete carhouse with arrangements for future shop extensions is in contemplation, and though definite location has not yet been decided upon, it will no doubt be at Salt Lake City, where the general offices of the company are located.

The accompanying illustrations give a clear idea of the extent of the damage and the present condition of the carhouse and equipment immediately after the fire.

A novel feature of the wooden car loading platforms at Winnipeg is that they are built and maintained by the city. They have proved a great convenience to the public, particularly as protection against vehicular traffic.

Maintenance of Car Equipment*

The Author Describes the Procedure Which He Has Found Most Effective in Making Running Repairs and in Overhauling Cars Periodically

BY JESSE M. YOUNT
Master Mechanic, United Railroads of San Francisco

THE passenger of a street railway, when he pays his fare, buys a ride to his destination, which he can reasonably expect to be without delay and in comfort.

To give him this requires the equipment to be maintained to a reasonably good standard of condition. Naturally it follows that the management defines what the standard shall be, and the mechanical department can work accordingly.

To keep the maintenance up to the standard of policy decided, you must have an organization of forces which work in harmony. The master mechanic or superintendent of equipment, who is the head of the department, should have the following sub-heads under him, namely; chief clerk, chief draftsman, chief inspector, and the following foremen; machine shop, truck and forge shops, car wiring and controller, armature room, carpenter shop and paint shop. Far better results can be obtained by having the department foreman report direct to the master mechanic, than when there is an intermediate official between them.

Now that we have an organization formulated, we must develop a system of inspection and general overhauling.

MAINTENANCE ROUTINE

The inspection is done in the operating carhouses, under the supervision of carhouse foreman. The general overhauling is done under the supervision of the master mechanic, at the general shops, where he should have his headquarters. Inspection and general overhauling can be done either on a daily basis or on a mileage basis. For inspection, I have found it better to use the mileage basis because some particular car will make more mileage in three days than another car in five days. An economical and efficient basis of inspection is from 1100 miles to 1600 miles, depending on the age of the equipment. On a daily basis the usual time between inspections is seven days. By going to the mileage basis, we find some of the cars out twelve or fourteen days between inspection, while others are only out six or eight.

The main features that limit the mileage between inspections are adjustment of brakes, lubrication of motors and adjustment of controllers.

The average number of cars operated from a carhouse (in San Francisco) is approximately seventy. To take care of these requires the foreman, one carpenter, one controllerman, one man on air and trolleys, two for brakes and bolts, two for oiling and inspecting motors and journals, a night foreman and two repairmen to look over bolts and brakes and to check any defects the motormen might note on their defect cards.

In the operation of an electric railway a number of things can be put off or curtailed without serious results, but not so with the inspection. The inspection can be regulated to do work at the critical moment, but if you go beyond this point the equipment is ruined and has to be renewed. For instance, the armature of the motor, revolving between field pieces with $\frac{3}{16}$-in. air gap, has babbitted bearings. Should these bearings run hot, the armature rubs on the pole pieces, ruining the armature and causing the expensive operation of rewinding the armature.

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*A paper read before the Pacific Railway Club.

OVERHAULING ON 50,000- 60,000-MILE BASIS

Now as to overhauling. An economical point for general overhauling of equipment is the 50,000 to 60,000-mile period, or approximately every sixteen months. This is about the limit to the wear of wheels and bearings, and also an economical point to touch up and revarnish the car bodies.

ORDER OF WORK

With limited forces at the inspection stations, it is impossible to do much needed testing. Therefore, it is up to the shop force to look after all tests, while the car is being overhauled. The first test should be the one on the air reservoir. This can be done under hydraulic pressure, without removing the reservoir from the car and before the car is taken inside the shop.

The car is now turned over to the truck-shop foreman, and the car body is raised, the trucks run from under the body and the body placed on wooden horses. To keep the car in the shop the least possible time all departments should start to work on the car together, so that by the time the truckmen have overhauled the trucks, the other departments will have finished their work, with the exception of the paint work.

Before the trucks are dismantled they should be cleaned with sand blast, or other effective means, so as to make inspection for flaws more thorough. Motors then should be removed by crane, wheels removed and brake rigging dismantled. In reassembling the trucks, they should be squared up so as to reduce flange wear of the wheels. As far as possible, new wheels should be used in the overhauled car. Those wheels which are yet serviceable, when the car is brought in, should be reground and used for replacements, when wheels are changed at the carhouses. By the use of bushings, electric welding, and oxyacetylene welding, the brake levers, shoe heads and castings can practically all be reclaimed. In overhauling the motors, the armatures should be removed and thoroughly inspected and tested; the field coils should be tested and terminals inspected, and the inside of motors should be cleaned and painted with waterproof paint.

Brush yokes and holders should be removed, cleaned and repaired. In assembling the motor, care should be taken that the liners do not bind, and that the brushholders are properly set to give the right space between brushes. The motor can then be mounted on the trucks; and the trucks are ready to be replaced under the car.

The electricians in the meantime have removed all main switches and breakers, testing them and renewing worn parts. The controllers are thoroughly cleaned and adjusted and connections tested. It is good policy to use mostly new fingers on an overhauled car, and send the old fingers that are not worn out to the carhouses for further use.

Air compressors are removed and dismantled, cleaned and inspected; also gages are removed and reset by the master governor. While this work is going on the carpenters are going over the woodwork. All crews should end in the same period, which should be in three days. The car is then ready for the paint shop, for touching up and revarnishing which take aonther six or seven days.

With all departments working together in this manner, a car should not be in the general overhauling shop more than an average of two weeks in every sixteen months.

A New Type of Lightning Arrester Spark Gap

Shunting of the Gap with Impedances Proves Effective in Greatly Reducing the "Impulse Ratio" of the Gap

THE term "impulse protective gap" has been applied to a new type of spark gap for lightning arresters which was described by C. T. Allcutt of the Westinghouse Company at the last A. I. E. E. meeting. The principle involved is the connection of two spark gaps in series, these being shunted with unlike impedances. The shunts are made up of combinations of condensers and reactors or resistors, and they are designed so that when high-frequency impulses are received one gap will break down more readily than the other. When the first breaks down the second is stressed to the breaking point and it breaks down in its turn. As a practical matter it has been demonstrated that it is not necessary to have two physically separate gaps, but an electrode can be introduced into the middle of one gap thus subdividing it into series parts.

Experiments, described by the author, were made to determine the best form of electrode, but as far as the new device is concerned, the form of electrode appeared not to make much difference in the result. However, in general, it is best to use such forms of electrodes as will give the highest possible 60-cycle breakdown voltage. This condition is approximated with spherical electrodes.

In considering this new type of spark gap it should be remembered that in general the high-voltage lightning arrester consists of two distinct parts, a spark gap for discharging abnormal voltages and some means for preventing the normal line voltage from maintaining a power arc across the gap. F. W. Peek, Jr., has shown that some forms of spark gap require a very much higher voltage to discharge a high-frequency impulse than is required to discharge a continuously applied electromotive force. The name "impulse ratio" has been given to the ratio of the impulse breakdown voltage to the continuously applied breakdown voltage. The purpose in designing the new form of gap has been to produce one with a low impulse ratio, and the combinations described yield a gap with a ratio less than unity.

In putting forward the results of this work covered by his paper Mr. Allcutt points out that while the impulse gap has great possibilities as a protective device the results so far secured are not conclusive. The new gap must be studied under more adverse conditions before its protective value can be regarded as definitely established.

Women in the Metal Trades

War's Requirements Have Demonstrated Their Efficiency in Machine Shop Work

DISTINCTLY favorable results from the war-time employment of women in the metal trades are shown in a report issued on July 24 by the National Industrial Conference Board. The report summarizes information obtained from 131 establishments employing 335,015 men and 49,823 women. The work done by the women embraces a great variety of processes, from the operation of ordinary drill presses and lathes to coremaking, inspecting and assembling mechanical parts. In the main, their work was confined to the lighter processes in which rapidity and dexterity are more important than technical skill acquired by long training. The report emphasizes that work of a "repetitive" character is exceptionally well adapted to the utilization of female labor.

Employers generally commended women as being more thorough and conscientious, as producing less spoiled work, and as being more careful with tools. In many cases the quantity of work produced was more than that of men, but where less the quality was frequently better. Women were also reported as more regular in production, and as not showing the tendency to restrict output, which is sometimes characteristic of men.

Generally the principle of equal pay for equal work was followed. Work hours of women are largely dependent on the labor laws of the respective states. Nevertheless, in fifty-six establishments of 105 reporting, women were working fewer hours than the legal limit. In most states represented in this investigation the legal maximum is fifty-four hours per week. In Ohio, however, it is fifty hours and in California forty-eight.

It was the general experience that women are "more teachable," "quick to learn," and that they "follow instructions better" than men. In fact, in 103 establishments reporting, the attitude of women toward their work was considered to be as good or better than that of the men; in only eight was it regarded as worse.

One reason given for this was that the women are superior to the class of men at present available. Some employers reported that the increased demand for the services of women is tending to make them more independent than formerly, although one machine tool manufacturer with wide experience stated that women are "as exacting as men but no more." Women are generally reported as taking a more personal attitude toward their work, which is reflected on the one hand in greater sensitiveness to criticism and on the other in increased loyalty.

Greater stability of female labor was generally indicated by the information gathered in the course of the investigation. Of ninety-four employers reporting on this subject, sixty stated that the record of the women was better than that of the men; twenty-six that there was no difference; only eight that the turnover among women employees was higher. In this respect, therefore, the results are exceptionally favorable to employment of women.

Syracuse War Service Committee Greatly Assisted by Local Railways

IN THE recent war service campaign in Syracuse, N. Y., and throughout Onondaga County, the local committee used the decorated two-car train shown in the accompanying photograph. It consisted of an interurban car loaned by the Empire State Railroad and a double-truck flat car loaned by the Auburn & Syracuse Electric Railroad.

The cars making up the train were equipped in the Wolf Street shop of the New York State Railways. The motor car was decorated with flags, signs, etc., and the flat car was made into a traveling stage, the scenery in the background being removable so that it could be carried flat on the floor of the car in transit. This car was equipped with two pianos and two rows of footlights consisting of high-power Mazda lamps spaced a foot apart. A standard battleship searchlight, loaned by the Crouse-Hinds Company, was used as a signal to the villages that the train was coming.

WHY
WAR CHEST
WAR CHEST

TRAVELING STAGE AND MOTOR CAR USED IN ONONDAGA COUNTY, N. Y., IN 1918 WAR SERVICE CAMPAIGN

The train carried twenty Red Cross nurses, a band of seven pieces, a mandolin club, several singers, a "Four-Minute" speaker, and a veteran of the Civil War who has served in the Canadian Army during the present war in France for two years and is now incapacitated.

The train reached from one to three towns each night of the campaign, and at each place an entertainment lasting from thirty to forty minutes was given, followed by short addresses. It played an important part in enabling the city and county to raise a fund of $2,500,000, an oversubscription of $500,000. The committee also used an elaborately decorated single-truck open car loaned by the New York State Railways, equipped with a set of electrically operated chimes. This car was used in Syracuse over the lines of the State Railways every day during the campaign.

Principles in Labor Awards

Board Explains General Basis Followed in Its Decisions Made Public Last Week

IN THE official summary of the twenty-two awards in street railway cases of the War Labor Board given out in Washington the end of last week the board outlined some of the principles which it followed in making the various awards. The statement was made public just as the last issue of this paper was going to press, so that only the actual wage rates could be printed. The major principles enumerated by the board as covering its awards follow:

Where the wages of track men, pitmen, pitmen's helpers, controllers, men, etc., were advanced, the plan followed was to increase their wages in the same ratio as the highest increase to conductors and motormen.

In all cases where motormen and conductors are compelled to work in excess of the period of their regular runs they are to be paid on the basis of time-and-half time for the excess, thus placing them on the same plane with skilled mechanics in government industries. This award, the board says, marks a new departure in the adjudication of street railway disputes in that it provides for the penalization of companies for extending the spread of hours in which men perform their day's work beyond the number of thirteen hours. Motormen and conductors in a majority of the cities are compelled to break up their working time during the day on account of the rush hours. Wherever this split of time spreads beyond thirteen hours the companies are penalized by being compelled to pay all the way from one-third time to double time to the workers according to the spread. This, it is believed, will have a tendency to diminish the spread of the work hours of the men.

In calculating the additional pay for overtime the board in several instances cites its decision in the award in the Cleveland Railway case as a precedent. The award in that case was that where the elapsed time consumed by swing runs exceeds fourteen hours, an addition of pay for the period of excess consumed time shall be allowed as follows:

For the fifteenth hour	Fifteen minutes
For the sixteenth hour	Thirty minutes
For the seventeenth hour	Forty-five minutes
For the eighteenth and each successive hour	One hour

On Sundays and holidays and on night car runs, the run shall be straight, with no more than eight hours' time, and with ten hours' pay for eight hours' time on night runs.

The award arbitrarily fixes the limit of apprenticeship on the cars at one year. This accelerates the method of graduating the men from one wage classification to another. Thus, instead of compelling men to work a full year before they may expect a wage increase and two years before they may expect a second increase, the award fixes three months as the first period upon the completion of which men shall receive their first increase and the second increase is made payable nine months after receipt of the first one. Heretofore, the wages have been raised in small amounts every year, covering fixed periods, so that in several instances which have come under the observation of the arbitrators it took ten years for the motorman or conductor to get the highest wage rate paid by the company.

While it is difficult to state definitely the exact percentage of increase granted in the awards, it may be said that in the larger cities the increase is from 35 to 40 per cent. The increase in Detroit, for instance, approximates 40 per cent, in New Orleans 50 per cent. In the smaller cities, such as Galesburg, Ill., it runs as high as 65 per cent on account of the extremely low pay received by the men up to this time. In New Orleans the wage was fixed lower than in other larger cities, the principal reason being the climatic conditions which made possible the omission of the items of fuel and heavy clothing from the cost of living budgets.

In cases where the right to organize has been an issue, the arbitrators applied the War Labor Board principles protecting workers in the exercise of their right to join trade unions without fear of molestation by the employer. Where individual employment contracts have been exacted by employing companies they are ordered eliminated for the period of the war on the ground that they constitute an interference with the free right of men to organize. Such an order was made in the case of the Omaha & Council Bluffs Street Railway. The administrators were called upon to render a decision with respect to the right of organized operatives to wear the button of their local union in the case of the Columbus Railway, Power & Light Company. This question, the board says, has frequently become an issue between street railway companies and their employees. In the Columbus award the arbitrators declared their inability to "see any objection under ordinary circumstances to the workers wearing a modest button of the ordinary size and design, worn presumably not for any objectionable purposes, but as men wear Red Cross or fraternal buttons." In the same case four men named as having been discharged for union activities were ordered reinstated in their former positions and ratings with full pay for lost time.

The War Labor Board says it "is now engaged upon investigations preliminary to decisions by the two chairmen in the street railway controversies which have come before the Board during the course of consideration of the cases decided today. A staff of women investigators is conducting an investigation of street railway industries with regard to the employment and treatment of women who have been entering the industry in large numbers in several communities. The attitude of the National War Labor Board toward the employment of women," it says, "is that they should receive for their services pay equal to that received by men for performing like services."

In the case of the Detroit United Railway the board says that "No objection shall be made to the employment of women or colored men, if necessity arises."

In the case of the Public Service Railway the board says that the "pay of men failing to answer roll-call on any one day or days shall be reduced only in the proportion that the roll-calls he fails to answer bear to the total number of roll-calls during the week."

CASES STILL TO BE DECIDED

The board says that it has still before it sixteen cases undecided, giving the cases by name. It says that the decisions in these cases will be handed down as rapidly as possible.

The board estimates the number of men affected by the decisions already rendered at 50,000.

AMERICAN ASSOCIATION NEWS

War Board Issues Bulletins

THE American Electric Railway War Board has issued three bulletins during the past week. Bulletin No. 25 contains the brief statement issued by the National War Labor Board denying that it has any intention of promulgating a flat wage rate for motormen and conductors of 50 cents an hour as reported in the daily press. Bulletin No. 26 is twelve pages in length and gives the full statement issued by the War Labor Board in regard to the twenty-two wage cases decided by the board last week. Bulletin No. 27 gives the text of the letter addressed to the president by Charles E. Elmquist, president National Association of Railway & Utility Commissioners, and Joseph B. Eastman, chairman special war service committee of that association, advising the appointment of a national administrator or board of three, as reported in the issue of this paper for Aug. 3.

The War Board held a meeting in New York on Aug. 6.

LETTER TO THE EDITORS

Use Salesmanship in Selling Transportation

NEW YORK CITY, AUG. 5, 1918.

TO THE EDITORS:

Although Demetrius Econoupoulos charges 5 cents for a single apple in order to enjoy a reasonable rate of return upon his investment, it is notorious that the wily Levantine wholesales the same wares at six for a quarter. Why not consider the case of Mr. Econoupoulos as applied to the sale of tickets at a slightly reduced rate? Demetrius knows that by selling his apples at the lower rate for a wholesale purchase, the buyer will surely consume more, but few railway men seem to believe that by selling tickets, preferably of metal, at the reduced rate for a wholesale purchase, the buyer will surely ride more.

Too many railway men seem to think that the fewer tickets they can sell to comply with franchise stipulations, the better off they will be. Hence they limit their sale to the company offices and to a few stores, which do more to get the privilege than the railway man does to induce them to accept it. They ought to realize that it is as hard for a man with tickets in his pocket to refrain from riding, if there is a car in sight, as for a man with apples in his pockets to refrain from eating. There is absolutely no difference in principle. What is more, much of the extra riding will be shorthaul, downtown riding or riding during the noon-time off-peak period.

"Nonsense," or some shorter expletive, utters the operator when urged to sell transportation upon merchandising principles. "This game is different." Is it really different in its appeal to the bargain instinct? Of course it isn't. The railway man's own crude selling of the past proves it! What about those parks with their twelve months' investment for three months' business, their heavily cut rates, their maximum length rides, their frequent accidents, their waste mileage, their hours of costly layovers at park sidings? Should those who were so keen for that kind of traffic creation despise a plan that increases the only kind of riding that brings a profit—the short pick-me-up of a few blocks?

To come down to hard pan: Here's a case vouched for by the financial officer of a certain railway. His company used to sell metal tickets at a 5 per cent reduction for $1 lots. People bought them freely and rode with reckless abandon. The railway man, whose pass privileges do not extend to his own large and interesting family, always had a pocketful of tickets and never hesitated to comply with: "Daddy, kin y' give me some tickets for the street car?" Now he says that such a request means cash, and the youngsters ride only one way to or from school instead of both ways.

Take a second case: A certain franchise calls for a 10 per cent reduction on metal ticket sales in quantities of $1. The tickets are sold only at the railway office and some department stores—very, very quietly. Result: Less than 8 per cent of the riding by adults is on metal tickets. The company has obeyed the letter but not the spirit of the law. Here's a true incident to prove that this policy is not for the best interests of the railway. In the office building of this company is a bright young man who discovered that tickets could be bought at 10 per cent off. Unselfishly he passed the good news on to a number of his female friends whose bargain instinct was aroused at once. They never ride without tickets now, and they do a lot of noon-time riding they never did before.

The third case will make it clear that I am not talking about the justice or injustice of a given rate of fare but of the principle of wholesale rather than of retail riding. A company which had secured the right to charge a 6-cent fare decided to put on sale a 6-cent metal ticket to avoid the inconvenience of collecting the odd fare but made no plan for selling these tickets in quantities at a discount. Why should it expect the public to go to the inconvenience of purchasing such tickets in advance simply to make the work of collection easier?

For obvious reasons the sale of such tickets should not be conducted on the cars, but a most intensive selling campaign should be carried on elsewhere. Undoubtedly many merchants would be glad to have them for their change-making value alone in these days of small coin shortage. A company could well go still further by providing the merchants with cards reading: "Save time and annoyance in boarding cars by having exact fare. Reduced rate tickets for sale here." "Ask for part of your change in reduced rate car tickets. Why walk with those bundles?" "Your time is worth more than the cost of a street car ride. Reduced rate tickets for sale here." I venture to say that with 90 to 95 per cent of adult riding in ticket sales, schedule speeds would rise, earnings would go up, operating expense would go down, peculation would be practically abolished and the honest conductor's work made much more agreeable. In all probability, also, the sale of tickets bought but never used because of being lost or carried away by visitors to the community would prove a neat little by-product in itself.

"TRANSPORTATION."

Unloading Dry Sand by Pneumatic Pressure

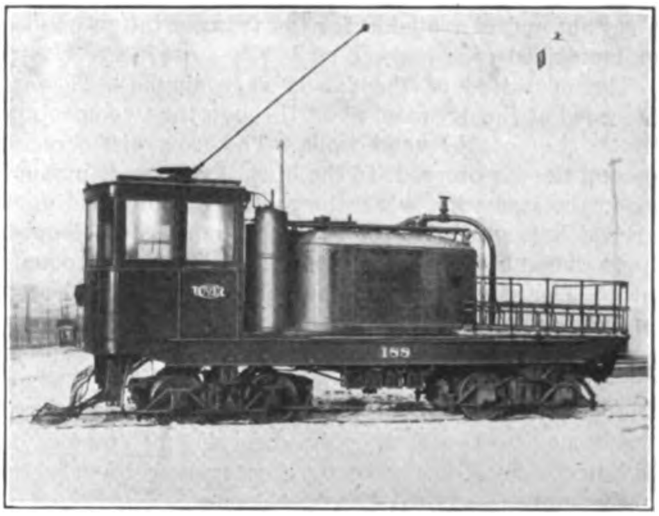
Equipment Built by St. Louis Railway Delivers 150 per Cent More Sand per Day With Half as Many Men

By Benjamin F. Thomas, Jr.
Mechanical Engineer, United Railways of St. Louis

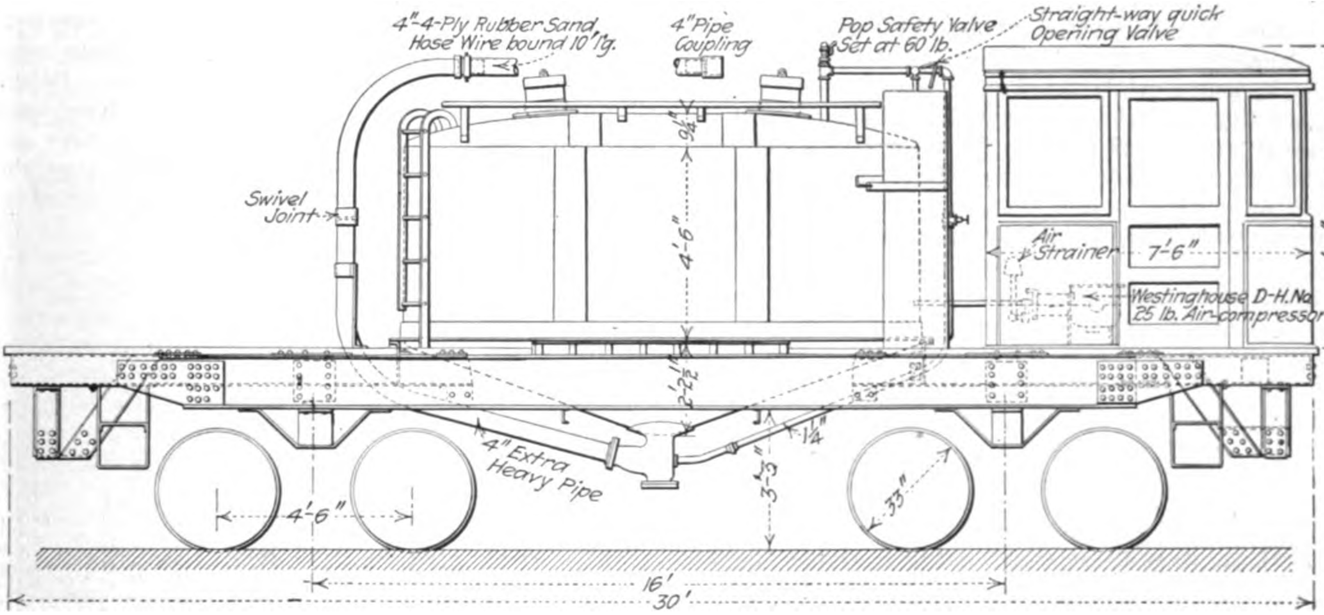
THE problem of distributing dry sand to car sheds has been solved very successfully by the United Railways of St. Louis. In November, 1917, the dry sand car illustrated, designed and built by the company, was put into operation. From this car the sand is unloaded by the application of air pressure and the results have been very gratifying in the amount of labor saved and in reducing the amount of time necessary to unload. With a crew of two men, the car will deliver about 1000 cu. ft. of sand per day, as compared with 400 cu. ft. per day with four men when unloaded manually. This general method is not original with this company as it has been used for some time by the Philadelphia Rapid Transit Company. (See the issue of the ELECTRIC RAILWAY JOURNAL for April 25, 1914, page 910.)

The construction details of the car are shown in an accompanying illustration. The body of the car consists of a 15-in. 60-lb. I-beam frame mounted on the company's standard diamond-frame truck and driven by four 50-hp. Westinghouse motors. The car is 30 ft. long over the bumpers, and approximately 8 ft. 6 in. wide.

The large sand tank, which is 12 ft. in diameter and has a capacity of 360 cu. ft., is placed in the middle of the car. In the concave bottom of this tank there is an opening to which is riveted a T-shaped casting. A 4-in. discharge pipe leads from one side of this casting and extends vertically up the back of the tank and over the top by means of two large radius bends. A wire-bound rubber hose is attached to the free end of this pipe. There is a 4-in. gate valve at the end and a swivel joint between the bends so that the pipe may be turned at any angle. Directly opposite this opening in the casting is a 1¼-in. pipe leading to the compressed-air equipment.



PNEUMATIC SAND CAR BUILT BY THE UNITED RAILWAYS OF ST. LOUIS


4"-4-Ply Rubber Sand Hose Wire bound 10' lg.
4" Pipe Coupling
Pop Safety Valve Set at 60 lb.
Straight-way quick Opening Valve
Swivel Joint
9¼"
4'-6"
Air Strainer
7'-6"
Westinghouse D-H. No 25 lb. Air-compressor
7'-3"
2'-2½"
4" Extra Heavy Pipe
1¼"
3'-3"
33"
4'-6"
16'
30'

DETAILS OF CONSTRUCTION OF PNEUMATIC SAND CAR

The compressed-air equipment consists of two type DH-25 Westinghouse motor-driven compressors capable of delivering 25 cu. ft. of air per minute at 90 lb. pressure, and two 18-in. x 72-in. air reservoirs which are connected to the sand tank through a quick-opening valve. The compressors are located in the driving cab which takes up 7 ft. 6 in. of space at one end of the car. This cab has a 30-in. sliding door in the rear end and is 7 ft. 3 in. high, giving a total height from top of rail of 11 ft. 10¾ in. The air reservoirs are located between the cab and the tank. After having been in operation some time, it was found to be advantageous to install two additional air reservoirs of the same size and so arranged with check valves that a back pressure of 20 lb. is always upon the compressors. This is to prevent the compressors from racing when the pressure in the reservoirs is suddenly thrown into the sand tank. The rear end of the platform is surrounded by a railing and is available for the transportation of men or materials.

The operation of the car is very simple. The car is loaded at the dry sand plant through the two openings in the top of the sand tank. The caps are screwed on and the car proceeds to the bins. Pressure is pumped up in the reservoirs while the car is traveling and upon arrival is turned onto the sand through the quick-opening valve at a pressure of from 25 to 60 lb. per square inch. The sand is forced down into the T-shaped casting at the bottom of the tank and, assisted by air pressure entering the T through the 1¼-in. pipe, is forced up and out through the stand pipe and hose. Sand begins to flow at 25 lb. pressure, but operates best at about 40 lb. The tank is designed for 60 lb. working pressure, and is protected by a safety valve at the top of the tank.

Power-Operated Train Order Signals Produce Economies on the Erie

A Comparison of Improvement in Train Operation by Use of Automatic Signals Instead of Manual Signals or Telegraph Train Dispatching

A COMPARISON of the results of train operation on the Erie under two different systems of signals is made by Henry M. Sperry in the *Railway Age* of July 5. The Susquehanna division of the Erie was selected for making this comparison, as any resulting improvements would be due entirely to the signal facilities, there being no change whatever in track facilities or motive power.

Prior to the installation of the automatic block signals, the Susquehanna division was operated under manual block signals. The average length of the blocks was 3.07 miles and there was a great difference in the length of the various blocks, the shortest block being but 0.3 mile in length while the longest was 7.27 miles long. This variation in block lengths is characteristic of the manual block, as the block stations are usually placed at passenger stations, passing sidings, junction points, etc. As a result it is often impossible to avoid delays in trains which are required to move under close headway.

Under the manual block system train dispatching was by written train orders sent by telegraph. This system caused a loss of time in operation as trains were required to either slow down or stop in order to receive their orders, which were necessary for all special or irregular movements. The old style written train orders were replaced with three-position signals electrically operated. The three-position train-order signal is an electric motor signal on the same mast with the automatic block signal and is located at passing sidings or crossovers. The control of these signals is from the nearest day and night train order office, making it possible for the train dispatcher to direct the operation of these signals by telephone instruction to the offices controlling them. With this method it is a comparatively simple matter for the train dispatcher to display the required signal indication for directing train movements at the various sidings. Trains at the blind sidings either continue on the main track or take the siding as required by the signal indication of the train-order signal. If they enter the siding they report by telephone to the office from which the train-order signal is controlled. The dispatcher makes no record of the train movement authorized by him until after the train has acted upon the instructions of the train-order signal.

Under the method of train orders by signal indication, the dispatcher with a few words over the telephone directs the signal. The train is not required to slow down simply to receive instructions, as the instructions are conveyed to the train by the unmistakable indication of the train-order signal. Further, these instructions are given to the train at the point where it is required to act upon them and not at some distant point as is often the case under the written train-order system.

The improved results in train operation have more than justified the installation of this system. Delays to freight trains due to the manual block have been practically eliminated. The train load has been increased and the time consumed in passing over the division has been reduced 15 per cent. The accompanying table shows the improved results which were accomplished.

TABLE I—RESULTS OF FREIGHT TRAIN OPERATION ON THE SUSQUEHANNA DIVISION—ERIE RAILROAD

For Months of December, 1909, to November, 1910, Under Manual Block
Compared with Months of December, 1910, to November, 1911, Under Automatic Block

	Ton Miles		Ton Miles per Train			Reductions a/c Temperature			Freight Trains				
Months (a)	1909-10 Manual Block (b)	1910-11 Automatic Block (c)	1909-10 Manual Block (d)	1909-10 Manual Block (Corrected) (See Note a) (e)	1910-11 Automatic Block (f)	1909-10 (See Note b) (g)	1910-11 (h)	(i)	1909-10 (k)	1909-10 Manual Block (Corrected) (See Note c) (l)	1910-11 Automatic Block (m)	Saving in Freight Trains (n)	Saving in Train Operation (o)
December	173,387,082	177,605,807	227,542	217,757	228,285	8.5	12.8	+4.3	762	811	778	33	$4,511
January	162,944,115	194,134,250	224,750	232,392	251,795	12.4	9.0	—3.4	725	835	771	64	7,401
February	154,443,876	180,987,865	225,136	231,215	252,072	12.0	9.3	—2.7	686	782	718	64	7,629
March	199,235,797	178,197,673	247,497	239,577	244,106	6.0	9.2	+3.2	805	744	730	14	4,284
April	131,246,585	168,295,833	245,320	241,640	256,548	2.2	3.7	+1.5	535	696.5	656	40.5	6,512
May	170,527,993	189,061,368	268,548	268,348	276,002	0.0	0.0	0.0	635	704	685	19	4,931
June	160,521,776	202,898,946	250,815	250,815	293,206	0.0	0.0	0.0	640	809	692	117	11,944
July	189,088,090	207,184,154	271,289	271,289	298,106	0.0	0.0	0.0	697	764	695	69	8,242
August	195,734,433	203,503,501	297,921	297,921	302,832	0.0	0.0	0.0	657	683	672	11	3,834
September	195,588,923	189,772,505	273,550	273,550	296,057	0.0	0.0	0.0	715	694	641	53	7,041
October	210,030,355	221,607,785	260,583	260,583	308,216	0.0	0.0	0.0	806	850	719	131	12,765
November	195,119,249	208,820,764	267,653	263,370	293,700	3.7	5.3	+1.6	729	792.9	711	81.9	8,875
	2,137,868,274	2,322,070,451	254,751 (Average)	254,054 (Average)	274,217 (Average)	44.8	49.3	+4.5	8,392	9,165.4	8,468	697.4	$87,969

NOTE.—(a) The "Ton miles per train" under manual block (corrected Col. e.) are the totals for 1909-10 corrected by the difference in temperature of the winter months of the two years in order to place the totals for the two years on an equal basis in respect to weather conditions.

(b) The "Reduction on account of temperature" (Cols. g and h) are the percentages by which the monthly ton mile totals were reduced on account of low temperatures. These percentages were used to arrive at the totals under manual block (corrected).

(c) The "Freight trains" manual block (corrected Col. l) were computed by dividing the "Ton miles per train" manual block (corrected Col. e) into the ton miles per month moved under the automatic block (Col. c). The results (Col. l) show the number of trains that would have been required to move the traffic that was moved under automatic block if the trains had been operated on the manual block basis.

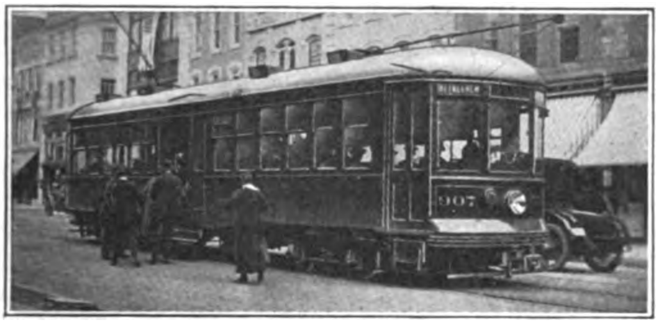
Center-Entrance and Exit Cars for Allentown

Lehigh Valley Transit Company Installs Twenty-Four New Cars to Provide Increased Service to Training Camps

THE Lehigh Valley Transit Company operates 215 miles of electric railway in eastern Pennsylvania and western New Jersey, serving Allentown, Easton, Bethlehem, South Bethlehem and numerous other towns and boroughs. It furnishes high-speed limited service between Allentown and Philadelphia. Allentown is one of the principal cities in the Lehigh Valley and is located in the center of the great cement belt and 30 miles south of the anthracite coal fields. The government has leased the Allentown fair grounds as a training site for the United States Army Ambulance Corps and has several thousand men stationed there.

Due to these activities and to those of the Bethlehem Steel Company, located at South Bethlehem, it was recently decided to purchase twenty-four new double-truck cars for city and suburban service. A careful study was made of the latest equipment in large Eastern centers, and as a result it was decided to design a light-weight, prepayment, center-entrance and exit type of car, with double truck, and of all-steel construction.

The cars as purchased are 47-ft. over-all length and 8-ft. 6-in. over-all width. They have entrance and exit doors at the center on both sides, and a door for the motorman and for emergency exit at diagonally opposite corners. Equipment is for double-end operation with couplers and multiple-unit control for train operation during rush hours. The conductor's door control standard is at the center. The doors, equipped with Brill automatic mechanism, fold outwardly, operating in conjunction with a single folding step. The door opening is 4 ft. 10 in. wide with no stanchion in the middle. A 3½-in. depression in the floor at the center and 26-in. diameter wheels, gives steps of 15½-in. and 13⅜-in. respectively.

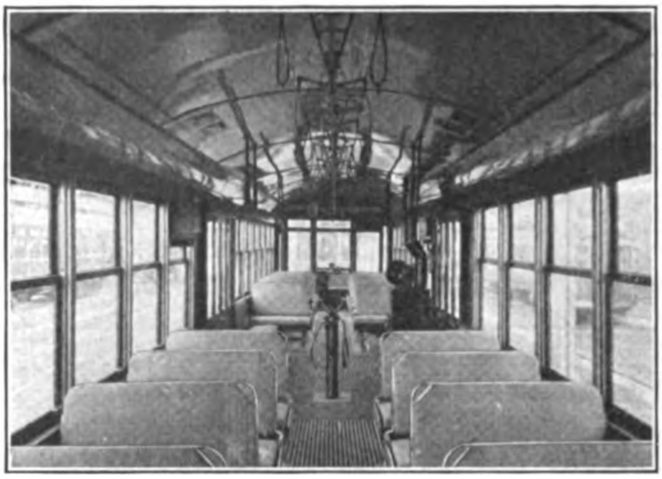


PASSENGERS BOARDING CAR AT STOP

With the exception of four longitudinal seats at the center doors and one in each end at the left of the motorman's position, all seats are arranged transversely. The seats are of the Brill "Winner" type with a total capacity of fifty-seven.

Windows are provided with metal sash, stiles fitting the "Renitent" post construction. The lower sashes raise to a height above the eyes of the seated passengers. The vestibule windows drop into pockets and the sashes are provided with racks to hold the window at various heights.

The floor of the car is double, the first layer being of ⅞-in. yellow pine and the upper one of ⅜-in. maple. Oak strips are laid in the aisle between the cross seats and at the doors. The inside walls of the car body below the side windows are lined with Agasote $\frac{3}{16}$-in. thick and having ½-in. air space between inside and outside sheathing. The roof is of the plain arch type supported on pressed steel rafters and sheathed with ½-in. tongued and grooved poplar boards covered with No. 8 cotton duck. Eight Automatic Ventilator Company's ventilators are placed four on each side of the roof. Ceilings are lined with Agasote, painted white.



INTERIOR ARRANGEMENT OF CARS

Each end of the car is provided with a 6-in. channel bumper faced with a 6-in. Hedley anti-climber and reinforced with a ⅛-in. x 22½-in. steel anti-telescoping plate. Westinghouse car and air couplers are furnished, also HB lifeguards and Horne double-acting hand brakes. The sand boxes have Ohio Brass Company's air valves.

The trucks are Brill 77-E-1, equipped with Davis steel wheels, hammered steel axles and Westinghouse 514-A motors.

Other features of the car equipment are Adams & Westlake gongs, Pantasote curtains, Cooper No. 12 heater, International type R-5 double register, Keystone illuminated car signs, Ohio Brass Company trolley retrievers, Keystone bell and buzzer high-voltage system with push buttons on each side post, Electric Service Supplies Company's bronze lamp fixtures and shades and Pyrene fire extinguisher.

These cars will be operated from Allentown to Bethlehem, a round-trip mileage of 15.56 miles and 16 miles respectively. No terminals are provided as the cars make a loop in both cities. An amusement park owned and operated by the company and located midway between Allentown and Bethlehem furnishes especially heavy traffic in the summer months. It is expected that the new cars will show a marked reduction in the time element of loading and unloading.

A bill has been presented to the Municipal Council of Tokyo favoring the extension of the local electric railway system. Extensions of about 54 miles are proposed for the next four years.

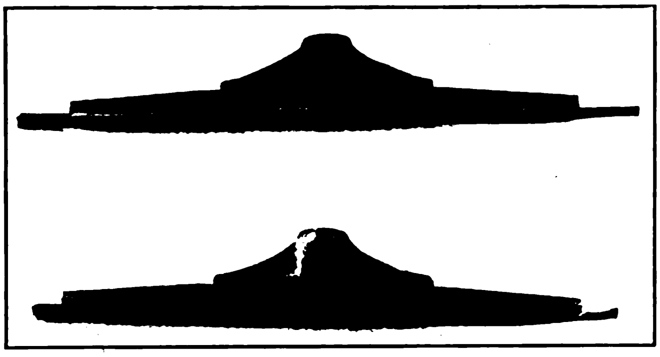
Hard Spots in Trolley Wire Result from Hammering of Trolley Wheels

Flexibility of Supports and Light-Weight Fittings Will Reduce Hammering and Result in Increased Service

BY G. H. BOLUS
Designing Engineer The Ohio Brass Company

TROLLEY wire freely suspended between supports assumes a catenary curve the depth of which is governed by the weight of the wire, the tension to which it is subjected and the distance between supports. If a trolley wire could be suspended between supports without sag the ideal condition would be approached. The catenary type of construction with messenger wire and hangers of various lengths approximates this, but even with a spacing as short as 10 ft. between hangers there is some sag in the trolley wire.

The catenary type of construction is not well adapted to city service as the extra number of fittings required and the cost are against it. The most common construction for this service consists of direct suspended trolley wire supported by brackets or cross-span wires every 100 ft. With such a spacing of the supports there is more or less sag. For instance, at 1800-lb. tension a No. 00 copper trolley wire sags 3.36 in.


REDUCED SECTION OF TROLLEY WIRE COMMON AT EAR APPROACHES

When a trolley car equipped with pole and wheel having, say 25-lb. tension, is run under a stretch of direct suspended trolley wire the wheel moves in both a horizontal and vertical direction, the latter due to the sag in the wire. In other words, the trolley wheel travels a greater distance than the car. An abrupt change in direction of motion occurs at support points, which causes a hammering or hollowing out of the trolley wire by the force of the blow.

In practice the points where hollowings occur in the contact wire are usually spoken of as hard spots in the line and they are present at all supports and between supports where a very heavy trolley splicer is used to connect two small trolley wires. They are also very common under elevated structures and the like, due to the unyielding nature of the supports.

An accompanying illustration shows two ears removed from different properties where slack trolley wire and high base tensions are common. The reduction in cross-section of trolley wire at the approach end of the ears due to the hammer blow from the wheel is clearly distinguishable. The properties using these ears are widely separated geographically.

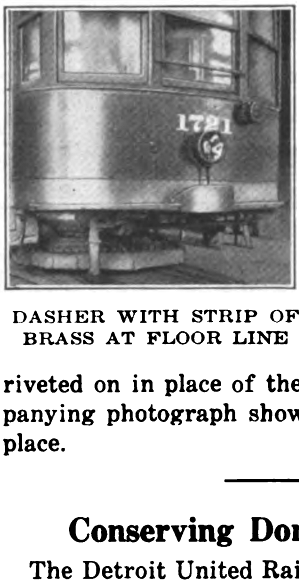
The effect of hammering is sometimes found at the center of the ear directly under the boss. This is caused by the wheel actually leaving the wire at the ear approach and striking under the boss.

Flexibility at supports and light-weight fittings will reduce hammering, and an ear using a flat steel spring to connect the boss to the runner has been used with success, although the regular type of ear will give perfect results if sags and cross-spans are properly handled. In cross-span construction the hammering effect due to hard spots at supports may be modified by slacking off on the cross-spans so as to allow the wheel to lift the span slightly. Tight spans produce hard spots and put an unnecessary strain on poles and guys.

Vibration is present in the trolley line and if damped out suddenly or localized produces crystallization and early breakage of trolley wires. For this reason frogs, crossings and section insulators, while usually made of malleable iron, are fitted with bronze approaches or shock absorbers to absorb the vibration gradually and minimize wire breakage due to crystallization.

A broken trolley wire is a dangerous thing not only to traffic and pedestrians, but if it should "freeze" to the rail it would undoubtedly be annealed for some distance, in most cases back to the first feed point. A corrective measure sometimes used to prevent this with double-track construction is to cross-connect the trolley frequently so that only a very short length of wire could be damaged. It should be remembered that copper trolley wire which has become annealed has less than 50 per cent of its initial strength and its resistance to wear is greatly reduced. Copper alloy trolleys do not seem to anneal as readily as copper, but they have a tendency to break up into short pencils.

Brass Footing for Metal Dashers


DASHER WITH STRIP OF BRASS AT FLOOR LINE

SHEET iron or steel dashers are apt to rust along the lower edge on account of the moisture which accumulates on the inside at the point of junction with the floor. The Rhode Island Company at its Providence shops finds it economical to cut away the lower part of rusted dashers, replacing it with sheet brass, a strip about 10 in. wide being riveted on in place of the discarded metal. The accompanying photograph shows the "rejuvenated" dasher in place.

Conserving Domestic Sizes of Coal

The Detroit United Railway has been conducting tests to determine if buckwheat size anthracite, bituminous coal or coke cannot be used as fuel for their car heaters. These tests were made at the suggestion of the Fuel Administration as it is considered extremely unlikely that any domestic sizes of anthracite will be available for industrial or public utility use during the coming winter.

Auto-Trolley-Car Shows Big Saving in Operating Costs

Passengers Call Them "War Cars" and Consider Their Operation as a Patriotic Measure Adopted by the Company

AS DESCRIBED in the ELECTRIC RAILWAY JOURNAL of May 18, page 977, the Westchester Electric Railroad Company of the Third Avenue Railway System, New York City, began placing cars of the one-man pedal-controlled type in service on its Chester Hill line early in May. Since their initial introduction here cars of this type have been gradually introduced on three other lines and it is expected that eight short lines will be completely equipped with them within the next two months.

Results so far have been very gratifying both in regard to the type of service provided and its resulting costs. Indications are that lines which have always been "lame ducks" and have been previously operated at a loss will be able, by the use of this type of car, to show a reasonable return upon the investment in them.

In adopting this type of car the company has pursued the policy of making the change to one-man operation only as fast as the men left the company's employ or were taken for war service, and none was displaced in the change. The rate of pay for operators on this type of car is 30 cents per day higher than in two-man operation and the labor is less trying. As a consequence the men are anxious to obtain a chance to operate the cars and many have requested permission to "break in" on their own time.

On the Chester Hill line the average payroll for operation a year ago was $330 per week. This has now been reduced to $200 per week, a saving of $130 or about 40 per cent. At the same time the operators are receiving more returns, as already suggested. Passengers are referring to cars of this type as "war" cars and they consider their introduction in the nature of a patriotic measure on the part of the company. As these cars replace older ones with fewer conveniences, and as the new cars are clean, bright and sanitary, all patrons are immensely pleased with the change.

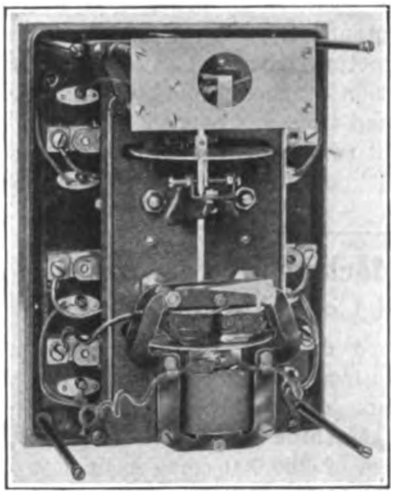
In starting operation on a new line, the cars are first placed in regular service with a motorman, a conductor and an instructor. This avoids any delays or inattention that might result from unfamiliarity with the equipment. When the operator and the public have been somewhat accustomed to the change, regular one-man operation is taken up.

As the principal object of pedal operation of the equipment was to give greater freedom to the operator for supervising boarding and alighting, and to leave his hands free for making change, the question of whether the men should be permitted to make change with the car in motion had an important bearing. Results have shown that an experienced operator can collect one or two fares after starting the car without increased hazard. In average service there are not more than one or two passengers left standing on the platform after the doors are closed. The operators are provided with a change-carrying machine to assist them in their duties. Of course, at intersecting points or when the cars are crossing busy thoroughfares it is considered advisable for the operators to devote their whole attention to the operation of the car rather than to risk an accident for the small saving in time that would result.

The management of the road is particularly impressed with the field for the use of this car in putting back in their service soldiers who return partly disabled from the front, thus giving them a useful occupation and assisting them to become operators instead of helpless dependents.

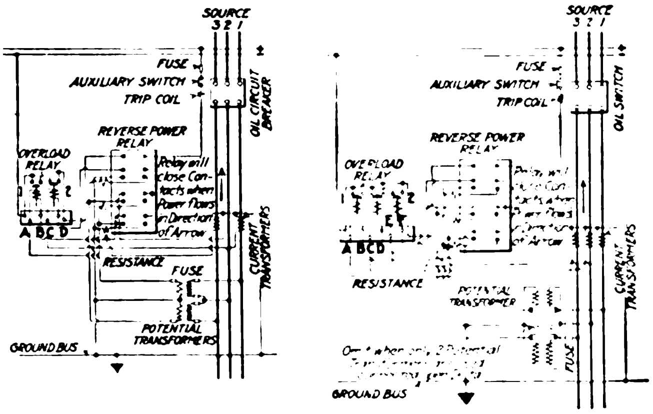
Polyphase Induction Reverse Power Relays

THE polyphase induction reverse power relay here illustrated has been brought out by the General Electric Company. It will operate correctly on practically all single-phase short-circuits, even though the voltage between two lines which are short-circuited may fall to zero, on balanced three-phase short-circuits with 10 amp. secondary and 1 per cent of normal voltage remaining and in practically every case on balanced short-circuits, with a voltage of one-half of 1 per cent normal. The relay is constructed along the lines of a polyphase watt-hour meter, but with three instead of two driving elements. Each of the elements has a current and a potential coil.



INDUCTION POLYPHASE REVERSE POWER RELAY

Two disks connected to a single operating shaft are used, the upper one of which is driven by one element and the lower by two elements, one in front and one in back.



REVERSE POWER RELAY CONNECTIONS FOR UNGROUNDED AND GROUNDED CIRCUITS

The use of three elements is required for grounded Y circuits. For ungrounded circuits two current and two potential transformers are sufficient. The third current coil carries the resultant current of the two current transformers and the third potential coil is connected across the open delta of the two potential transformers.

The relays are built with single or double-throw contacts which, however, carry for only an instant the tripping current of the automatic circuit opening device, because the closing of these main contacts sends the entire tripping current of the breaker being protected through the operating coil of an auxiliary relay within the case of the reverse power relay and causes its contacts to close and short-circuit the main relay contacts. The auxiliary contacts are sealed closed by the tripping current until the trip circuit has been opened by means of an auxiliary switch on the air or oil circuit breaker. The breaking of the tripping current by this auxiliary switch permits the auxiliary relay to open.

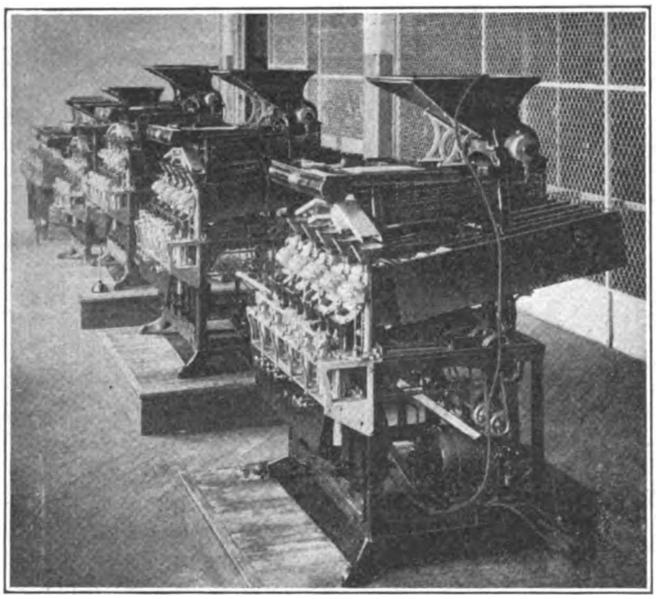
Vibration is practically eliminated even at very heavy currents.

The relays are made sensitive in order to operate properly on very low potentials. Thus overload relays must be used in conjunction with the reverse power relays to prevent operation at normal potential until a predetermined current and time are reached. The contacts of the overload and reverse power relays are connected in series so that both must close to trip the breaker.

Coin Handling Machines Save Labor in Sorting and Counting Money

MUCH labor is saved daily at the offices of the Detroit United Railway by automatic coin handling machines. A bank of machines made by the Sattley Coin Handling Machine Company of Detroit, Mich., handle an average of 200,000 coins each day.

The machines, operated by Westinghouse ⅛-hp. motors, receive the miscellaneous coins in the hoppers at the top. Without further attention, battered and badly-worn pieces are thrown out and the remaining coins are sorted into their respective denominations. These are accurately counted and properly wrapped in rolls of any desired amounts. Thus a great deal of time is saved and the element of error is reduced to a minimum.



BANK OF AUTOMATIC COIN HANDLING MACHINES

Types of Track Construction Used in Brooklyn During 1917

Construction, Reconstruction and Modification are Necessary to Meet the Intensified Conditions Caused by the War

IN A REPORT recently prepared within the way and structure department of the Brooklyn Rapid Transit System several changes in track construction are given.

It appears that the installation of the general standard surface track construction as adopted in 1911 has been continued but modified by the use of cast-weld joints of which there are more than 13,000 now in service on that system. The use of continuous joints was resumed last season for certain short sections where conditions are against welding economically. The use of gravel concrete was practically discontinued in favor of ⅜-in. crushed stone screenings. The standard track construction now calls for 7-in., 122-lb. grooved girder rail; 6-in. x 8-in. x 8-ft. rough yellow pine ties; standard flat tie rods spaced 8 ft. apart; four standard hook head spikes per tie; cement mortar rail filler; new 5-in. granite blocks with cement-grouted joints on gravel or crushed stone concrete base; gravel concrete mixed 1 to 3 to 6, and extending down from 1 in. above the ties to the level of the bottom of the ties. The crushed stone screenings concrete was mixed ¾ to 2½ to 6. The grout mixture of one part cement to one and one-half parts sand has also been continued.

The spacing of tie rods was increased from 6 ft. to 8 ft. on centers, partly to offset the increase in cost of the rods and partly because it was decided that the new 122-lb. rail, being stiffer laterally, does not need to have the rods spaced as closely as with the former standard rail. The granite pavement installed in 1916 with pitch and sand joints has given excellent service so far, indicating that this type of paving joint is very satisfactory for use under heavy team traffic conditions.

A second gasoline motor roller was secured early in 1917 and the two rollers have been used to good advantage in rolling sub-grades. The roller has also been used to assist in cutting asphalt into 2-ft. strips by rolling a special T-iron into the surface. This practice has eliminated excessive asphalt surface restoration work, and practically no men are required now for cutting work. This yields a considerable saving.

The curved-head rails installed in 1915 and universally since that year have not shown any signs of corrugation as yet. Corrugation usually develops within two years at the latest after installation and it is felt that the curved heads have accomplished the main object claimed, namely, the postponement, if not the actual elimination of corrugation. It may be noted in passing that the American Electric Railway Association is seriously considering the incorporation of the curved head idea in its standard design for 7-in. grooved girder rail.

The curved head rail section used by the Brooklyn Rapid Transit Company is a modification (in the head contour only) of the association standard 7-in. grooved girder rail, and is known as L. S. Company section 122-491. The difficulty in gaging this rail has been overcome by the adoption of a new standard track gage adopted after consultation with the mechanical department.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE · PERSONAL MENTION · CONSTRUCTION NEWS

P. R. T. Increases Wages

Additional Wages Granted by the Philadelphia Rapid Transit Company this Year Aggregate $4,000,000

To save the War Labor Board the bother of passing on the carmen's wage question in Philadelphia and to give incentive to the men further to facilitate the transportation of war workers, the management of the Philadelphia Rapid Transit Company on Aug. 4 announced to the Employees' Co-operative Committee that, effective Aug. 4, wages would be increased to a maximum of 48 cents an hour, the amount which the War Labor Board required railway companies in other large cities to pay their men. This increase in wages and the other advances granted since the beginning of the year aggregate more than $4,000,000.

A letter sent by Mr. Mitten to the War Labor Board said in part:

"The contract (for the operation of the high-speed lines) approved by the city and now before the Public Service Commission provides the machinery for such increase in fare as should protect the solvency of the company, and it is only in the event that this contract be not approved that we may be obliged to ask that your honorable board then use your good offices for us to the same extent that may be done in the interest of other cities making similar increases in wage."

SOME DETAILS OF WAGE SCALE

The wages of trainmen are to be increased and adjusted as of the pay-week commencing Aug. 4 to conform to the wage scale now made effective by the War Labor Board in cities of the first class, in cents per hour, namely:

Surface System:	Conductors and Motormen
First three months	43
Following nine months	46
Thereafter	48

Elevated system:	Motormen	Conductors	Guards
First three months	46	43	43
Following nine months	49	46	45
Thereafter	51	48	46

Where the over-all time of swing runs exceeds fourteen hours, an addition of pay for the period of such excess time is to be allowed as follows:

For the fifteenth hour	Fifteen minutes
For the sixteenth hour	Thirty minutes
For the seventeenth hour	Forty-five minutes
For the eighteenth hour and each succeeding hour	One hour

Time and a half will be paid for extra trips or tripper service.

These rates eliminate the nine-hour minimum guarantee, present allowance for trippers, present allowance for swing runs, weekly guarantee to extra men, together with any other limitations, time allowance or guarantees heretofore existing.

The wages of all other employees are now being considered for an adjustment which will be made effective as of the same date, Aug. 4.

Student Training Corps Plans

The War Department has recently announced an arrangement by which college students more than eighteen years of age may enlist in the military forces of the country and obtain training in college which will prepare them for the service. They will enlist in what is called the Students' Army Training Corps and will be provided with uniforms and equipment by the War Department, but will be on furlough status. They will receive regular military training and will be subject to call, but the policy of the government will be to keep members of the corps in college until their draft age is reached or possibly longer if the needs of the service, *e.g.*, for doctors, engineers, chemists and the like are such as to make that course advisable. Camps for these students will be held at Plattsburg, N. Y., Fort Sheridan, Ill., and Presidio, Cal.

Seattle Wages Fixed

As a result of numerous conferences between officers of the Puget Sound Traction, Light & Power Company, Seattle city authorities, and representatives of the street carmen's union, extending over a period of weeks, a wage scale has finally been decided upon, and ratified by the union.

The agreement under which the street car strike of a year ago was ended expired on Aug. 1, and the new wage scale will date from that day. However, before the agreement can become effective the revenues of the company must be increased. In case the city shows no disposition within twenty-one days to assist the company, or is unable to devise means of affording relief, the union will appeal to the National War Labor Board, and at the same time the company will carry its case to the proper government officials. In the meantime the platform men will continue working under the present arrangement, with the understanding that their increased pay is to be made retroactive to Aug. 1.

The new wage scale increases the present wage of 33 cents to 40 cents an hour to 50, 55 and 60 cents an hour. Other conditions will remain practically the same as under the old agreement.

Ordinance Before Council

Chicago Measure Will Come Up for Passage on Aug. 14—May Be Voted Upon in November

The ordinance for unification of the railway companies and the construction of subways in Chicago was approved by the local transportation committee of the City Council on Aug. 5 and submitted to the Council on the same day. It will come up for passage on Aug. 14.

TRUSTEES NAMED

The measure as finally drafted had only a few minor changes aside from those mentioned in the account of the proceedings in last week's issue of the ELECTRIC RAILWAY JOURNAL. Interest centered on the names of men proposed by the companies for members of the board of trustees. There seemed to be general satisfaction with the following selections, which are subject to approval by the City Council:

E. D. Hulbert, president of the M chants Loan & Trust Company; Harrison B. Riley, president of the Chicago Title & Trust Company; George G. Tunnell, assistant to the president of the Atchison, Topeka & Santa Fe Railroad and trustee of the Chicago bureau of public efficiency; John F. Smulski, president of the Northwestern Trust & Savings Bank; Joseph E. Otis, vice-president and acting president of the Central Trust Company of Illinois; John W. O'Leary, president of the Arthur J. O'Leary & Son Company; Henry A. Blair, chairman of the board of operation of the Chicago Surface Lines and president of the Chicago Railways; Leonard A. Busby, president of the Chicago Surface Lines and president of the Chicago Railways; Britton I. Budd, president of the Chicago Elevated Railways.

FOUR PRESENT DIRECTORS INCLUDED

Of the nine men proposed, the present directorates of the companies include Messrs. Busby, Blair, Budd and Riley. The trustees under the new ordinance must have no financial interest in the companies and will be entitled to annual salaries of $5,000 each.

Several attempts were made to require additional elevated or subway construction in the first period, but the Aldermen stood firm against adding to the financial requirements.

While there is still some opposition to the measure on the part of radical municipal ownership advocates it is not expected that this will hinder its passage. The newspapers are almost a unit in calling for favorable action and it looks as though the people will vote on the ordinance next November.

San Francisco-Oakland Terminal Wage Award

Brief Review of Full Award of Board Appointed to Pass Upon Wages for Key Route Employees

The board of arbitration consisting of Paul A. Sinsheimer, chairman; George C. Kaufman for the men and John S. Drum for the company, which has been considering the wage controversy between the San Francisco-Oakland Terminal Railways (Key Route) and its employees, handed down its findings under date of July 3 and issued them on July 11. The award is signed by Messrs. Sinsheimer and Kaufman.

WAGES ONLY THING BEFORE BOARD

The only issue before the board was the wage to be paid to the men. The conditions of employment were established under a new agreement between the company and the men. The existing wage schedules and the proposed readjustments all contemplate a ten-hour day.

The company operates a system of street railways; fast interurban electric railways and ferry boats. Its street railways serve a number of municipalities fronting the shore of San Francisco Bay, in Alameda and Contra Costa counties, including the cities of Oakland, Alameda, Berkeley, Richmond, Haywards and Piedmont, and embracing a territory of approximately 300,000 population. Its ferry boats and electric trains operate between the city of San Francisco and the cities of Oakland, Berkeley and Piedmont. The entire system embraces within its scope the largest cities on San Francisco Bay, with a population of approximately 800,000 people. This railway property consists of two sections: the Oakland Traction Company, commonly known as the "Traction Division," embracing the street railway service; and the San Francisco-Oakland & San Jose Railway, commonly known as the "Key Division," embracing the fast electric train service to the piers and the ferry boats which connect with San Francisco.

On June 17, 1917, the carmen's union called the existing agreement into question and asked for a modification of its terms. These modifications were adjusted satisfactorily with the company, with the exception of the new wage proposals made by the men. It was thereupon agreed between the company and the union that the question of wages should go to arbitration. Accordingly, on Aug. 25, 1917, an agreement of arbitration was entered into between the company and the union.

THE ELEMENTS CONSIDERED

The agreement of arbitration required that in reaching its conclusions the board should consider the four following elements:

1. The value of the services rendered by the men.
2. The wages paid on traction and interurban lines in other communities.
3. The cost of living in Oakland and the other East Bay cities, as compared with other communities.
4. The financial ability of the company, in view of its present income and growing operating costs, to pay an increased wage.

The board reached and announced its conclusions in a memorandum on Nov. 2, 1917. The complete and final report is now presented in compliance with the full requirements of the arbitration agreement, so that it may be made available as a detailed record for the purposes of the Railroad Commission of California.

The board says it was offered six alternatives as follows:

1. To adopt the theory of the social minimum.
2. To adjust the existing wages by adding thereto the measure of the increase in living costs.
3. To determine the wage scale by a comparison with street railway compensation in other cities throughout the United States.
4. To determine the wage scale by the schedules paid in other industries in Oakland, Alameda and Berkeley.
5. To adjust the wages of the men in respect to the earnings and profits of the company—the theory of the economic maximum.
6. To compute a series of wage schedules which should be reasonable *per se.*

THE BOARD'S CONCLUSIONS

It reviews at length the degree and balance of emphasis to be placed on these various alternatives.

In conclusion the board says:

"The railway has maintained a continuity of its service. It has suffered a loss of revenue which these rising costs have entailed. It has honorably joined with its employees to meet the question of wages. Company and union have united in an effort and desire to do and to receive equity. They have been willing to forego such powers as each might possess to seek its own advantage and have placed the issue so vital to both in the hands of a disinterested tribunal.

"This company, we believe, in doing equity, is entitled to equity. It has continued to transport the populations of San Francisco, Oakland, Alameda, Berkeley and Piedmont with the same excellence of service that has heretofore obtained.

"We submit these facts for the consideration of the tribunal which shall pass finally upon its prayer for financial relief.

"We may summarize what has here been said into the following general principles:

"1. Wages are measurable only by their relation to the costs of life.

"2. Wages adjusted by arbitration must be reasonable and equitable *per se.*

"3. Capital cannot successfully urge its right to pay less than a reasonable standard because of financial impairment. This would mean that each purchaser could adjust prices to his financial means.

"4. If the sum available to capital and labor be limited, capital may wait for its return and still live. Labor cannot.

"5. It is manifestly inconsistent in industry to increase prices because wages are high and then, maintaining the prices, to withhold the wages.

"6. During a period of suddenly advancing costs, the public utility enterprise lacks the freedom of self-adjustment to the new condition that attaches to industry generally.

"7. In the public utility service, when rising costs and increased wages transgress on capital, either relief must be found in augmented earnings or the burden will continue to rest on capital.

"8. In the public utility service, the inter-dependence of the wages of the employee, the capital of the stockholder and the service to the patron demands a form of adjustment which shall assure equity to the wage earner and the stockholder and continuity of service to the patron.

"This brings us to the determination of the new schedule of wages in this enterprise. We have suggested a basic wage average from 40 cents to 42 cents an hour for the experienced men in the Traction Division. For the men in the Key Division, we recommend a scale graded from 43 cents to 45 cents an hour. Every man in this division will, however, by reason of his length of service, receive the maximum of 45 cents an hour. We, accordingly, find the following schedule of wages to be reasonable, as a minimum:

Traction Division	Pay Per Hour
First six months	30 cents
Second six months	32 "
First six months of second year	34 "
Second six months of second year	36 "
Third year	38 "
Fourth year	40 "
Fifth year and thereafter	42 "
Key Division	
First year	43 "
Second year	44 "
Third year and thereafter	45 "

"Brakemen of the Key Division will take the same wage rating as motormen and conductors of the Traction Division.

Eastern Wisconsin Company Celebrates

The biggest patriotic celebration ever held in Winnebago County took place on July 14, Bastile Day, at Eweco Park, owned by the Eastern Wisconsin Electric Company, Oshkosh, Wis. Arrangements were made for a company of Wisconsin State Guards to be present. They formed a hollow square at the foot of the flagpole and when the salute was fired and the band struck up the national anthem a 12-ft. x 20-ft American flag was hoisted to the top of an 85-ft. flagpole on the shore of Lake Winnebago. The flag was then lowered and the flag of the French Republic was attached below the American flag. This was followed by a salute, the band then struck up the national anthem of France, and the American flag and the French flag were hoisted up. Following this the two flags were lowered and the service flag of the Eastern Wisconsin Electric Company with thirty-three stars was attached below the French flag. The salute was again fired and the three flags were hoisted to the top of the pole, the band playing "On Wisconsin," the State song. More than 9000 people witnessed the ceremonies. Ten per cent of the receipts of the park division for that day were given to the Red Cross and the Knights of Columbus War Relief Funds. B. W. Arnold, manager of the company, received many compliments on the handling of the crowds by the company.

Successful Appeal for Men

The Rhode Island Company, Providence, R. I., has recently advertised as follows in the Providence papers:

"MEN IN NON-ESSENTIAL INDUSTRIES

"The electric railways of the country are absolutely essential to winning the war. At the present time there is a shortage of men. The Rhode Island Company has many openings for men as conductors and motormen. Good wages are being paid and steady work guaranteed. Men in non-essential lines are asked to get into communication with our transportation department. This is your chance if the business in which you are engaged is not necessary to the winning of the war. Write or call on Mr. Hackett, Room 307, 100 Fountain Street, Providence. Hours 10 to 12 a.m., 2 to 5 p.m."

The results obtained are said to have been very satisfactory, and would seem to indicate that the appeal for men is one that might be employed profitably by electric railways elsewhere.

News Notes

Increase in Pay on Interurban Railway.—A new wage scale has been put into effect by the Interurban Railway, Des Moines, Iowa, which gives the men an average increase of about 35 per cent. The increase is retroactive and all employees will receive back pay from June 1.

San Francisco Men Accept.—The platform men of the San Francisco (Cal.) Municipal Railway have accepted the compromise wage proposition of the Board of Works and will receive 50 cents an hour for an eight-hour day, with time and a half after the first twenty minutes of overtime has elapsed.

Wages Increased in Fargo.—The wages of the trainmen of the Northern States Power Company, at Fargo, N. D., have been increased to the following scale: first six months, 26 cents an hour; second six months, 27 cents; third six months, 28 cents; fourth six months, 29 cents; after twenty-four months, 30 cents. On Jan. 1, 1917, an increase of 1 cent an hour was made and on Nov. 16, 1917, a further increase of 2½ cents was made. The total increase since Jan. 1, 1917, amounts to 6 cents an hour, or 25 per cent.

Get-Together Meetings.—In a statement to the employees of the Pacific Electric Railway, Los Angeles, Cal., in the *Pacific Electric Railway Magazine* for July 10, Paul Shoup, president of the company, suggests department family meetings at least once a month, to be attended by all the employees and officers to talk over all matters of common interest. Mr. Shoup says that he would be glad to attend the meetings if he were invited. He says: "Let's have no more bars between the company management and the rest of the people who are on the payroll."

Change in Pooling Plan Ratified.—The Board of Estimate of New York City on Aug. 2 ratified the plan by which the city will begin to share in new subway earnings on Jan. 1, instead of about three months later. This will result from a modification of the pooling arrangement. The amended plan was agreed upon several days ago by city officials, members of the Public Service Commission and the officers of the Interborough Rapid Transit Company. The proposed change in the pooling arrangement was referred to in this paper for Aug. 3, page 206.

Denver Wage Demands Before Board.—The wage committee of the union formed among the employees of the Denver Tramway have sent demands to the War Labor Board at Washington for an increase to 50 cents minimum and 55 cents maximum with a basic eight-hour day. Following this action a conference was held with the management. The men were not ready to present the demands so only preliminary discussion took place. No feeling of animosity exists between the men and the company and the trainmen continue to show the same spirit of courtesy and co-operation to the public.

Wages and Fares Coupled.—A local of the Amalgamated Association has just been organized among the employees of the Louisville (Ky.) Railway. Superintendent Riddle of the company addressed the union men at a meeting on July 30, in which he delivered a message from President Minary relative to the increased cost of materials, supplies, etc., and the need of a 6-cent fare. Mr. Minary urged the men to aid in the movement to obtain an increase in fare, a subject which will be taken up with the city administration at once. Mr. Riddle stated that increased wages were only possible in event a 6-cent fare was obtained.

Increase in Wages in San Francisco.—The third voluntary increase within one year in the wage scale for platform men was announced on July 27 by the United Railroads, San Francisco, Cal., to become effective on July 28. The increase affects 2200 employees. Under the new scale all the platform men getting less than 36 cents an hour receive a 4-cent raise for each hour's work. Those receiving 36 cents an hour and over get a 3-cent raise an hour, up to 45 cents, which is the new maximum. This is to be increased 1 cent an hour each year for those receiving under 45 cents an hour until they reach the maximum. For new men entering the service of the company this will be the wage scale: 37 cents an hour for the first six months, 39 cents an hour for the second six months, 40 cents an hour for the second year and 1 cent an hour for each year thereafter until the maximum of 45 cents an hour is reached.

Service Withdrawn Following Confusion.—Because it believed that a continuance of the shuttle service connecting the lines of the H subway system at Times Square and the Grand Central Station, New York, would prove a peril under the present uncompleted condition of these stations and until the public has learned the new routes, it was decided by the Public Service Commission on Aug. 2 to stop this service temporarily at midnight that day. It was made clear that the plans of the subway, as originally made, were not affected by the stopping of this short-line service, but that it was a mistake to try to give complete service at the present time. Construction work at Times Square station and at the Grand Central station will be rushed, and when the dead tracks and the temporary platforms at the Grand Central are removed and the passageways shortened at the Times Square station the shuttle service will be resumed.

Effect of War Board Ruling on Chicago Companies—Raising of the wages of trainmen approximately 9 cents an hour by mandate of the Ward Labor Board brought to the people of Chicago a realization of the fact that higher fares will be necessary to meet the additional cost of operation. To the Chicago Surface Lines the new wage scale means about $3,500,000 added to the payrolls, while the elevated companies' burden will be close to $1,500,000. The traveling public had heard of the provisions of the pending ordinance which would put rates of fare on a sliding scale to meet the cost of service, but many persons evidently had not figured that higher fares would ever be necessary. The railway officials have not announced any definite program of action looking to extra revenues, but they have informed the public that increases in the prevailing rates are inevitable. The Surface Lines probably will ask the city authorities to agree to an amendment in the present ordinance so that fares can be raised. The elevated lines will probably seek relief from the State Utilities Commission.

Financial and Corporate

Net Lags Behind Gross

Subsidiaries of United Light & Railways Company Feel Effects of Rising Costs

The gross earnings of the subsidiaries of the United Light & Railways Company, Grand Rapids, Mich., for the calendar year 1917 showed substantial increases in all departments. Owing to the higher cost of materials and labor and the increased taxes, however, the net earnings did not show a proportionate increase.

PASSENGER DECREASE OF 15.16 PER CENT

The revenue passengers of the railway subsidiaries totaled 43,777,903, an increase of 5,764,828 or 15.16 per cent. The sources of revenue of the subsidiary companies, both gross and net, and the percentage of each class of revenue to the total, are shown in Table I.

TABLE I—DIVISION OF GROSS AND NET EARNINGS OF SUBSIDIARIES OF UNITED LIGHT & RAILWAYS COMPANY FOR CALENDAR YEARS 1916 AND 1917

Gross Earnings:	1917	Per Cent of Total	1916	Per Cent of Total
Gas........	$1,539,844	19.99	$1,353,805	19.66
Residuals....	126,787	1.65	92,709	1.35
Electric..	2,786,411	36.13	2,587,459	37.58
Railway—City.....	2,090,648	27.14	1,806,218	26.23
Railway—Interurban	910,322	11.82	868,601	12.61
Heat.......	121,365	1.58	86,215	1.25
Miscellaneous.....	129,888	1.69	90,770	1.32
Total....	$7,705,268	100.00	6,885,779	100.00
Net Earnings:				
Gas........	$481,588	18.12	$564,160	21.16
Electric....	1,054,814	39.68	1,152,546	43.22
Railway—City.....	737,668	27.75	571,968	21.45
Railway—Interurban	284,726	10.71	300,693	11.28
Heat.......	303	0.01	10,745	0.40
Miscellaneous.....	99,259	3.73	66,280	2.49
Total...	$2,658,361	100.00	$2,666,393	100.00

During 1917 a total of $1,903,053 was expended for additions and extensions to properties. Of this total $220,990 was expended on gas properties, $779,282 on electric properties, $817,303 on railway properties and $85,476 on heating properties.

Expenditures for construction were general in nature and became necessary because of the growth of the communities served. A large proportion of the above-mentioned sum was expended on the properties of the Tri-City Railway & Light Company, serving Davenport, Iowa, and Rock Island, Moline and East Moline, Ill. The expenditures there were made to satisfy the requirements of the United States Government and industries employed on important government contracts

The comparative statement of the holding company and the subsidiaries for 1916 and 1917 is given in Table II. From the surplus accounts of subsidiary companies, $309,161 was transferred to their depreciation reserves, and in addition the subsidiary companies expended or set aside for maintenance $521,065, which was charged directly to operating expenses. This made the total expended or set aside for maintenance and depreciation of property $830,226, or over 12.88 per cent of the gross earnings received from the sale of gas, electricity, heat, and transportation. In compliance with the depreciation fund agreement with bondholders, there was expended in 1917 the further sum of $246,342 for extensions, betterments and additions, against which no bonds can be certified.

TABLE II—COMPARATIVE INCOME STATEMENT OF UNITED LIGHT & RAILWAYS COMPANY AND SUBSIDIARIES FOR CALENDAR YEARS 1916 AND 1917

	1917	1916
*Gross Earnings, (all sources)............	$7,853,909	$6,922,559
*Operating Expenses (including maintenance, general, income and excess profit taxes..............	5.046,907	4,219,386
Net Earnings.........	$2,807,002	$2,703,173
Interest on subsidiary securities held by public.............	899,381	931,260
Balance..............	$1,907,621	$1,771,913
Interest on first and refunding 5 per cent bonds, United Light & Railways Company	434,302	403,724
Balance..............	$1,473,319	$1,368,189
Interest on debenture, notes and loans of United Light and Railways Company...	268,748	174,916
Balance available for dividends...........	$1,204,571	$1,193,273
Dividends, first preferred stock, 6 per cent....	605,557	595,793
SurplusEarnings.....	$ 599,014	$597,480

* The gross earnings and operating expenses of the subsidiary companies include inter-company transactions to the amount of $925,110, of which $256,522 represents electric power sold to subsidiary railway properties.

The operating expenses of the subsidiary companies covered $395,460 accrued for payment of general and federal taxes, including excess profit taxes, an increase of $100,028 for the year.

New Cities Service Issue

Henry L. Doherty & Company and Montgomery & Company have formed a syndicate to underwrite $6,000,000 convertible 7 per cent gold debenture bonds of the Cities Service Company which are to be offered to stockholders for subscription at 102½. The bonds are part of an authorized issue of $30,000,000, of which $3,000,000 were disposed of last March. The proceeds of the new offering are to be used in developing oil land holdings.

After Jan. 1, 1920, the bonds will be convertible into Cities Service stock in proportion of 80 per cent of preferred and 20 per cent of common for each $100 par value of bonds.

Against Finance Plan

Attorney General Is Opposed to Proposed Utility Finance Corporation

The Attorney General has reported adversely on the plan for a $100,000,000 corporation to act as an intermediary between borrowing corporations and the War Finance Corporation. This was disclosed on Aug. 2 by W. P. G. Harding, governor of the Federal Reserve Board and managing director of the War Finance Corporation, following an informal conference with New York bankers at the Federal Reserve Bank. Mr. Harding, before taking the train for Washington, said:

PLAN ORIGINATED IN NEW YORK

"The plan originated by New York bankers and strongly supported by Chicago bankers appeared to be faulty and Attorney-General Gregory was asked for a ruling. He decided that section 10 of the war finance act, limiting loans to any one corporation to 10 per cent of the War Finance Corporation's capital, or $50,000,000, applied to the corporation proposed as an intermediary. In consequence the utmost amount that such a corporation could receive from the War Finance Corporation is $50,000,000."

The New York *Sun* says that when Governor Harding's announcement was reported to a banker intimately connected with the plans to form a $100,000,000 buffer corporation, he said:

"That settles it. Our plans are knocked in the head. Some new method will have to be devised or the borrowings of corporations will be sadly limited. We had hoped to aid not only public utilities but all corporations in need of assistance.

"The banks are well loaned up. They would not care to indorse or guarantee the obligations generally of debtor corporations, and the War Finance Corporation finds it difficult to make loans on the collateral without some guarantee. If the War Finance Corporation could loan a much larger amount than $50,000,000 to our proposed intermediary concern, the problem could have been easily solved, but such a ruling puts an end to a scheme that received strong support and was carefully studied."

$100,000,000 CORPORATION PROPOSED

The War Finance & Utilities Corporation, organization of which awaited a favorable ruling from the Attorney General, was to have been a $100,000,000 corporation at the start with plans for further enlargement. It was being formed under section 7 of the War Finance Corporation act, which provides in brief that a bank or banking establishment may make loans to any business which is necessary or contributory to the prosecution of the war and may rediscount 75 per cent of every such loan at the offices of the War Finance Corporation. The limitation to $50,000,000 affects the extent of rediscounts and loans combined.

Cleveland Railway Shows Deficit for 1917

Traffic Increase of 1916 Not Maintained Last Year, with Rising Taxes and Expenses

Two of the most important incidents of operation for the Cleveland (Ohio) Railway during the calendar year 1917 were the increases in the operating allowance and in the rate of fare. An increase in the operating expense allowance to 14½ cents per revenue car-mile became effective on Jan. 1 and continued during the whole year, instead of 13½ cents, the allowance in effect from May 1, 1916, to the end of that year. On Dec. 15 the rate of fare was changed from rate *"e"* (3 cents cash fare, plus 1 cent for a transfer) to rate *"d"* (4 cents cash fare, three tickets for 10 cents, 1 cent transfer and 1 cent rebate), and, on Dec. 26, to rate *"c"* (4 cents cash fare, three tickets for 10 cents, 1 cent transfer, no rebate).

The company was aided in keeping down the fare in 1916 by an increase of something like 12 per cent in business, with an increase of only 5 per cent in car mileage. During 1917, however, the receipts from April on began to fall. The increase for the first ten months was less than 7 per cent and for November only 4 per cent over 1916. At the same time taxes increased 10.9 per cent, and the expenses of maintenance and operation rose 13.44 per cent in the first ten months.

During 1917 the operating revenues increased $654,570 or 6.87 per cent, the gain in passenger revenue being 7.04 per cent. Revenue from other operations rose $13,496 or 14.44 per cent, and non-operating income $4,638 or 6.12 per cent. On the other hand, the total maintenance and operating expenses increased $901,905 or 13.54 per cent. The largest items of increase were in the following accounts: Wages of trainmen, $241,777; injuries and damages, $169,350; fuel for power, $93,303, and power purchased, $185,250.

The accident department estimates that more than $600,000 will be required to settle claims unadjusted at the close of the year arising from accidents that happened between March 1, 1910, and Jan. 1, 1918. There is no balance in the operating expense reserve, or in any other reserve, to meet these liabilities.

The car-mile earnings and expenses of the company for the last two calendar years are given in the accompanying statement. The total revenue car-miles increased from 35,673,567 to 37,648,670, and the ordinance car-miles (with trailers at 60 per cent) from 33,871,076 to 35,822,584. The total rides increased from 375,382,748 to 398,378,894. The percentage increases during 1917 in these and other items are shown below:

	Per Cent Increase in 1917 Over 1916
Passenger revenue (exclusive of transfers)	7.69
Passenger revenue (including transfers)	7.04
Gross income	6.87
Maintenance allowance	5.77
Maintenance expenses	7.71
Operating allowance	15.62
Operating expenses	15.88
Taxes	10.99
Interest	84
Operating expenses, taxes and interest	11.51
Total expenses, taxes and interest	10.73
Fares	6.86
Transfers	3.50
Rides	6.13
Ordinance car-miles	5.76
Actual car-miles	5.54
Allowances, taxes and interest	10.23
Expenses, obsolete equipment, taxes and interest	11.76

On Dec. 31, 1917, the interest fund was $273,963 less than the amount originally provided under the terms of the Tayler ordinance. The earnings in excess of allowances, taxes and interest totaled $463,173 for 1910, 1912, 1915 and 1916, but the losses in 1911, 1913, 1914 and 1917 showed the preponderating total of $737,136, leaving the net decrease noted above. The balance in the fund on Jan. 1, 1917, was $545,438, and at the end of the year $226,036. The maintenance reserve on Dec. 31, 1917, showed a deficit of $298,624 as compared to $268,918 the year before, and the operating reserve a deficit of $216,281 as compared to $195,075. Besides these deficits, aggregating $514,905, there were various suspense accounts bringing the total reserve and suspense accounts on Dec. 31 to $2,338,589.

The expenditures on betterment or construction accounts in 1917 amounted to $1,219,715, the largest items being for the new track extensions, a new transformer station and its equipment, new motor-cars and trailers, and land. In line with the general policy of the nation, expenditures for track extensions and other new property will probably be held down as closely as possible in the current year.

COMPARATIVE INCOME STATEMENT OF CLEVELAND RAILWAY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Cents Per Car-Mile	Amount	Cents Per Car-Mile
I—Based on Ordinance Allowances				
Operating revenues:				
Revenue from transportation	$10,069,164	.....	$9,428,091	.....
Revenue from other operations	106,961	.....	93,464	.....
Total operating revenues	$10,176,125	28.41	$9,521,555	28.11
Expense allowances:				
Maintenance	$1,770,074	4.94	$1,673,548	4.94
Operating	5,194,275	14.50	4,492,732	13.27
Total expense allowances	$6,964,349	19.44	$6,166,280	18.21
Net operating revenue	$3,211,776	8.97	$3,355,275	9.90
Non-operating income	80,388	0.22	75,750	0.22
Gross income	$3,292,165	9.19	$3,431,025	10.12
Taxes	643,107	1.80	579,423	1.71
Net income	$2,649,057	7.39	$2,851,602	8.41
Interest	1,928,856	5.38	1,912,815	5.65
Surplus	$720,200	2.01	$938,787	2.76
Special allowances	1,039,602	2.90	936,000	2.76
Net surplus	*$319,401	0.89	$2,787	0.00
II—Based on Actual Expenses				
Operating revenues	$10,176,125	28.41	$9,521,555	28.11
Actual expenses:				
Maintenance of way and structures	$1,089,883	3.04	1,062,379	3.14
Maintenance of equipment except power plant	946,604	2.64	808,060	2.38
Maintenance of power plant	32,211	0.09	49,254	0.15
Total maintenance	$2,068,698	5.77	$1,919,693	5.67
Power	$1,094,942	3.06	$811,594	2.40
Conducting transportation	3,120,295	8.71	2,824,852	8.34
Traffic	500	0.00	500	0.00
General and miscellaneous	1,277,902	3.57	1,103,793	3.26
Total operating	$5,493,639	15.34	$4,740,739	14.00
Total expenses	$7,562,338	21.11	$6,560,433	19.67
Net operating revenue	$2,613,787	7.30	$2,861,122	8.44
Non-operating income	80,389	0.22	75,751	0.22
Gross income	$2,694,176	7.52	$2,936,873	8.66
Taxes	643,109	1.79	579,423	1.71
Net income	$2,051,068	5.73	$2,357,450	6.95
Interest	1,928,856	5.38	1,912,815	5.65
Surplus	$122,212	0.34	$444,635	1.30
Obsolete property	524,000	1.46	384,000	1.13
Net surplus	*$401,788	1.12	$60,635	0.17

*Deficit.

I. R. T. Financing Discussed

W. P. G. Harding, governor of the Federal Reserve Board and managing director of the War Finance Corporation, on Aug. 2 called on Mayor Hylan and Comptroller Craig with reference to the proposed Interborough Rapid Transit Company financing and reported that he had obtained from them full information regarding the relations between the city and Interborough Rapid Transit Company and the Brooklyn Rapid Transit Company. He said:

"I took advantage of this trip to New York to ascertain from the municipal authorities the terms on which the companies operate the lines owned by the city, and Mayor Hylan gave me all the information I required. The Interborough company had an application before the War Finance Corporation for a direct loan, but this was subsequently withdrawn. I have received intimation that a fresh application is about to be made and I secured first-hand information regarding the company's financing problems."

The Public Service Commission has granted the application of the Interborough Rapid Transit Company to issue $39,416,000 of 7 per cent notes at not less than 95½ of their face value convertible into 5 per cent bonds at 87½.

W. S. S. Campaign at Wheeling

To assist Wheeling "over the top" in the recent national campaign for the sale of War Saving Stamps, the employees of the Wheeling Traction Company formed an organization known as the Wheeling Traction System War Savings Society. The organization dedicated the first of the fifty-two new cars being delivered to the Wheeling Traction Company by using it as a meeting hall at the time of the formation of the society and as a means of transport for the campaign workers. Their first meeting was addressed by the Highlander Sandy MacGregor of Tank Britannica fame. The employees of every department of the company belong to the organization. The society secured subscriptions for $9,010, or about $22 per man employed. This sum was secured notwithstanding the fact that many of the employees are members of other war saving clubs. To stimulate interest and show the progress of the campaign a great clock diagram was painted on the bulletin board on the front of the Highland carhouse of the company. As this carhouse faces the National Pike over which army trucks are passing at the present time at the rate of 500 per week, the board attracted considerable attention.

Financial News Notes

$5,000,000 Mortgage Recorded.—The Sacramento Northern Railroad, the successor to the Northern Electric Railroad, Chico, Cal., has filed for record a $5,000,000 mortgage in favor of the Mercantile Trust Company, San Francisco, Cal. This is in accordance with the plan for the reorganization of the Northern Electric Railroad following foreclosure and sale recently. The reorganization plan was reviewed in the ELECTRIC RAILWAY JOURNAL for June 15, page 1161.

Municipal Line Sold for Junk.—At a special meeting of the Council of Yazoo City, Miss., on July 16 the Municipal Railway, abandoned about three months ago on account of the expense of operation exceeding the income, was sold to the highest bidder, Ben Goldstein, Yazoo City, for $20,000. Mr. Goldstein gets the entire equipment, except the engines and generating outfit at the power house, which will be sold as a separate outfit. The purchaser has a year in which to dismantle the property.

$1,000,000 Bond Issue Authorized.—Chairman Hill of the Public Service Commission for the Second District of New York has heard the application of the Syracuse & Suburban Railroad, Syracuse, N. Y., for permission to make a first refunding mortgage on all the company's property for $1,000,000, and for authority to issue $750,000 of fifty-year 5 per cent bonds. The proceeds of the bonds are to be used in purchasing outstanding bonds and for reimbursing the company's treasury for capital expenditures made and under contemplation.

Winnipeg Net Income Drops.—The net income (excluding depreciation) of the Winnipeg (Man.) Electric Railway for the year ended Dec. 31, 1917, at $253,629 showed a decrease of $151,621 as compared to 1916, although the gross earnings at $3,339,009 represented a gain of $27,840. In commenting upon this showing the company says that so long as materials continue to rise in price, demands for higher wages have to be met and the jitney question remains unsettled, no substantial improvement in net income can be expected. The company provided $201,050 for depreciation and $60,000 for a sinking fund appropriation in 1917, and the surplus carried forward amounted to $1,218,106.

Lincoln Traction Removes Track.—Some years ago two electric railways operated at Lincoln, Neb.—the Lincoln Traction Company and the Citizens' Railway. Both companies operated a line between Lincoln and College View, one line being 6¼ miles long on direct private right-of-way with a running time of twenty-four minutes, while the other was 7 miles long with a running time of forty minutes. Since the Lincoln Traction Company took over the Citizens' Railway the operation of the two lines has been continued, but on July 13 the Public Service Commission gave permission for the removal of 1 mile of track between Normal and College View. In order to avoid any delay laborers were put to work on Sunday morning, July 14, and the offending track was removed forthwith.

Enforced Service Unsatisfactory.—On Aug. 2 J. S. Lewis, president of the Southern Traction Company, Bowling Green, Ky., was arrested for maintaining a nuisance in the form of a street railway. The warrant followed complaints registered by citizens relative to the operation of the cars and to the condition of the plant of the company. Some months ago the officers and stockholders of the company endeavored to dispose of the property as junk to a St. Louis Company, which announced its intention of dismantling the road. A temporary injunction prevented this. Later a permanent order was entered prohibiting the company from dismantling the plant and selling the equipment. Under the terms of the franchise the city held that the company would have to give service. The enforced service proved unsatisfactory.

Supplementary Receivership Bills.—Ephrim Caplin, attorney for John W. Seaman, New York, in receivership proceedings against the United Railways, St. Louis, Mo., on July 27, filed in the United States District Court a petition supplementary to the two bills previously filed in the proceedings, and naming six local members of the board of directors as defendants. As in the preceding petitions, the supplementary bill asks that the directors be ousted. Those named additionally are A. C. Brown, Murray Carleton, A. J. Siegel, A. L. Shapleigh, F. O. Watts and D. R. Francis, Jr. These six names were left off the other petitions because of there being no judge in the city who could give this permission. The new petition also includes a request that a special master be appointed to call a special meeting of the stockholders for the election of new directors. The petition would debar from the election the directors just mentioned because of their alleged complicity in deeds affecting the company adversely.

Electric Railway Monthly Earnings

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
12 m, June, '18	$6,750,454	$4,339,549	$,410,905	$1,047,182	$1,363,723
12 m., June, '17	5,864,694	3,389,006	2,475,688	953,141	1,522,547

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1 m., June, 18'	$808,431	$542,769	$265,662	$155,612	$110,050
1 m., June, '17	853,195	542,238	310,957	145,598	165,359
6 m., June, '18	4,847,573	3,515,491	1,332,082	938,080	394,002
6 m., June, '17	5,175,944	3,408,072	1,767,872	876,011	891,861

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$24,218	*$17,106	$7,112	$8,073	†$961
1m., May, '17	23,265	*18,202	5,063	7,472	†2,409
12m., May, '18	305,014	*226,940	78,074	93,976	†15,902
12m., May, '17	310,441	*231,374	79,067	86,779	†7,712

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., May, '18	$38,606	*$25,996	$12,610	$8,131	$4,478
1m., May, '17	25,313	*15,644	9,669	7,801	1,869
12m., May, '18	404,933	*249,282	155,650	94,973	60,677
12m., May, '17	291,587	*170,102	121,485	92,990	28,495

* Includes Tanks. † Deficit.

Traffic and Transportation

New York Inquiry Begun

City Commission Asks Surface Railways for Data to Permit Inquiry into Their General Condition

The Public Service Commission for the first District of New York, on Aug. 7, began an investigation into the general condition of all street surface railroad corporations operating cars within the city of New York.

OBJECT OF INVESTIGATION STATED

Chairman Hubbell presided, and Commissioners Travis H. Whitney, Charles S. Hervey, F. J. H. Kracke and Samuel H. Ordway were present. Chairman Hubbell opened the hearing. He stated that the object of the investigation was to ascertain actual conditions upon surface car lines, and to determine whether the service afforded is adequate and proper for the war period.

Commissioner Charles S. Hervey, upon whose motion the investigation was ordered, suggested the appointment of a conference committee on service, to report at the next hearing, consisting of one member each from the New York Railways, the Third Avenue Railway, the Brooklyn Rapid Transit surface lines, the Queens Borough surface lines and the Richmond Borough surface lines, together with a representative each from the transit bureau, the bureau of electrical equipment, the bureau of statistics and accounts, the transit division of the secretary's office and the law department of the commission, such conference committee to report as follows:

1. What lines largely used by the public are now applying inadequate service, and what additional service thereon is necessary to meet the public need?
2. What, if any, surface lines in the city can be discontinued during the period of the war, without serious inconvenience to the public?
3 Where service cannot be discontinued, what reduction in non-rush hour service can be made?
4. If any discontinuance of service or reduction in service is recommended, what will be the annual or monthly saving thereby, expressed in quantity of material or labor and in money:

(a) in the consumption of coal,
(b) in the release of labor to other lines,
(c) in the release of cars to other lines,
(d) in the general overhead of operation and in the maintenance of property in the streets,
(e) in the release of property which can be taken wholly out of service.

STATISTICAL DATA REQUESTED

In reporting on any of these proposed discontinuances or reduction of service, the committee is to furnish full information as to the use of these lines, the number of passengers carried, the number of cars operated, the passenger revenue and operating costs, etc., for a full year preceding July 1, 1918.

With respect to statistical data required, the companies are requested to prepare for submission at the next session, for all property under their jurisdiction in public use, either owned or leased, full information for each year of the period beginning July 1, 1909, and ended June 30, 1918, including the following:

1. Revenues and expenses, including taxes.
2. Disbursements for interest, dividends or rentals.
3. Value of property in public use, owned or rented, as reported by the companies to the departments of taxation.
4. Amortization or depreciation reserves.

Commissioner Whitney advised the preparation of these additional data:

On the basis of adequate service, give the following costs by months, from Aug. 1, 1918, to Aug. 1, 1919:

1. Wages of platform employees.
2. Wages of employees necessary to maintain property in safe and efficient condition.
3. Cost of material necessary for such maintenance.
4. Other costs necessary for such operation and maintenance.

In each case the companies are asked to furnish such wages and costs on the following bases: (1) Wages and costs in 1915, (2) wages and costs as of Aug. 1, 1918, (3) wages and costs necessary to maintain the property and operate adequate service.

In basing the estimates on adequate service the companies are also to give by months the total car-miles to be operated and the estimated passengers.

The hearing was adjourned one week.

Jersey Company Renews Appeal

The Public Service Railway, Newark, N. J., on Aug. 6 made another application to the Board of Public Utility Commissioners for an increase in fare to 7 cents on all the company's lines, urging that because of the War Board's decision allowing an increase in wages to employees the increased fare is an absolute necessity. Counsel said that another reason for the application was that the company might accumulate a surplus to maintain its credits. The War Board's order compelling an increase in wages, he said, would cause an expenditure in that direction by the company between now and Dec. 31 next of $877,571.

Vice-President Slocum, of the utility board, said that the application would throw the doors wide open again on the matter. The board will fix a date for a hearing.

The original application of the company to the commission was for an increase in fare from 5 cents to 7 cents and to charge 2 cents on an original transfer and another cent on a transfer on a transfer. On July 12 the board issued an order allowing the company to charge 1 cent for each original transfer on each fare starting Aug. 1.

Five Cents for Cleveland

Company Will Also Charge for Transfers—Tayler Grant Provisions Revised for War Period

Cleveland now has a straight 5-cent fare, with a 1-cent charge for transfers without rebate. The ordinance increasing the rate of fare from 4 cents, or seven tickets for a quarter, with 1 cent for a transfer, was passed at a special session of the City Council on Aug. 3. The session was called by Mayor Harry L. Davis immediately after the receipt of information that the conductors and motormen had been granted a substantial advance in wages by the Federal War Labor Board.

FIVE FARE SCHEDULES FIXED

The new ordinance fixes five fare schedules. Unlike the Tayler plan, the first is the highest. For the present, however, it was considered sufficient to put the second one into force. The first calls for a maximum cash fare of 6 cents, 1 cent for a transfer and no rebate. As a matter of fact all five schedules provide for this transfer charge without rebate. The schedules are as follows:

1. Six cents cash fare, nine tickets for 50 cents.
2. Five cents cash fare, five tickets for a quarter.
3. Five cents cash fare, eleven tickets for 50 cents
4. Five cents cash fare, six tickets for a quarter.
5. Four cents cash fare, five tickets for 20 cents.

This ordinance also provides for an increase from 16 cents per car-mile to 19½ cents per car-mile in the operating allowance. The increase will date from May 1, the date when the advance in wages takes effect. The City Council urged that all back pay due the men under the increase be paid up by Aug. 15, but the company doubts its ability to complete the payment of the accumulated wages before Oct. 1 without borrowing money for that purpose.

The ordinance dates from Aug. 4 and will be in effect until six months after the close of the war, when the schedules of the Tayler ordinance again become operative.

The finding of the Federal War Labor Board, in the case of the men in Cleveland was referred to in the ELECTRIC RAILWAY JOURNAL for Aug. 3, page 207.

WAGE AWARD WILL COST $1,500,000

It is estimated that the award will result in an increase of between $1,250,000 and $1,500,000 a year in wages. As the old wage scale meant the payment of about $2,500,000 a year, wage requirements will be increased to almost $4,000,000.

Local fares in Lakewood and Cleveland Heights will remain as they are, but no transfers will be issued. Fares for those places for passengers going in or out of the city will be 5 cents, the same as within the city limits of Cleveland.

Many Railways Increase Fares

Statistics Published by the American Electric Railway Association Give Data Since the Last Report

The statistical department of the American Electric Railway Association has compiled a list of electric railway companies whose fares have recently been increased. It is supplementary to the list issued by the association during the first part of the year and mentioned on page 541 of the issue of this paper for March 16. Roughly, the period covered is from February to the middle of July. The list follows:

City Railways

Arkansas

Hot Springs (Hot Springs Street Railway)—All reduced fares eliminated. Flat 5-cent fare in effect.

California

San Francisco district (San Francisco-Oakland Terminal Railways)—Trans-bay fare increased to 10 cents and 11 cents and commutation rate raised on parity with steam road rates. Permitted by Railroad Commission.

Delaware

Wilmington (Wilmington & Philadelphia Traction Company)—Former fare 5 cents, present fare 7 cents. Permitted by Public Utility Commissioner.

Iowa

Des Moines (Des Moines City Railway)—Reduced rates eliminated. Flat 5-cent fare in effect. Permitted by City Council.

Illinois

Bloomington, Cairo, Champaign, Danville, Decatur and other cities in Illinois, (Illinois Traction System)—Reduced fares eliminated. Flat 5-cent fare in effect.

Elgin (Aurora, Elgin & Chicago Railroad)—Former fare 5 cents, present fare 6 cents.

Jacksonville (Illinois Traction System)—Former fare 5 cents, present fare 6 cents.

All permitted by Public Utilities Commission.

Indiana

Evansville (Public Utilities Company)—Reduced fares eliminated. Flat 5-cent fare in effect.

Jeffersonville and New Albany (Louisville & Southern Indiana Traction Company)—Reduced fares eliminated. Flat 5-cent fare in effect.

All permitted by Public Service Commission.

Kansas

Kansas City (Kansas City Railways)—Former fare 5 cents; present fare 6 cents. Permitted by Public Service Commission.

Kentucky

Paducah (Paducah Traction Company)—Former fare 5 cents, present fare 6 cents. Permitted by City Commission.

Massachusetts

Amherst, Greenfield and Northampton (Connecticut Valley Street Railway)—Reduced fares eliminated. Flat 5-cent fare in effect.

Boston, Suburbs (Middlesex & Boston Street Railway)—Former fare, 7 cents with 6-cent tickets, present fare 7 and 8 cents, with charge of 1 cent for transfer between 7 and 8-cent lines. Six-cent tickets abolished.

Holyoke (Holyoke Street Railway)—Fares increased through adoption of zone system.

Springfield (Springfield Street Railway)—Fares increased by adoption of zone system.

All permitted by Public Service Commission.

Michigan

Battle Creek and Jackson (Michigan United Railways)—Former fare, 5 cents; present fare, 6 cents. Permitted by City Commissioners.

Manistee (Manistee City Railway)—Former fare 5 cents, present fare 10 cents, three tickets for 25 cents, seven tickets for 50 cents. Permitted by City Council.

Missouri

Kansas City (Kansas City Railways)—Former fare 5 cents, present fare 6 cents.

St. Joseph (St. Joseph Railway, Light, Heat & Power Company)—Sale of tickets at six for 25 cents eliminated.

St. Louis (United Railways of St. Louis)—Former fare 5 cents, present fare 6 cents.

All permitted by Public Service Commission.

New Hampshire

Claremont (Claremont Railway & Lighting Company)—Reduced rates eliminated. Flat 6-cent fare in effect.

Keene (Keene Electric Railway)—Former fare 6 cents, present fare 7 cents.

Manchester (Manchester Street Railway)—Former unit fare, 5 cents; present fare, 6 cents.

All permitted by Public Service Commission.

New Jersey

Atlantic City (Atlantic City & Shore Railroad)—Unit zone fares increased 1 cent, except that fare between Atlantic City and Pleasantville was increased 2 cents.

Newark and all other cities in New Jersey served by the company (Public Service Railway)—One-cent charge for transfer added to unit fare.

Ocean City (Ocean City Electric Railroad)—Former fare, 5 cents; present fare, 7 cents.

All permitted by Public Utilities Commission.

New Mexico

Albuquerque (City Electric Company)—Former fare, 5 cents; present fare, 6 cents. Permitted by City Commissioners.

New York

Geneva (Geneva, Seneca Falls & Auburn Railroad)—Former fare, 5 cents; present fare, 6 cents. Permitted by Public Service Commission.

Ogdensburgh (Ogdensburgh Street Railway)—Former fare, 5 cents; present fare, 7 cents. Permitted by Public Service Commission.

Ossining (Hudson River & Eastern Traction Company)—Former fare, 5 cents; present fare, 6 cents. Permitted by Village Trustees.

Peekskill (Peekskill Lighting & Railroad Company)—Former fare, 5 cents; present fare, 6 cents. Permitted by Village Trustees.

Poughkeepsie (Poughkeepsie City & Wappingers Falls Electric Railway)—Former fare, 5 cents; present fare, 6 cents. Permitted by Public Service Commission.

Waverly (Waverly, Sayre & Athens Traction Company)—Former fare, 5 cents; present fare, 6 cents. Permitted by Village Trustees.

White Plains (Westchester Street Railroad)—Former fare, 5 cents; present fare, 6 cents. Permitted by Common Council.

North Carolina

Asheville (Asheville Power & Light Company)—Reduced rates eliminated; flat 5-cent fare in effect.

Greensboro (North Carolina Public Service Company)—All reduced fares eliminated; flat 5-cent fare in effect.

Wilmington (Tidewater Power Company)—Former fare, 5 cents; present fare, 7 cents; fare to Wrightsville Beach increased from 35 to 40 cents. Permitted by State Corporation Commission.

Ohio

Cleveland (Cleveland Railway)—Fare increased to highest scale provided in franchise; 4-cent cash fare, 1 cent for transfer, no rebate; seven tickets for 25 cents.

Toledo (Toledo Railways & Light Company)—Former fare, 5 cents; present fare, 5 cents with 1 cent charge for transfer. Permitted by United States District Court. City restrained from interfering.

Oklahoma

Chickasha (Chickasha Street Railway)—Former fare, 5 cents; present fare, 6 cents. Permitted by State Corporation Commission.

Pennsylvania

Chester (Chester Traction Company)—Former fare, 5 cents; present fare, 6 cents.

Lebanon suburban lines (Reading Transit & Light Company)—Former fare, 6 cents; present fare, 8 cents.

Mauch Chunk (Carbon Transit Company)—Former fare, 5 cents; present fare, 7 cents. Permitted by City Council for period of war and eighteen months thereafter.

Mount Carmel (Shamokin & Mount Carmel Transit Company)—Unit zone fares increased from 5 to 6 cents.

Norristown suburban lines (Reading Transit & Light Company)—Former fare, 6 cents; present fare, 8 cents.

Pittsburgh (Pittsburgh Railways)—Former fare, 6 cents and 5½ cents; present fare, 5 cents in central zone and 7 cents to points outside.

Suburban Pittsburgh (West Penn Railways)—Former fare, 5 cents; present fare, 6 cents.

Reading, suburban lines (Reading Transit & Light Company)—Former fare, 6 cents; present fare, 8 cents.

Rhode Island

Providence and other cities (Rhode Island Company)—Fares increased by introduction of zone system. Permitted by Public Utilities Commission.

South Dakota

Sioux Falls (Sioux Falls Traction Company)—Former fare, 5 cents; present fare, 6 cents. Permitted by referendum of voters.

Utah

Salt Lake City (Utah Light & Traction Company)—All reduced rates abolished; flat 5-cent fare in effect; suburban zones readjusted. Permitted by Public Utility Commission, contested by city and upheld by Supreme Court.

Virginia

Charlottesville (Charlottesville & Albermarle Railway)—Sale of six tickets for 25 cents eliminated; school and workmen's tickets raised from 2½ cents to 3 cents. Permitted by State Corporation Commission.

Lynchburg (Lynchburg Traction & Light Company)—Reduced rates eliminated; flat 5-cent fare in effect. Permitted by State Corporation Commission.

Roanoke (Roanoke Railway & Electric Company)—Reduced rates eliminated; flat 5-cent fare now in effect. Permitted by State Corporation Commission.

Washington

Tacoma (Tacoma Railway & Power Company)—Former fare, 5 cents; present fare, 7 cents, fifteen tickets for $1. Transfers between company's lines and municipal lines provided for. Permitted by City Council.

Tacoma (Municipal lines)—Former fare, 5 cents; present fare, 10 cents; commutation rates, 7½ cents.

Wisconsin

Fond du Lac (Eastern Wisconsin Electric Company)—Sale of six tickets for 25 cents eliminated.

Milwaukee (Milwaukee Electric Railway & Light Company)—Reduced rates abolished in central zone; flat 5-cent fare in effect.

Sheboygan (Western Wisconsin Electric Company)—All fares less than 5 cents eliminated.

All permitted by State Railroad Commission.

Canada

Edmonton (Radial Railway, municipally operated)—Former fare, cash, 5 cents; workmen's tickets, good until 8 a. m., eight for 25 cents; present fare, 7 cents to 11 p. m., after which 10 cents; tickets sold on cars, six for 25 cents; tickets sold at stations, five for 25 cents; two tickets for night fares.

Fort William (Municipal Railway)—Flat 5-cent fare for adults, except after 12 o'clock midnight, when fare is 10 cents; children's tickets, eight for 25 cents; children's cash fare, 5 cents.

Montreal Tramways—Fare increased in uniform tariff or city territory in accordance with following schedule: 12 o'clock midnight until 5 a. m., 15 cents cash; 5 a. m. to 8 a. m., 6 cents cash or five tickets for 25 cents, and on week days no charge for transfer; 8 a. m. to midnight, 6 cents cash, five tickets for 25 cents, 1 cent for transfer; for school children between five and sixteen years old, week days only between 8 a. m. and 6 p. m., 7 tickets for 25 cents, transfers free.

Quebec Railway, Light & Power Company—Former fare, cash, 5 cents, six tickets for 25 cents; male workmen's tickets, good between 6 and 8 a. m. and 5 and 7 p. m., eight for 25 cents; children under seven, accompanied by elders, free; present fare, cash, 5 cents, twenty-one tickets for $1; male workmen's tickets, seven for 25 cents; children under seven, accompanied by elders, 3 cents or 10 tickets for 25 cents.

Vancouver (British Columbia Electric Railway)—Former fare, 5 cents; present fare, 6 cents. Permitted by City Council.

Interurban Railways

California

Central California Traction Company—Rates increased by 10 per cent to put them on parity with steam railroad rates.

Colorado

Denver & South Platte Railway—Fares, Eaglewood to Littleton increased from 5 to 10 cents; from Denver to Littleton increased from 5 to 11 cents. Permitted by Public Utilities Commission.

Connecticut

Hartford & Springfield Street Railway—Former unit zone fare, 6 cents; present unit zone fare, 7 cents, 15 tickets for $1.

Georgia

Augusta-Aiken Railway & Electric Corporation—Rate between Augusta and Aiken increased from 25 to 40 cents. By Circuit Court, which overruled decision of State Railroad Commission refusing increase.

Illinois

Chicago & West Towns Railway—Fares generally increased. Permitted by Public Utility Commission.

Indiana

Rates of all interurban companies increased to 2½ cents per mile. Permitted by Public Service Commission.

Union Traction Company—Fare between Sistersville and New Martinsville increased from 20 to 25 cents. Permitted by Public Service Commission.

Kansas

Kansas City—Western Railway—Fares increased by substitution of mileage system for zone system. Rates 2 cents per mile. Permitted by State Public Utility Commission.

Kentucky

Kentucky Traction & Terminal Company—Fares on interurban lines, excepting through rates from Lexington, increase from 2½ to 3 cents a mile. On Lexington business unit fares in 2-mile zones increased from 5 to 6 cents.

Massachusetts

New Bedford & Onset Street Railway—Former unit zone fare, 6 cents; present unit zone fare, 7 cents.

Northern Massachusetts Street Railway—Length of zones reduced.

Worcester & Warren Street Railway—Former unit fare, 7 cents; present unit fare, 10 cents. All of these permitted by Public Service Commission.

Michigan

Houghton County Traction Company—Rates between Houghton and Calumet increased from 25 to 30 cents. Permitted by State Railroad Commission.

New Hampshire

Manchester Street Railway—Former unit zone fare, 5 cents and 6 cents; present unit zone fare, 7 cents and 8 cents. Permitted by Public Service Commission.

New Jersey

New Jersey & Pennsylvania Traction Company—Former unit zone fare, 5 cents; present unit zone fare, 6 cents. Permitted by Public Utilities Commission.

Ohio

Cleveland, Chagrin Falls & Cincinnati Railway—Mileage rate increased from 2 to 2½ cents. Permitted by Commission.

Cleveland & Eastern Traction Company—Fares between Cleveland and South Euclid raised from 5 to 10 cents. Cuyahoga county attempted to enjoin company from putting increase into effect. Supreme Court refused injunction.

Dayton, Covington & Piqua Traction Company—Rates increased from 2 to 2½ cents a mile. Permitted by Commission.

Ohio Electric Railway—Fares increased to 2½ cents per mile with exception of few short runs.

Pennsylvania

Allentown & Reading Traction Company—Former unit zone fare, 5 cents; present unit fare, 6 cents.

Lackawanna & Wyoming Valley Railroad—Former fare, 2 cents per mile; present fare, 2½ cents per mile.

Lehigh Valley Transit Company—Length of zones reduced. Reduced round-trip tickets eliminated. Commutation rates standardized at 4 cents per 2½-mile zone.

Scranton & Binghamton Traction Company—Former unit zone fare, 5 cents; present unit zone fare, 6 cents.

Texas

Texas Electric Railway—Fares over 35 cents increased 8 per cent.

Washington

Puget Sound Electric Railway, Seattle Division—Fare between Seattle and Tacoma and Seattle and Puyallup increased from $1.35 to $1.50. Permitted by Public Service Commission.

Washington Water Power Company—Flat 3-cent per mile rate in effect.

West Virginia

Monongahela Valley Traction Company—Former unit zone fare, 5 cents; present unit zone fare, 6 cents.

Newell Bridge & Railway Company—Former fare (on Newell-East Liverpool lines), 5 cents; present fare, 10 cents.

West Virginia Traction & Electric Company—Former unit zone fare, 5 cents; present unit zone fare, 6 cents. Permitted by Public Service Commission.

Canada

London & Port Stanley Railway—Fare increased 15 per cent. Permitted by Board of Railroad Commissioners of Canada.

Buffalo Votes on August 20

Electors Will Pass Upon the Matter of a Higher Fare for the International Railway

Voters of Buffalo, N. Y., are waiting for the opportunity on Aug. 20 to express their preferences on whether or not to repeal the action taken by the City Council waiving certain franchise restrictions and allowing the Public Service Commission for the Second District to fix a higher rate of fare to be charged by the International Railway within the city. Women qualified to vote at the general election in November under the new state law registered with the Bureau of Elections on Aug. 9 and 10 and will be allowed to express their preference at the special election. This will be the first time women have voted in the city and will be the first time a referendum election has been held under the commission charter, adopted three years ago.

WAGES DEPEND ON ELECTION

Upon the result of the election depends the wage recently granted its employees by the railway, also the additional wage increase granted by the War Labor Board. One sentence in the decision rendered by the War Labor Board says that should the City Council revoke its action granting the company permission to apply to the Public Service Commission for a higher rate of fare, the wage increase shall be automatically terminated. Thus the situation will revert back to the original condition and may result in a general strike of all employees.

Mayor George S. Buck and three of the city commissioners are urging voters to ratify the action of the City Council. These city officials were originally opposed to higher street fares, but after Day & Zimmerman, accountants, made an investigation of the financial condition of the company they voted to suspend certain franchise restrictions between the city and the company and recommended to the Public Service Commission that a higher rate of fare be charged. It is generally believed that a 6-cent fare will not be sufficient to pay the wage increase allowed platform employees by the War Labor Board and make improvements which are declared to be absolutely essential to the upkeep of the company's city properties. It is believed by municipal authorities and officials of the International Railway that either a 7-cent or 8-cent fare is necessary or else a 6-cent fare and additional charges for transfers.

COMPANY PLANNING CAMPAIGN

Ivy Lee, of Lee, Harris & Lee, New York, will handle the details of the campaign to be waged by the railway for ratification of the Council's action. Many of the large labor organizations of the city have pledged their support to the company in its effort to secure higher fares. The Mayor has promised to speak before many business and commercial organizations on the company's need for higher fares. The Mayor was elected on a platform of railway reform, revocation of franchises, etc., but he has apparently realized the serious situation now confronting the railway.

A statement filed with the City Council by the city's expert accountants who have been investigating the financial condition of the International Railway shows that a 6-cent fare would increase the company's gross income from transportation $1,114,474 a year. Increased wages would take from this sum $467,500 a year, leaving the company $646,974 with which to make improvements. Experts say this sum would be too small to make many of the improvements which are essential.

The special referendum election will cost the taxpayers of Buffalo $30,000. Of this sum $25,000 will have to be paid to clerks and inspectors of election. Election inspectors get $10 a day and there are 191 election districts in the city. On election day the polls will be open from 6 o'clock in the morning until 8 o'clock in the evening. Paper ballots will be used in taking the vote. The question will be: Shall the action of the City Council * * * be repealed? By voting "yes," the voter is opposing a higher fare, and by voting "no," the voter favors a higher fare.

RECENT DIVIDEND ACTION QUESTIONED

A formal complaint against officials of the International Railway has been filed with the District Attorney of Erie County by an organization of businessmen opposed to the higher fare. It is alleged in the complaint that officials of the company acted improperly in declaring a dividend of one-half of 1 per cent last March when there was a deficit of $1,317,829 and that the company filed false financial statements with the Public Service Commission.

In a public statement, President Connette denied any crime had been committed by declaring this dividend. In reference to the charge that the company filed false statements with the Public Service Commission, the District Attorney says this matter will be investigated by the officials of Albany County in which the capital is located.

Fare Plea Reproduced

The New York *Evening Sun* of Aug. 2, gave 16½ in. of space to the plea for fair play addressed to the editors of New York State papers by J. K. Choate, chairman of the special committee on ways and means to obtain additional revenue of the electric railways of New York State.

Financial America and the New York *Commercial* are also among the papers that have reproduced the plea.

The statement by Mr. Choate was reviewed briefly in the ELECTRIC RAILWAY JOURNAL for Aug. 3, page 214.

New Interurban Freight Rates in Indiana

Indiana Commission Rejects Plea for Same Schedule as Steam Roads —Allows Special New Scale

New freight rates for the interurban lines in Indiana were authorized on July 31 by the Public Service Commission of that State to be effective for two years. The petition of the electric roads for the same schedule of rates now in effect on the steam roads was denied by the commission, but a new scale was designed to attract light freight for short hauls to the interurbans and to divert heavy freight for long hauls to the steam lines. The same freight classification is maintained, but the new rate scale is as follows:

DETAILS OF RATES

First-class rate, 21½ cents for 100 lb. for 4 miles; first class rates for greater distances to be based on 1 cent for 100 lb. for each 4 miles; second-class rates to be 86 per cent of first-class rates; third-class rates to be 70 per cent of first-class rates; fourth-class rates to be 55 per cent of first-class rates; fifth-class rates to be 40 per cent of first-class rates; and sixth-class rates to be 30 per cent of first-class rates. Thirty-five cents is the minimum charge.

The new rate structure was built on the theory that interurban and steam carrier functions are different, in the terms of the order of the commission, which states that interurban freight transportation is more nearly akin to express service than the steam freight service.

It is held that the interurban terminal cost of handling package freight is much less than that of steam carriers, while the haulage cost is much greater; that a scale of rates adjusted to steam carrier conditions is not suited to interurban conditions; that a scale of reasonable class rates applicable to interurban transportation must necessarily be less for short distances and higher for long distances than steam carrier rates; relatively lower on the high classes and higher on the low classes than steam carrier rates; that uniformity in rates throughout the State is desirable; that if the commission granted the rates prayed for, automobile truck competition with the interurban lines would be stimulated to a degree that would result in a depletion of the interurban revenues from freight transportation.

BURDENS OF COMPANIES REVIEWED

The order of the commission referred to the burden placed on the interurbans by increasing costs of operation, and that the increase in coal rates made by the federal government has borne very heavily upon them, not only in the ratio of increase which affected all utilities, but in the loss of the preferential basis previously accorded the interurban lines in the way of "fuel rates" accorded the steam lines on whose line the coal does not originate.

The commission held that no parallel can be drawn between the interurban and steam-line freight rates, declaring that "an interurban can handle package freight for a distance of 5 miles at a great deal less cost than a steam road; while the steam road cost for a 100-mile haul is less than that of the interurban. Steam rail rates are no criterion for interurban rates, save from the viewpoint of competition. Considered from an operating cost basis, the interurban rates should be lower than steam carrier rates on high-class freights, and higher on low-class freight; lower in short hauls and higher on long hauls."

Taking up the adjustment of the relation between the steam carrier freight rates and those of the electric lines, the commission was confronted by the problem of according to the public reasonable charges for both classes of transportation, and at the same time encouraging the offering of high-class freight to the interurban lines and of low-class freight to the steam carriers. The commission concluded that the way to do this was to authorize a small advance on high-class freight and a larger advance on low-class freight. The commission held that greatly to increase the interurban rates would divert the short-haul package freight business to auto-truck transportation systems. This would take away from the interurban electric railways their most profitable class of freight.

Illinois Traction System Rate Changes

Review of Decision of State Body Holding Electric Railway Subject to Same Conditions as Steam Lines

Stating, in brief, that the electric railway is subject to the same general operating conditions and expenses as the steam railways the Public Utilities Commission of Illinois has handed down two decisions of importance in that State in the case of the Illinois Traction System. These orders allow the Illinois Traction System and the Chicago, Ottawa & Peoria Railway, a subsidiary line, to increase class and commodity rates to a figure equal to that allowed steam carriers in the McAdoo General Order No. 28, and permit the companies to withdraw reduced round-trip and excursion passenger fares.

Both orders were issued on July 30, were effective as of Aug. 1, and are to continue during the war.

Application was made by the Illinois Traction System and the Chicago, Ottawa & Peoria Railway on June 12 and 20 for permission to increase class and commodity freight rates governing the movement of traffic between points in Illinois. No protest was made at subsequent hearings before the commission.

In approving the petition, the commission said in part:

"From the record it appears the petitioners are subject to the same general operating conditions and expenses as exist on steam lines of railroads and that the service performed by them compares favorably and is in competition with the said steam carriers, and that unless they were permitted to increase their freight charges to the same extent serious congestion and inadequate service would result.

"In the granting of said petition the commission authorizes rates equal to but not exceeding the rates now in effect via competing steam carriers between common points, together with the same relative increase between local points, to become effective. The commission reserves the right to enter any further order which it may deem proper and just in the premises."

The Illinois Traction System has petitioned the Interstate Commerce Commission for similar freight rate increases on interstate business.

In petitioning the Illinois Commission for increases in passenger tariffs the system asked permission to cancel all of the present commutation fares now on sale between points in Illinois, to increase the one-way local fares to the actual mileage carried, and to charge for round-trip tickets straight 2 cents per mile and to cancel the present Sunday excursion fares between Springfield and Peoria. Objection was entered by the commuters of Edwardsville, Ill., and the commission has not disposed of this part of the petition.

Under the old tariff a round-trip passenger was given a rate approximately 185 per cent of the local one-way rate. The company claimed that this practice had now been done away with by its competing carriers. It was further contended that prior to June 10, 1918, it met the competition of competing short-line fares based upon 2 cents per mile between points on its lines, and at the present time all of such competing carriers by virtue of General Order No. 28 issued by the Director General of Railroads have increased their rates to 3 cents per mile, placing them much in excess of its present rates. For some time prior to June 10, 1918, a rate of $1.25 per round trip, Springfield to Peoria, was maintained to meet the competition of steam lines. These rates having been canceled by the competing steam carriers the Illinois Traction System asked permission to make the same cancelation. No objection was filed relative to any of the proposed changes except the commutation fares involved.

The commission has also issued an order allowing the Chicago, Ottawa & Peoria Railway to cancel reduced round-trip fares on the same basis as that granted the Illinois Traction.

Indiana Commission Has Jurisdiction

State Supreme Court So Rules in Indianapolis Case After Lower Court Had Decided Other Way

On July 30 the Supreme Court of Indiana handed down a decision ruling in favor of the contention of the Indianapolis Traction & Terminal Company that the Public Service Commission, acting under Sec. 122 of the public utility commission act, has authority to hear the rate increase petition of the company purely on the ground that an unusual emergency exists (with reference to the war). The Supreme Court instructed the Marion County Circuit Court, from which the case was appealed last February, to overrule a demurrer which that court had upheld, and set out that a common writ of mandamus will issue against the Public Service Commission to compel it to take official jurisdiction of the company's appeal for a straight 5-cent fare.

History of Case

The Indianapolis Traction & Terminal Company on Nov. 19, 1917, filed with the commission a petition asking for authority to abolish the six-for-a-quarter and twenty-five-for-a-dollar tickets and charge a straight 5-cent fare, retaining all the present transfer privileges. The petition set out that because of the unprecedented increases in operating expenses due to the war conditions, an increase in fare was necessary to insure a continuance of good service and the solvency of the company. The commission declined to hear the case on the ground that it did not have jurisdiction, owing to the Indianapolis franchise being a special grant of the Legislature. This opinion was upheld by the Circuit Court of Marion County.

The opinion of the Supreme Court sets out that in this particular case the fixing of the rate of fare was not left to the municipality, as is sometimes done, but that the State granted the right to make the present system of fares to the utility as a condition for using a part of the highway system of the State, and the city was not a necessary party, only acting as the agent of the State in incorporating the existing rate schedule in the franchise under which the company operates.

Commission Qualified to Regulate Utilities

"The Public Service Commission is a legislative agency, assumed to be qualified by knowledge and experience to regulate public utilities of the State with reasonable fairness and substantial justice, not only to the public but to the utility as well," the court said in explaining the character of the body in which the Legislature has invested the rate-making power, which may, under Sec. 122 of the utility commission act, be applied even where contractual relations exist, to relieve a utility in an emergency such as that faced in the present war conditions.

The court states that the franchise rate would continue to hold, except for Sec. 122, which gives the commission broad powers in an emergency. The court adds that the utility law, and particularly that section, should be liberally construed with a view to the public welfare. Then, it argues, if a utility is in the midst of such an emergency as the present, the commission may take action toward relief as a temporary measure even if contractual obligations would block such relief as a permanent blessing to the utility.

It was agreed between representatives of the Indianapolis Traction & Terminal Company and the members of the Public Service Commission that it was not necessary to await the formal action of the Circuit Court mandating the commission to hear the case, and the commission has set Aug. 19 as the date when it will hear the petition of the company for the elimination of the reduced-rate tickets and establishment of a flat 5-cent fare in the city of Indianapolis.

The Indianapolis Traction & Terminal Company on Aug. 1 filed a petition with the Public Service Commission asking that it set aside its order that it had no jurisdiction in the matter of fares and enter into another hearing. This action followed the finding of the court that the commission did have jurisdiction in the case. A copy of the decision of the Supreme Court, quoted above, accompanied the petition.

Report Presented in Syracuse Fare Case

Expert Accountants Show Financial Condition of Company, but Make No Recommendations

The report of Price, Waterhouse & Company, New York, N. Y., agreed upon by the New York State Railways, Syracuse and Utica Lines, and the officials of those cities to make an investigation and report of the earnings of the railway properties there was placed in the hands of the Public Service Commission for the Second District on July 31. The report was made in connection with the petition filed by the road for permission to increase fares in Syracuse and Utica from 5 cents to 6 cents. The report covers forty-four typewritten pages besides many schedules. It represents the result of a thorough examination of the books and accounts of the company for the years 1916 and 1917 and the four months ended April 30, 1918. The report gives the facts as summarized but makes no recommendations.

If the rate of wages prevailing from June 15, 1918, had been in force during the four months ended April 30 the net income from railroad operation would have shown on all lines a deficit of $194,000 and on the Syracuse Lines a deficit of $70,000.

An appraisal of the company's property which formed a part of the report was not made by the investigators and it was decided to adjourn the hearing until Aug. 7 at which time the makers of the appraisal will be sworn. It is also expected at that time that the Public Service Commission will ask for any additional information which it may desire.

On top of the presentation of the report of Price, Waterhouse & Company came the announcement of the War Labor Board with respect to wages on the New York State Railways. As a consequence Stewart S. Hancock, corporation counsel, who has handled the fare increase opposition for the city of Syracuse and B. E. Tilton, general manager of the local lines of Syracuse both issued statements. to the press. Mr. Hancock doubts the efficacy of the 6-cent fare as a means of adding to the revenues of the company. He intimated, however, that the city will accept the 6-cent fare, but that it will oppose any further increase until the 6-cent method has been tried for a reasonable length of time.

Mr. Tilton is quoted as follows:

"The situation of the company is that it has discontinued the dividend on the common stock and discontinued the dividend on the preferred stock, is not earning interest on the bonds and with the increase in the payroll faces bankruptcy. Without prompt and immediate relief—the increased revenue from a fare of at least 7 cents—the company cannot remain solvent."

The Syracuse papers were quick to express candid opinions on the street railway situation. In concluding an editorial on the railway crisis in the issue of Aug. 3 the *Post Standard* said:

"There can be no continued delays. There can be no more lawsuits to decide where the regulatory powers rest. The city and the railways with the aid or through the medium of the Public Service Commission should agree upon rates just to the city and fair to the company. If two private enterprises bearing the same relationship were similarly in disagreement they would have come to a friendly understanding long ago."

On Aug. 2 the Syracuse *Journal* said:

"We are convinced that the fair-minded people of Syracuse will be accord with our declaration that only are the local street car lines entitled to earn more than operating costs but that too close a paring between net revenues and actual costs would be far more disturbing to the city generally than even the imposition of a 7-cent fare. It is in the interest of all of us that this question of street railway fares be settled at once."

Six Cents in Detroit

Detroit United Puts New Rates Into Effect Following Failure of Council to Grant Relief

The Detroit (Mich.) United Railway on the morning of Aug. 8 raised rates within the limits of the city on the so-called "5-cent" or non-franchise lines, from 5 cents to 6 cents; abolished the eight-for-25-cent workingmen's tickets and placed on sale ten tickets for 55 cents.

This action was taken by the company when the Common Council refused to afford the company relief in the way of increased revenue.

In a letter to Mayor Marx, the company through its president, Frank W. Brooks, had offered two fare proposals. This letter was in turn sent to the Council. Mr. Brooks pointed out that the award of the War Labor Board had materially increased the wages of motormen and conductors and that the high and steadily increasing costs of material, equipment, etc., made a revision of fares absolutely necessary. Mr. Brooks' proposals were:

1. That for the time being a 5-cent fare with a charge of 1 cent for a transfer be established on all lines of the city; this proposal suggesting that the franchise on the so-called "3-cent lines" be modified respecting the rate of fare by a day-to-day agreement. This would give a uniform rate of fare throughout the city.

2. That the following rates of fare be authorized: single cash fare, 6 cents; ten tickets for 55 cents, both with free transfer privileges; the rates of fare now in effect on the 3-cent lines to remain unchanged, except the 6 cents cash fare and the ten tickets for 55 cents will be accepted on these lines and be good for a transfer to the so-called 5-cent lines.

Mr. Brooks in his letter quoted the comment of the Labor War Board, which said in discussing the Detroit case:

"The fares allowed the Detroit United Lines are exceptionally low, being 3 cents a passenger on some lines, 4 cents on others and 5 cents on others. They should all be raised to meet the cost due to high prices of needed material and equipment, and the increased pay herein awarded."

Mayor Marx sent the company's proposals to the Common Council with a recommendation that there be an investigation by experts to be employed by the city to determine whether the company was entitled to a raise in fares.

The Council, however, ignored the Mayor's recommendations and gave no heed to the urgent appeal of the company. It adopted a resolution to the effect that the Aldermen were unalterably opposed to the raising of fares; that if any attempt was made by the company to alter fares on the 3-cent lines the Council would deem it a surrender by the company of all its franchise rights; and that if the company raised fares on the 5-cent lines where franchises have expired it must bear the odium itself.

When company officials, through the Council's action, learned definitely that the Aldermen were not inclined to give the company a fair show, they immediately announced an increase to 6 cents. Proposal No. 2 was put into effect Thursday morning. It was realized that with an election a few weeks off and the politicians again making the railway question an issue, there was no hope that the city authorities would deal justly with the company on the fare question.

The company secured 2,000,000 pennies so that conductors might be able to make change when the 6-cent rate went into effect.

Transportation News Notes

Santa Cruz Would Increase Fares.—The Union Traction Company, Santa Cruz, Cal., has applied to the Railroad Commission of California for permission to increase its fares.

Fare Increase Denial Appealed.—Application to the State Railway Commission of Nebraska for an increase in rates was denied the Lincoln Traction Company on June 18. The case has been appealed to the Supreme Court of Nebraska and will be heard on Sept. 18. The company is asking for permission to increase fares to allow a fair and reasonable return on the investment. At present tickets are being sold six for 25 cents.

Increases for North Carolina Companies.—To meet increased operating costs street railways of Raleigh, Charlotte, Durham and Winston-Salem have been authorized by the State Corporation Commission of North Carolina to increase fares from 5 cents to 7 cents, effective from Aug. 1. The companies will be required, however, to sell four tickets for 25 cents. Among the companies affected are the Carolina Power & Light Company, the Southern Public Utilities Company and the Durham Traction Company.

Jitneys Under Ban in Sacramento.—The jitneys operating in the city of Sacramento, Cal., were put out of commission on July 20 when an injunction was granted forbidding the City Commissioner to hold a special election on the question of whether the jitney ordinance should become effective. Hereafter, before being allowed to operate jitneys will be required to purchase a franchise, which will be granted only in accordance with the commissioner's opinion as to the routes on which jitney service is needed.

Binghamton Wants Fare Relief.—On July 29 through its president, F. L. Fuller, the Binghamton (N. Y.) Railway petitioned the Common Council to remove any limitations now included in the franchise granted to the company which would prohibit the Public Service Commission from granting permission to increase the fare from the present 5-cent rate to a higher figure. The suspension of the present fare stipulation is asked "for the period of the war and as long thereafter as the Public Service Commission may deem proper."

Montreal Would Charge Seven Cents.—H. E. Smith, comptroller of the Montreal Tramways, speaking before the Public Utilities Commission on the company's application for a rate increase, said that for the present year up to April 30 operations would show a deficit of $252,538. The company is asking for a 7-cent fare or four tickets for 25 cents with free transfers. Only recently the commission announced the fares to be in force for the next year. This decision was reviewed briefly in the ELECTRIC RAILWAY JOURNAL for July 13, page 78.

Fare Complaint Dismissed. — The Public Service Commission of Pennsylvania has dismissed the complaint of the Merchants' Association of Pottsville against the Pottsville Union Traction Company, in which it was alleged that the company showed discrimination in charging an extra fare from the city line to Westwoods. In dismissing the order the commission ruled that the fixing of fare boundaries is the most difficult problem electric railways have to face, and that the fare is not excessive, as it permits the rider to go through to Minersville, a distance of 3 miles.

Jitney Case to Supreme Court.—The record has been completed and appeal perfected in preparation for taking the case testing the jitney ordinance enacted by the city of Dallas, Tex., to the United States Supreme Court. The style of the case is D. H. Gill et al. *vs.* the city of Dallas, for injunction. The jitney men lost in all the State courts and are carrying the case to the federal courts as a last resort. The city of Dallas has been cited to appear in the Supreme Court within thirty days from July 6. This means that the city will have until the October term of the court to make answer to the jitney men's petition.

Albany Tariff Further Suspended.—The Public Service Commission for the Second District of New York at its regular session on July 30, Chairman Charles B. Hill presiding, further suspended the operation of the tariff of the United Traction Company, Albany, filed on May 2, under which increased fares were proposed on its lines. Pending the investigation by the commission, the tariff was originally suspended until July 31. The commission was unable to complete its investigation within the period of the original suspension, and on July 30 it passed an order further postponing operation of the increased rates for a period of sixty days from July 31.

Charleston Fare Case Started.—The Public Service Commission of West Virginia has resumed its hearing on the application of the Charleston Interurban Railway for authority to increase its rates on the St. Albans and Cabin Creek lines. By the change an increase in the fare to South Charleston from 5 cents to 10 cents and to Kanawha City from 10 cents to 15 cents is sought. No change is proposed within the city limits. The Libby-Owens Glass Company, located at Kanawha City, and the citizens of that place and of South Charleston are protesting any increase. Evidence was offered in support of the petition of the company. The opposition will not be heard until later.

More Roads Seek Service at Cost.—The Connecticut Valley Street Railway, Northern Massachusetts Street Railway, and the Concord, Maynard & Hudson Street Railway have applied to the Public Service Commission of Massachusetts for an investigation of the capital requirements of their system, preparatory to assuming operation under the service-at-cost act passed by the last Legislature. The engineering and accounting departments of the commission have begun investigations of the physical and financial condition of the properties, which are operated by the interests identified with the Greenfield Electric Light Company and the Turners Falls Power & Electric Company. It has not yet been determined whether it will be necessary to hold public hearings upon these cases.

Desires Service at Cost.—The Northampton (Mass.) Street Railway has notified the Public Service Commission of its intention of accepting the general service-at-cost act for electric railways passed by the last Legislature. Under the terms of the act the commission must determine the amount of the company's capital investment, amount of stock investment and status of the unfunded debt. The commission must also determine the amount of reserve fund and improvement fund necessary for the acceptance of the act. Should the company finally accept the act, it will arrange a fare system of nine gradations, with four units above and four units below the initial one, and automatic adoption above and below the medium unit according to the return yielded. The act also provides for public directors.

Additional Fare Data Submitted.—Members of the committee on streets of the City Council of Richmond, Va., have received from the Virginia Railway & Power Company a tabulated statement of the earnings and expenses of the railway and electric light and power departments of the Richmond division of the company for the years beginning June 30, 1913, to the present fiscal year just closed. This statement is in response to a resolution passed at the meeting of the committee on June 27 at which the matter of increased fares was discussed. The additional data asked for at that time were referred to in the ELECTRIC RAILWAY JOURNAL for July 23, page 77. The committee has since recommended an ordinance providing for a straight 5-cent fare, labor tickets at three for 10 cents to be good until 8 a.m. instead of 7 a.m. and the retention of the 3½-cent school tickets and universal transfer privileges.

Freight Increase Allowed in Ohio.—Permission to increase freight rates was granted to ten Ohio interurban roads by the Public Utilities Commission on July 19. While the increases will be based upon those allowed steam railways by Director General McAdoo, the roads receiving them were compelled to show the necessity for a greater income. The increases apply only to the roads named and, if others find themselves in need of additional revenue, they will be compelled to show necessity in each case. The roads receiving this permission are as follows: Cleveland & Eastern; Ohio Electric; Sandusky, Norwalk & Mansfield; the Toledo, Fostoria & Findlay; the Tiffin, Fostoria & Eastern; the Stark Electric; the Western Ohio; the Toledo, Bowling Green & Southern; the Cleveland & Chagrin Falls, and the Cleveland, Southwestern & Columbus. New schedules must be filed with the commission fifteen days before they become effective.

Franchise Fare Provisions Rescinded.—George Bullock, as receiver of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., has filed with the Public Service Commission for the Second District copies of certain contracts which provide that all provisions relating to passenger fares in franchises held by the company or its receiver are annulled for a period of fifteen years from July 1, 1918. The contracts also provide that the receiver, the company or their successors, shall from July 1, 1918, charge "such rate or rates of fare as may be fixed from time to time and for such time during said period of fifteen years as the Public Service Commission of the State of New York or its successor may order and direct." These contracts are with the following: Town board and superintendent of highways, town of Westfield; president and trustees, village of Westfield; superintendents of highways and town boards of the towns of Portland, Ripley and Brocton and the president and trustees of the village of Brocton.

Attorney General Decides Road's Status.—According to an opinion to the Public Service Commissioners of Washington by Attorney General Tanner, relinquishment of the Spokane & Inland Empire Railroad to private ownership by the federal railroad directorate automatically revives the freight and passenger rate schedules in effect on that line before the government's increase of 25 per cent went into effect last month. The Attorney General does not hold directly that the State-regulated rates are now the only legal rates the Spokane & Inland Empire Railroad may charge, but that the Public Service Commission has the right to proceed with complaints on the basis that the jurisdiction of State regulation was re-extended over the road when control of it was surrendered by the federal government. As noted in the ELECTRIC RAILWAY JOURNAL of July 20, page 131, this road was recently referred to by the Public Service Commission as being "In a Hell of a Fix" as a result of changes in rates and division of responsibility following government control.

Kansans Can't Dodge Six-Cent Fare.—Officials of Kansas City, Kan., were barred by Federal Judge John H. Cotteral from proceeding in the State Court in their fight against the collection of an extra cent for fare at the State line until the suit pending against the Kansas City Railways in the Supreme Court is decided. Judge Cotteral maintained that the Federal Court has jurisdiction in such matters and that the State Court cannot legally issue a restraining order. Hence the collection of the extra fare. The Kansas City Railways has adopted a new transfer marked with a large red cross in order to prevent Kansas City, Kan., patrons from evading the extra charge across the State line. Many persons have been getting a transfer when entering the cars in Kansas, leaving the cars before reaching the State line where the cent is collected, and walking a short distance to a transfer point across the line. Those who attempt that ruse now are forced to give up their transfer and pay a 6-cent fare. Patrons who remain on the car until one of the six collection points along the State line is reached tender their marked transfer and 1 cent and receive in return a Kansas City, Mo., transfer for all points on that side of the State line.

Increase in Jersey Mileage Charge.—The Public Service Railroad has served a notice with the Board of Public Utility Commissioners of New Jersey that it proposes to put into effect a new schedule of rates for transportation, so that the mileage charge will be 2½ cents with a minimum fare of 10 cents between stations, except between Chrome and Chrome Junction, where the fare will remain 5 cents. The Public Service Railroad is a part of the Public Service Corporation's transportation system in New Jersey. It operates under a railroad charter and has no connection as to service with the Public Service Railway. The increased rates, if put into effect, will boost the transportation charges between Bayway, Elizabeth and Bonhamtown, between Bayway, Elizabeth and Sewaren and between Milltown Junction and Trenton. The proposed rates would not affect the operation of cars of the company over the tracks of the Public Service Railway in Trenton from the outskirts to the center of the city. This section of the road is operated as a trolley line and on the property of the railway the railroad's cars are being used. The new rates would not affect any section of the State where the railroad cars are operated over the railway's tracks. The old rate was 2 cents a mile.

Personal Mention

H. Bunce has been appointed roadmaster of the Pacific Coast Railway, Seattle, Wash., to succeed P. Dineen.

L. H. Crowell has been appointed assistant treasurer of the Columbus (Ga.) Railroad to succeed A. A. Wilbur.

C. M. Kittle has been made vice-president of the Kensington & Eastern Railroad, Chicago, Ill., to succeed W. L. Park.

J. P. Pulliam has been appointed acting treasurer of the Wisconsin Railway, Light & Power Company, Winona, Minn.

Otto Kirchheiner has been appointed master mechanic of the Key West (Fla.) Electric Company, to succeed E. D. Loper.

A. F. Marion has been appointed chief engineer of the Pacific Coast Railway, Seattle, Wash., to succeed N. D. Moore.

John Fisher has been appointed chief engineer of the Western Light & Power Company, Boulder, Col., to succeed A. Jardine.

F. O. Cooke has been appointed vice-president of the Fresno (Cal.) Interurban Railway Company to succeed J. J. Mahoney.

Herbert A. Loring has been elected president of the Western Light & Power Company, Boulder, Col., to succeed Guy E. Tripp.

E. N. Thyse has resigned as superintendent and purchasing agent of the Mankato (Minn.) Electric Traction Company.

L. P. Peterson has been appointed engineer of cable equipment of the United Railroads, San Francisco, Cal., to succeed J. H. Stott.

R. W. Wise has been appointed secretary of the Petaluma & Santa Rosa Railway, Petaluma, Cal., to succeed E. T. McMurray.

Charles P. Stone has been appointed auditor of the California Street Cable Railroad, San Francisco, Cal., to succeed Allen Knight.

E. W. Ackerman has been appointed auditor of the Interurban Railway & Terminal Company, Cincinnati, Ohio, to succeed C. Hogan.

S. Gerian has been appointed purchasing agent of the Western Light & Power Company, Boulder, Col., to succeed H. U. Wallace.

J. J. Ahearn has been appointed inspector of rolling stock of the Ottawa (Ont.) Electric Railway, succeeding R. A. Baldwin, promoted.

J. S. Billings has been appointed auditor of the Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala., to succeed G. A. Daniels.

H. V. Schenck has been appointed assistant secretary and assistant treasurer of the Grand Rapids (Mich.) Railway, to succeed S. E. Wolff.

H. D. Jennings has been appointed auditor of the Waterville, Fairfield & Oakland Railway, Waterville, Me., to succeed John S. Everett.

R. A. Baldwin, heretofore inspector of rolling stock of the Ottawa (Ont.) Electric Railway, has been appointed master mechanic of the company.

C. A. Semrad has been appointed acting general manager of the Western Light & Power Company, Boulder, Col., to succeed H. U. Wallace.

J. F. MacGilvray has been appointed treasurer of the Fort Smith-Oklahoma Light & Traction Company, Fort Smith, Ark., to succeed R. D. Beard.

Charles Vickery has been appointed roadmaster of the Fairburn & Atlanta Railway & Electric Company, Fairburn, Ga., to succeed G. T. Wooten.

D. A. Roberts has been appointed superintendent of the Southern Illinois Railway & Power Company, Harrisburg, Ill., to succeed C. F. Richardson.

H. I. Reuler has been appointed chief engineer of the Atchison Railway, Light & Power Company, Atchison, Kan., to succeed Henry F. Bryant.

Gus Peterson has been appointed auditor of the Minneapolis, Anoka & Cuyuna Range Railway, Minneapolis, Minn., to succeed C. A. Bratnober.

H. C. Mackey has been appointed comptroller of the Wisconsin Railway, Light & Power Company, Winona, Minn., to succeed Charles C. Major.

Don Baumhart has been appointed engineer of overhead construction of the Hutchinson Interurban Railway, Hutchinson, Kan., to succeed D. T. Taylor.

J. S. Minary has been appointed auditor of the Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich., to succeed Oren A. Small.

F. L. Farrell has been appointed general freight and passenger agent of the Fresno (Cal.) Interurban Railway to succeed M. T. Dohner, who is now in the United States army.

Ralph W. Eaton for five years electrical engineer for the Shore Line Electric Railway, Norwich, Conn., has been chosen to succeed Robert L. Brunet as public service engineer at Providence, R. I.

C. F. Richardson has been appointed assistant general superintendent of the Indiana Railways & Light Company, Kokomo, Ind. Mr. Richardson was formerly general superintendent of the Southern Illinois Railway & Power Company, Harrisburg, Ill.

R. B. Claggett, secretary and treasurer of the Columbus Railway, Light & Power Company, Columbus, Miss., who is also interested in similar corporations at Greenville, Miss., and Lake Village, Ark., has been commissioned as a lieutenant in the aviation corps and is now stationed at Kelly Field, near San Antonio, Tex.

Morton G. Lloyd, electrical engineer in charge of safety work in the Bureau of Standards, Washington, D. C., has been appointed a member of the electrical committee of the National Fire Protection Association, to represent the bureau. Dr. Lloyd is a fellow of the American Institute of Electrical Engineers and has served upon its standards committee and various other committees.

Charles Barrington, Jr., has resigned as purchasing agent of the Los Angeles (Cal.) Railway Corporation after having been connected with the company for seventeen years. Mr. Barrington has now become connected with the Hubbs-Storage Battery Company, in Los Angeles, manufacturers of storage batteries for automobile starting, lighting, etc., as vice-president and general manager. He organized this company about a year ago.

William M. Casey, former superintendent of transportation of the Denver (Col.) Tramway, has been appointed superintendent of transportation of the Washington Railway & Electric Company, Washington, D. C., succeeding William F. Dement. Mr. Casey, from the time of his leaving Denver at the end of 1916 until his new appointment, has been on the staff of John A. Beeler, consulting engineer, who is advising the Public Utilities Commission of the District of Columbia on the solution of its traffic problems.

Erwin W. Clapp, for the last eight years superintendent of the Bristol & Norfolk Street Railway, with headquarters at Randolph, Mass., has resigned to join the staff of the Bay State Street Railway, Boston. In his new post Mr. Clapp has been assigned to the office of the manager of transportation, reporting to Ralph M. Sparks, head of that department. Upon leaving the Bristol & Norfolk road Mr. Clapp was presented with a gold watch and charm by employees who have been associate with him and served under him.

William F. Dement has been appointed by the Washington Railway & Electric Company, Washington, D. C., to fill the new position of superintendent of employment and instruction, which has been created in view of the extraordinary labor conditions prevailing. Mr. Dement leaves the position of superintendent of transportation to take up his new duties, for which he is peculiarly fitted, having been with the company since the horse car days and having organized and conducted the instruction department fifteen years ago.

A. J. Witchel has been appointed chief engineer of the Spokane & Inland

Empire Railroad and the United Railways, with headquarters at Portland, Ore. Mr. Witchel has been connected with the North Bank System since its organization. The properties which he will now supervise were not taken over by the government when the Spokane, Portland & Seattle, Oregon Electric and Oregon Trunk line were federalized. A. E. Lupfer, chief engineer of the Spokane, Portland & Seattle lines under government supervision, will relinquish supervision of the Spokane & Inland Empire and United Railways lines.

Obituary

Charles A. Goodnow, vice-president of the Chicago, Milwaukee & St. Paul Railroad, died at the New Washington Hotel, Seattle, Wash., on July 26, following a brief illness. Mr. Goodnow went to Seattle recently to confer with officials of the railroad company and to attend to business concerning the electrification of the railroad. Mr. Goodnow was born in North Adams, Mass., on Dec. 22, 1853. He began his railroad career as a telegraph operator on the Hoosic Tunnel route and was advanced to train dispatcher before leaving that road and going to the West Shore as trainmaster during the period of construction. He went West in 1883 to take a position as train dispatcher on the Chicago, Milwaukee & St. Paul Railroad, and later as superintendent of construction on the new lines into Dakota. He went to the Burlington in charge of construction when the Chicago, Burlington & Quincy line was extended to St. Paul and Minneapolis, returning to the Milwaukee as superintendent, and later as assistant general superintendent. After the reorganization of the Chicago & Alton he was made general manager of that company, and for a time held a similar position with the Chicago, Rock Island & Pacific. Returning again to the Milwaukee he was made assistant to President A. J. Earling, and had charge of the building of the Gallatin valley road in Montana, the location and construction of the Milwaukee lines to Lewistown and Great Falls, Mont., and the securing of the exceptionally fine terminals which the Milwaukee has in Great Falls. For the past five years he had given exclusive attention to the electrification of the Milwaukee. He had seen his plans brought to successful completion on that portion of the road from Harlowtown, Mont., to Avery, Idaho, and the results had fully justified his expectations. On his return to Seattle just before his death Mr. Goodnow announced that the work on the western end of the road was progressing so satisfactorily that electric locomotives would be running into Seattle from Othello by July 1, 1919.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

Track and Roadway

Southern Pacific Company, San Francisco, Cal.—It is reported that the Chino branch of the Southern Pacific Company will probably be electrified and extended to Corona.

San Francisco, Cal.—The Board of Supervisors of San Francisco has instructed the Mayor to assure the Emergency Fleet Corporation that San Francisco will take over the proposed road to Hunter's Point after the war. This action was taken in complying with the desire of the federal government for an authoritative expression from the city on the subject of the electric railway to the proposed ship repair plant at Hunter's Point, where 100 acres are to be used adjacent to the dry docks. The government is to advance the funds for the construction of the road.

Detroit (Mich.) United Railway.—Work on the Ferndale Avenue extension of the Detroit United Railway is progressing rapidly, and it is expected that the line will be ready for operation by September. The new Ferndale main line begins at the junction of Springwells and Ferndale Avenues, and runs west on Ferndale to Woodmere Avenue, where it branches off onto a private right-of-way, continuing to a connection with Dearborn Avenue. The line then runs over Dearborn Avenue to Fort Street connecting with the Fort line at Fort Street and Dearborn Avenue. There is also a branch running north from Ferndale Avenue to the northerly end of the Ford plant. The line intersects Baby Creek at two points and this necessitated the construction of bridges.

Public Service Railway, Newark, N. J.—It is expected that the extension of the Public Service Railway to the Submarine Boat Corporation plant and the United States Army Quartermaster's Depot, both at Port Newark, will be completed by Labor Day, Sept. 2. The extension will provide facilities for about 20,000 workmen.

Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio.—The Public Utilities Commission of Ohio has denied the application of the Cincinnati, Milford & Loveland Traction Company, the property of which was recently sold to the bondholders' committee, to junk the road.

Lake Shore Electric Railway, Cleveland, Ohio.—The Lake Shore Electric Railway will complete its cut-off near Huron in September. All of the work except that within the corporation of Huron has been finished. The cut-off tracks will reduce by ½-mile the traction mileage from Sandusky to Cleveland. The cost of the work is approximately $180,000.

Seattle & Rainier Valley Railway, Seattle, Wash.—To provide a connecting link between Division A and the municipal elevated street railway lines, the city has asked the Seattle & Rainier Valley company to relinquish its abandoned tracks along Washington Street, from First Avenue South to Fourth Avenue. In a letter to John C. Higgins, attorney for the Seattle & Rainier line, Councilman Oliver T. Erickson, chairman of the utilities committee, states that "Under agreement on common-user rights, the city could use the tracks, but rehabilitation of the line involves big expense, and therefore it would be better for your company to surrender that piece of its franchise to the city and donate what is left of the old tracks."

Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal.—New quarters have been rented by the Pacific Electric Railway in the Odd Fellows' Building at Whittier. The first floor will be remodeled into a station which will more nearly meet the requirements of the city than have the old quarters in the Mason Building.

New York, N. Y.—A trolley station will be established on the Queensboro Bridge at Blackwell's Island for the use of persons visiting the hospital and prison on the island. The cost is estimated at $10,000 and will be paid for by the Department of Charities of the City of New York.

Power Houses and Substations

Des Moines (Ia.) City Railway.—This company is completing the construction of a new substation building at East Fourteenth Street at Des Moines Street. This is the last building to be erected in the substation plans of the Des Moines City Railway Company in connection with its rehabilitation plans.

Portsmouth, Dover & York Street Railway, Dover, N. H.—Work has been begun on the laying of the cable from the power plant of the Rockingham County Light & Power Company to Badger's Island. This cable when completed will furnish energy to operate the Portsmouth, Dover & York Street Railway.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Car Enamels, Varnishes and Paints Stiffen in Price

Due to Continued Increases in Cost of Material and Labor—Railway Buying Steady

In the spring prices for enamels, varnishes and mixed paints used in the electric railway field were going up rapidly. Since then further advances, which were predicted at the time in the ELECTRIC RAILWAY JOURNAL have materialized. Traction properties have not bought freely, excepting in a few instances, for reasons too numerous to mention and quite familiar to everybody knowing anything of natural conditions. At the present time such varnishes and paints as have been bought are for overhauling or the reshopping of cars. This means, of course, a steady, if comparatively, modest demand.

Linseed oil, China wood oil, varnish gums, reducers (turpentines), pigments ground color rubbings have not only risen in price, but additional increases are coming along with the abnormal existing conditions. For example in the last few weeks enamels have gone up 25 per cent; varnishes, 10 to 15 per cent; oil enamels, 25 per cent; varnish enamels, 10 to 15 per cent; car paints, 10 to 25 per cent. Yellows and greens are hard to get and the situation is growing worse. Linseed oil has advanced 15 to 20 per cent, and paint and varnish manufacturers declare it is going out of sight. Linseed oil substitutes are now 40 per cent above the former cost, with reducers up 50 per cent.

Crushers of linseed oil do not care to accept orders except for specifications to be shipped at once from stock if they have it. Few are disposed to obligate themselves for oil to be delivered in the future, as they are four weeks and more behind now on deliveries. There are slight prospects of catching up because of the dearth of flaxseed. The situation would be greatly improved if the embargo on importations of seed from the Argentine was lifted, and if the necessary ocean tonnage could be found to bring it north to the United States. The supply of flaxseed raised here and in Canada has long since been exhausted and prospects for the fall are none too good. Paint manufacturers say this outlook renders opinions on future prices for finished goods purely problematical. Domestic holders of the oil and seed are waiting for a still higher market.

China wood oil, the base of all fine car varnishes and enamels, is not only difficult to obtain, in any satisfactory quantities, but its price has been rising in proportion. Potash, another essential paint base, is scarce and high. Colors are restricted in delivery to the immediate future, with few if any orders being accepted for longer periods than three months, and then the price at shipment controls. There is a heavy demand for turpentine and something of a shortage is developing. Scarcity of skilled labor and difficulties of transportation are also factors of the first importance in all car painting and finishing commodities.

Traction Material Bought for Foreign Countries

Eastern and Western Manufacturers Making Heavy Shipments for New Construction Work

If buying of railway equipment and material for domestic uses is sluggish it appears the deficiency is being made up to some extent by heavy purchases for the export trade. One large Eastern manufacturer has recently executed an order of considerable size in overhead material for South American countries. In view of the quantity taken and the character of the equipment it is evidently not for maintenance or replacements but for new construction work. The manufacturer, in speaking of this particular transaction, stated that while this business was very satisfactory, he expected further and larger orders from the same source.

A Middle West concern also volunteered the information, that it had booked and shipped a number of unusually large orders of transmission construction equipment for France and Spain. The business was placed in New York by direct representatives of the foreign companies. Both of these orders ran into large amounts, totaling fully $200,000.

Of domestic trade a manufacturer of high standing said that since 1915 the traction roads had been out of the market, excepting for necessary material and equipment for maintenance and replacements. This condition of affairs had led to a more active cultivation of the export field.

Catalogs Wanted

The Montreal Tramways Commission, Royal Trust Building, Montreal, will be pleased to receive catalogs, booklets, bulletins, data or samples from manufacturers of, or agents for, all kinds of electric railway supplies, appliances, machinery and equipment.

Pre-War Prices Compared With Current Increases

Electric Railway Company Presents Tabulated Statement of Cost Differences

In its petition to the City Council of Akron, Ohio, for an increase of fares on June 24 by the Northern Ohio Traction & Light Company a statement of comparative costs of equipment, accessories and supplies was submitted. The years 1914 and 1915 witnessed normal prices for material used in railway operations, the difference up to the present time being shown in the appended table:

Articles	Per cent Increase	Articles	Per cent Increase
Solder	156	Track shovels	58
Pig lead	193	Steel wheels	76
White lead	87	Boiler tubes	300
Shellac	150	Coal	131
Armature coils	79	Armature bearings	77
Magnet wire	133		
Wool waste	104	Journal bearings	115
Trolley wheels	63	Axle bearings	106
Trolley harps	119	Castings, steel	114
Trolley rope	88	Angle bars, 7 in. x 20 in.	134
Dry batteries	93		
Linseed oil soap	111	Bolts, track	107
Brooms	127	Rails	82
Carbon brushes	460	Steel ties	32
Gear cases	154	Spikes, track	130
Linseed oil	142	Ties, oak	31

The company adds that these are but a small part of the full list of all materials used in the operation of the railway. Some of the items enumerated are used in smaller quantities, some in larger, but the list shown gives evidence of the general increase.

Coal Production Still Short

Production to Date Is 15,000,000 Net Tons Behind the Schedule for the Year's Requirements

The output of bituminous coal in the United States, according to the weekly report of the Geological Survey, declined approximately 1 per cent during the week of July 27. The production is estimated at 12,802,000 net tons, a decrease compared with the week preceding of 121,000 net tons but an increase over the corresponding week of 1917 of 1,471,000 net tons or 13 per cent. The average daily production is estimated at 2,134,000 net tons as against 2,154,000 net tons during the week of July 20 and as compared with 1,889,000 net tons during the week of July 27, 1917.

Last week's output, while 343,000 net tons or approximately 3 per cent in excess of weekly requirements of 12,459,000 net tons during the balance of coal year to make up the deficit to date, is nevertheless 1,300,000 net tons or 9 per cent behind the weekly requirements during the balance of the sum-

mer months to make up the deficit to date.

The difference between the summer requirements and those specified for the balance of the coal year is accounted for by the necessity to ship practically all lake coal during the summer months and 50 per cent more tidewater coal to New England during the summer than in the winter. Production to date is approximately 15,000,000 net tons behind schedule, and in order to meet all requirements as outlined by the United States Fuel Administration it will be necessary that the output of coal during the last of the summer months, August and September, be equivalent to more than 14,000,000 net tons per week, 714,000 net tons or 5.5 per cent in excess of the record to date.

Inquiries for Snowplows and Sweepers Running Behind

Electric Railway Properties Seemingly Indifferent to Next Winter's Storms—Cost of Equipment Higher

While this is the buying season for snow-clearing equipment very few orders are being booked. Brooms and brushes of every description have been advancing in price rapidly, one of the latest increases being from 10 to 25 per cent, effective July 15. On some grades of brooms the market is nearly bare, and buyers are being advised by manufacturers to anticipate their requirements as far ahead as possible if they wish to take advantage of the current cost.

For a while quite a number of orders were filed for snowplows and sweepers, and the manufacturers looked forward to a brisk demand. But for inexplicable reasons, inquiries seemed to drop off short. In this field also purchasing agents and traction managers were cautioned against the constantly increasing cost of this equipment. They were likewise warned that if early and dependable deliveries were a primary consideration, specifications should be put in the maker's possession before the middle of the month and not later than Sept. 1.

An advance of 25 per cent in the price of plows and power sweepers was made in June, with no revision since. Manufacturers are not sure how long the current selling figure can be maintained. At any rate, it is believed that if orders multiply shortly prices will go up again. Small sales mean unchanged cost, as enough material has been accumulated to take care of such orders. The buying averages about the same every year.

So far virtually no inquiries have been received for ice cutters. Last winter this equipment sold readily. Horse-drawn snow removers are being bought for early delivery. The changes in price of such lines have followed the steel and iron revisions, rating higher, of course, than the corresponding figures of a year ago.

Heavy Demand for Spraying Equipment

Raw Materials Being Secured in Good Quantities—Scarcity of Piping Brings About Higher Prices

Unusually heavy calls for spray cooling apparatus and for painting equipment operated on the spraying principle are reported by the Spray Engineering Company, Boston, Mass. An interesting application of the air-washing principle has lately been made by this concern in connection with the loading of gas shells, special equipment having been fitted up to dispose of surplus gas released during the filling process. The spray painting apparatus of this company has just been accepted by the American Bitumastic Enamels Company for use in painting vessels shortly to be launched at the Hog Island yard, and an initial shipment of ten sets has just been forwarded. The Chicago Railways Company is using this apparatus for the painting of street poles carrying trolley and other overhead equipment by using an extension arm which does away with a ladder. It has been found that car trucks can be painted with the spray equipment in about twelve hours against twenty-four hours by the usual hand methods, and the work can be done with the trucks in place under a freshly painted car body.

President L. H. Parker states that the total business of the company in May, 1918, was double that of any previous month, and that June also showed a gross business far in excess of other months with the exception of May. Raw materials are being secured in good quantities through government authorization. On account of the recent scarcity of piping, it has been necessary lately to increase the selling price of some of the company's products to correspond to the higher cost of this material.

Steel Rail Price Undetermined

Manufacturers Still Unable to Agree on Price for Presentation to War Industries Board

According to the latest reports on going to press steel rail manufacturers have not yet come to an agreement over the price which they believe should rule for the next few months. The War Industries Board, through its price-fixing committee, will of course make the final decision, but no meeting between the government representatives and manufacturers has taken place.

Some of the manufacturers, it is reported, want the price to remain at the present level of $55 a ton for Bessemer and $57 for open hearth, while others are more in favor of a new basis around $51 to $53 a ton.

The government, through control of the railroads, has become practically the only customer for rails. Europe has taken very large quantities, but the tonnage has fallen off during the past year as indicated by exports of 405,278 tons during the eleven months ended May 31, against 533,152 tons in the same period in 1917 and 489,037 tons two years ago.

Centralizing Government Purchasing

Boards of Review Control Contracts—Purchase of Railway Materials Assigned to Engineers' Branch

Organization of the centralized purchasing scheme whereby the General Staff controls the buying of all commodities and supervises all contracts for the Army is rapidly progressing. Already assignment of purchases of a number of commodities has been made to the several branches of the War Department, and boards of review are passing on all contracts in order to insure uniformity of contract control and provisions. The general administration of the scheme is under the direction of Brig. Gen. Hugh S. Johnson, head of the purchase and supply branch of the division of purchase, storage and traffic of the General Staff of the Army.

The purchase of railway materials is assigned to the engineers' branch. This branch purchases among other things paint containers, gantry cranes, locomotive cranes, paint driers, enamels, japans, lacquers, paint, steam shovels, turpentine, varnishes, linseed oil, and railway equipment.

Renewed Interest in Fare Boxes

A renewed interest in fare boxes is apparent from numerous inquiries and orders. As evidence of this condition, the Johnson Fare Box Company, Chicago, Ill., reports the following orders recently received from some of the principal traction properties.

United Railroads, San Francisco, Cal., 450 boxes; Takoma Railway & Power Company, Tacoma, Wash., 163 metal ticket boxes; Minneapolis (Minn.) Street Railway, 100 boxes; Memphis (Tenn.) Street Railway, 62 metal ticket boxes; Public Service Railway, Newark, N. J., 58 boxes; Pacific Electric Company, Los Angeles, Cal., 47 boxes; Stone & Webster Properties, Texas and Oklahoma, 35 boxes; Gary (Ind.) Street Railway, 28 metal ticket boxes; Utah, Idaho Central Railway, Ogden, Utah, 20 boxes; Mobile Light & Railway Company, 10 metal ticket boxes.

Rolling Stock

The Sheffield (Ala.) Company has purchased from the Cincinnati Car Company two motor cars, double equipment, Westinghouse 101-B, and two all-steel trailers. The company also is negotiating with the car builders for three additional motor cars and three trailers.

Trade Notes

R. H. Corson, representative of the National Carbon Company of San Francisco, will establish offices at 314 Empire State Building, Spokane, which will become the distributing center for the Inland Empire, Northern Idaho & Western Montana.

Trolley Supply Company, Canton, Ohio, reports that it has received from the Boston Elevated Railway an order for 400 No. 2 Simplex roller bearing trolley bases to be used on the road's new cars.

Washington Railway & Electric Company, Washington, D. C., is using "Presto" drawing holders as described in the ELECTRIC RAILWAY JOURNAL of Dec. 15, 1917, page 1086, for the purpose of filing car schedules. The "Presto" holder is manufactured by the National Company, Boston, Mass.

L. D. Calhoun has been appointed as assistant sales manager of the Square D Company, manufacturer of electrical safety switches, at Detroit, Mich. Mr. Calhoun has been advertising manager of the company for the past year, and in addition to his new duties will continue to handle the company's advertising, etc.

J. N. Mahoney, for twelve years connected with the engineering department of the Westinghouse Electric & Manufacturing Company, has tendered his resignation from that company and will open consulting offices in New York. For the last eight years Mr. Mahoney has been in charge of designing switches, fuses and circuit breakers and prior to that time was connected with the railway engineering department in charge of control design.

F. A. Mansfield, formerly connected with the sales department of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa., has resigned to take the position of Pittsburgh district sales manager of the Mechanical Appliance Company at Milwaukee, Wis. This company manufactures a complete line of alternating-current and direct-current motors, small generators, motor-generator sets and inverted rotaries.

American City Bureau, New York, N. Y., is the title of consolidation of the American City Bureau and the Town Development Company. Its purpose is to build and maintain civic commercial organizations in different municipalities, improve chamber of commerce methods and broaden the scope of commercial organizations. It also conducts an annual summer school for secretaries. Harold S. Buttenheim is president.

Aero Fire Alarm Company, New York, N. Y., is manufacturing a hollow wire of small diameter which can be carried to buildings or around moldings and extends to a cabinet containing a sensitive diaphragm and electrical contact. In the case of fire the air in the tube expands, thus creating a pressure on the diaphragm and causing an alarm. It has been admitted to the list of fire apparatus authorized by the National Board of Fire Underwriters.

The Dearborn Chemical Company, Chicago, Ill., has just made general announcement of the establishment of a specialties department, for the manufacture and marketing of a number of specialties of interest to manufacturers of steel products, including a rust preventive, known as No-Ox-Id, which is already in use in many plants. Other specialties developed by the Dearborn Laboratories are cutting oils for use in metal cutting, to lubricate the cutting tool and prevent overheating; quenching oils, for heat treating; drawing oils, and Dearboline—a preparation for cleansing machined parts of emery or grease.

New Advertising Literature

Carleton-Wenstrom Company, Philadelphia, Pa.: Circular describing Carwen ball bearings. The specifications and list price of these ball-bearings for the 200 series is given.

Cruban Machine & Steel Corporation, New York, N. Y.: "Safest Solderless Electrical Connectors" is the title of a circular that is being distributed to the trade. This circular describes and illustrates the several kinds of connectors that are manufactured by this company.

NEW YORK METAL MARKET PRICES

	July 31	Aug. 7
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.23	8.45 to 8.55
Tin, Chinese*, cents per lb	94	92
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	July 31	Aug. 7
Heavy copper, cents per lb	23½	23.50 to 24.50
Light copper, cents per lb	20½	20 to 21.50
Red brass, cents per lb	22	21 to 22
Yellow brass, cents per lb	14	14.50 to 15
Lead, heavy, cents per lb	7	7.12½ to 7.50
Zinc, cents per lb	5⅜	5¼ to 5⅜
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	July 31	Aug. 7
Rubber-covered wire base, New York, cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40	32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	37.50 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross tons	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, girder (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste, cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.86	$1.86
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.88	$1.88
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	63	63

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, August 17, 1918 *Number 7*

Mr. McAdoo Favors Electrification, but Not Now

PUBLIC interest was stirred this week by some remarks on the desirability of steam railroad electrification, erroneously attributed in the daily papers to Director General McAdoo. His real position is set forth in a brief statement which he has given to the JOURNAL for publication. He very properly holds that in the present circumstances, with the tenure of government control indefinite, any extensive program for electrification cannot properly be taken into consideration. This policy is a logical one. The immediate object of this nation is to win the war, and while electrification would help, the expenditure of the same amount of money and energy in equipment which can be used by our men at the front would probably bring quicker results. But in the general scheme of conservation which must follow the war, electrification must have an important place, and here, as abroad, it is none too early for the formulation of large plans for the early future, when reconstruction will make enormous demands upon our resources. Had electrification been generally undertaken ten years ago we would be in a much better condition now from a transportation standpoint than we are. Our plans should be ready to begin the work, just as soon as our factories and men can turn from the arts of war to those of peace.

The Seatless Car Idea Looms Up Again

IN THE ISSUE of this paper for Aug. 10 we published a plan of a so-called "seatless car" which is being tried out in service in Rome, Italy. Inquiry among transportation engineers develops the fact that the idea is not entirely novel and that it has had some serious consideration in New York City during the period just prior to the present war. Such study as was given to the idea was solely along the line of relief of congestion and rapidity of loading at terminals and transfer points. There was naturally no thought at the time of the present situation as to shortage of man power. The idea was abandoned largely because of the fear that the public and the regulating commissions would not take kindly to any suggestion which would be so directly opposed to the "seat for every fare" slogan.

The shortage in man-power has crippled the railways so much that any plan to increase the carrying capacity of city cars, especially during the rush hours, deserves consideration. A simple computation shows that the average 45-ft. cross-seat surface car will seat about forty-eight people and carry about thirty-three standees comfortably, giving a total of eighty-one passengers. However, with the car thus filled the average speed is reduced greatly, due to delays in loading and unloading. The same car with all seats removed would carry 100 people all standing, if an average of 2¼ sq.ft. of space be allowed for each person, and they would not be crowded as closely as the eighty-one people were in the car having seats. This provides for an increase in carrying capacity of more than 23 per cent, with no increase in operating charges except possibly for power.

The public has generally become used to the "standing room only" idea under very trying conditions during rush-hour travel. Practice has even shown that where the ride is not a long one, most people would rather stand in the first car at hand than wait for an available seat in the car following. All students of transportation have observed this fact.

We would not be understood as recommending the plan except in an emergency and where the run was a short one. But in these times when every plan for reducing expenses must be considered, it is well to remember what the public has accepted for tramway service in the country of one of our Allies.

Will the Use of a Cushioned Gear Reduce Friction Losses?

THE power loss in the gearing between the railway motor and the car axle which it drives has always been a source of regret to the equipment engineer, who instinctively dislikes to see good coal thus wasted. Car gearing operates under such unfortunate conditions that we have all assumed that if the teeth were properly designed to work together and to withstand the stresses, if the gears were properly lubricated, if the distances between centers were properly preserved and if grit were excluded from the gear case, we had done about all that was humanly possible under the circumstances. Even under these conditions the losses constitute too great a part of the total, especially at times of light load. Now an engineer, G. W. Remington, comes along with the suggestion, based upon extensive study and experience, that much of this friction loss is caused by vibration and that this vibration might be at least partly eliminated. The natural way out, he thinks, is to use a cushioned gear. Such gears are not novel in electric locomotive drive, but the cushion used generally for this purpose has been the coiled spring. This, Mr. Remington thinks, would not be satisfactory on electric cars. He prefers rubber, and has been assured that oil-proof rubber cushions can be had.

We hope that the publication of an article by Mr. Remington on the subject of cushioned gears, in this issue of the ELECTRIC RAILWAY JOURNAL, will lead to a trial of this scheme.

Special War Traffic Is Costly to Handle

OBSERVATION of the way electric railways are handling shipyard, munitions and camp traffic indicates that they have been obliged to muster what facilities they could and trust to luck to handle the business and to make a little money. As it has been out of the question to get new cars quickly, the veterans of past decades have been refurbished and cars have been bought or leased from railways whose traffic has declined since the war began. The result on some lines is a truly astounding conglomerate.

The best that can be done by most railways is to run motor and trailer combinations. Even these mean high platform expense in the many cases where the business is simply of twice-a-day character between the city and some distant workshop. Fare collection is another fright at many places, the cars being boarded in such a reckless way that the conductor cannot reach all the passengers.

In reality the ideal way of carrying such travel is with special locomotive-handled trains to the distributing center of the city, thereby keeping down the platform expense; and the ideal way of getting the money and relieving the conductor is through prepayment areas with motor-driven coin boxes or registers. Otherwise, we fail to see how many companies can break even, for there is not much nourishment at present costs in building track, line and substation for cars which make only two trips a day, one in the morning and the other in the evening, and run empty for one way of each of these trips.

A Useful Series of Articles on Electric Railway Rolling Stock

IN THIS ISSUE of the ELECTRIC RAILWAY JOURNAL is the conclusion of a series of seven articles on the design and construction of car bodies and trucks, written by Norman Litchfield. We hope that later he will prepare a supplementary series on maintenance in this same field. Meanwhile it will be well for all of our readers who have to do with the purchase, maintenance and operation of electric railway cars to study this series as a whole in order that they may be able to do what they have to do more intelligently.

In order effectively to handle this subject, Mr. Litchfield has been obliged to go somewhat into the subject of mechanics, which is, of course, the basis of all engineering design and construction. In some cases he has had to assume a certain amount of knowledge of mechanics on the part of the reader. The purpose of the series, however, was not to go into refinements of design which would appeal only to the car-body or truck expert, but rather to point out those principles which should be understood by general managers, equipment superintendents and employees generally who hope eventually to attain to positions of greater responsibility than those that they now occupy.

There is a certain tendency among many to "shy" at mathematics or mathematical-looking diagrams, in the prevalent but mistaken fear that these can only be understood by the initiated. Mathematics, however, is the basis of all safe and sane business, and it is only when it takes algebraic form that it appears formidable. In this series Mr. Litchfield has avoided the use of all mathematical "frills" and has used only that theory which is essential to his line of thought. He has, we believe, made a notable contribution to the literature of his subject.

Now that the series is complete we urge again a review of the seven articles as a whole, and it will be a mighty dull reader who will not find a little effort put upon such a review of very great value in his work.

How the War Has Affected Railway Traffic

THE effect of the war on increasing the operating expenses of electric railways and thus necessitating a higher fare are pretty well understood now by the public, but a great many people do not yet realize that many of the railways are not carrying anywhere near so many passengers as formerly. We say many of the railways because on some lines, especially those near cantonments, shipbuilding plants and munition work, the traffic has increased. This makes difficult any general summary of the situation, either as to cause or effect. Where the fare has been increased, it is a popular theory to attribute the diminution of traffic entirely to that cause. But we believe that much of it in many cases would have occurred in any event.

One reason, of course, is that a considerable proportion of the men between the ages of twenty-one and thirty-one have left to enter military service. These men in their home town are usually liberal spenders, at least for local transportation. As a rule, they are earning good wages and like to ride to and from their work as well as use the cars for trips in the evening and on holidays. The subtraction of say 5 per cent of the population of a town is bound to have an effect on electric railway travel, but when this percentage represents the most active part of the population, the effect is bound to be larger.

Another important cause of reduced traction earnings, in the opinion of many railway men, is the conservation and savings campaigns being followed in all parts of the country, especially that of the purchase of Thrift Stamps. No railway man would discourage this campaign, but it undoubtedly has had an important effect on electric railway earnings. The principle preached is the saving in different ways of small amounts for the purchase of Thrift Stamps, and the easiest way that many can save five nickels is by walking five times instead of riding on the street cars. The campaign in the public schools for Thrift Stamps has undoubtedly been the means of diverting many nickels from the railway company to the government.

The third cause for reduced traffic is that partly through shortage of labor and partly in their efforts to economize, many companies have reduced their service. Headways have been lengthened from three minutes to five minutes or from five minutes to seven and one-half minutes, etc., and this has naturally resulted in a further loss of patronage.

Where there has been an increase in fare, there has also undoubtedly been some effect on traffic, but for the reasons outlined we do not believe that all of the decrease in traffic can be attributed to an increase of fare

Depreciation Must Be Recognized, But the Public Must Pay for It

ADEQUATE allowance should be provided for electric railway depreciation. Adequate provision should also be made for the electric railway earning power necessary for sound credit. These are not new doctrines, but we direct attention to one phase of them which is apparently not soundly considered—that is, their relative importance.

What should be done when revenues lag behind costs so that full provision cannot be made for both depreciation and a fair rate of return to investors? There is no reason for entering upon an academic discussion of what is the priority between these two items, and whether the public prefers an insolvent railway in first-class physical condition or a prosperous company with more or less deteriorated property. The vital point is simply this—in the case of revenue deficiency, should it be assumed that it makes no difference how much the security holders, or in practice the stockholders, suffer if only the commissions' ideas on depreciation are enforced?

This point is not theoretical. It has a practical bearing in New York State at this very moment. The situation there is briefly this. In 1912 the First District Commission promulgated an order requiring a monthly allowance of 20 per cent of the operating revenues for maintenance and depreciation. After a long legal battle the highest State court has now held that the regulatory law does not grant to the commission the authority to make such an order. The same court, it will be recalled, has also ruled that the public service law has conferred upon the commissions no power to raise franchise rates, regardless of the cost of operation.

In the face of this situation, the Second District Commission, which has under way a revision of its accounting rules, as previously noted in these pages, is "suggesting" to companies that between 2 and 5 per cent a year on the cost of way and structures and between 2 and 10 per cent for equipment will generally be less open to question than depreciation rates outside of these limits. Each company may determine its own depreciation charges, of course, but the commission will follow the above stated policy in passing upon the adequacy or inadequacy of such charges in rate and other cases.

The Second District Commission is undoubtedly actuated by the most sincere motives, and we know that it feels as much concerned about the credit of the companies within its jurisdiction as it does about depreciation. But the duty of both commissions in New York, to the railways and to the public, demands that the situation be handled in a larger way. Both depreciation allowances and a proper return to investors are absolute necessities, but they require adequate fares—these are fundamental.

What is needed, therefore, is a redrafting of the regulatory law. If the commissions are to establish depreciation rates, they should have power at the same time to increase rates. Commission regulation of depreciation accounting, combined with the present hit-and-miss system of commission and municipal rate-making, would be most inequitable. Justice lies only in *simultaneous* amendments covering both depreciation and fares.

Even then, the commissions should realize that the proper allowance to be included in present-day operating expenses for insuring the future replacement of physical property is one still largely of conjecture and opinion. Hence there should be some range for the exercise of judgment on the part of those charged with the responsibility of conserving the physical and financial integrity of the properties. In the past the companies probably advocated lower rates than the commissions approved, but the conditions might easily be reversed. For instance, with falling prices of labor and supplies the companies might argue for a high depreciation charge so as to keep the fares up, while a commission might urge a lower charge to permit a reduction in fare.

Can Further Economies in Car Heating Be Introduced?

THE utilization in winter for car heating of the heat dissipated in grid resistors and motors has been considered many times by various railroads. The amount of heat that could be thus obtained has been found to vary widely with the character of service, the manner in which the motorman handles his car, the speed, the windage and other variables, which make the utilization of this heat a discouraging proposition. In another part of this issue is an article giving some results of tests made to determine, if possible, just how much of this waste heat could be utilized without excessive cost for car changes. Some results and suggestions are also given for smoothing out the peak loads during rush hours by interlocking the regulation of the car heaters with the control equipment, so that current can be used for heating the car only during the periods of coasting, braking and stops. The value of this smoothing method will increase as the number of cars in operation is decreased and should be of greatest value to small systems. This heating peak amounts to as much as 30 per cent in some cases, and as the top of the peak costs most, this represents more than that percentage in actual cost in and the amount of fuel used. From the data which we have been able to collect, it is evident that a full equipment of car heaters is necessary to provide for extreme conditions and that a full utilization of any other sources of heat can be obtained only by the use of thermostatic control for regulating the heat supplied by the electric heating equipment.

No doubt many tests and trials similar to those given have been made by other roads of which we have no knowledge. It is the hope of the editors that this article will open up a discussion which will supply data leading to some definite results and aid in producing the much needed economy in this direction, for economy in the use of the coal supply which will be available next winter is not only desirable but necessary. Any plan that gives promise of a saving in this direction is worthy of consideration and trial. During the past winter the regulations affecting car heating were suspended by the Massachusetts Public Service Commission in order to save coal, and the heating of cars was made optional with each operating company. The traveling public accepted the conditions without serious complaint, but all operating officials recognize the desirability of providing heat for cars if this is at all possible.

Way Department Requires Particularly Complete Organization

The Work of the Department Requires Closest Co-operation with Other Departments, Specific Subdivision of Duties and Responsibilities, and Strict Discipline

By R. C. Cram

Assistant Engineer, Department of Way and Structures,
Brooklyn Rapid Transit System

THE recent articles by the writer have mainly been devoted to a discussion of some particular features of maintenance of way activities. Little or nothing has been said concerning the organization of way department and it may not be out of place to consider the subject at this time, since it is only by means of thorough organization that the work of the department can be satisfactorily accomplished.

A discussion of the general organization of an electric railway system would be out of order here, but it may be well to state that the way department is often in charge of an engineer or superintendent who is directly responsible to the executive officer of the company in general charge of operations, usually a general manager. The way department has been defined* as "that division of the company organization having charge of the right-of-way, tracks, bridges and all matters pertaining to their construction and maintenance, with such other duties as may be assigned to it."

The track department, as well as the band, needs an inspiring leader

Way departments employ a great many men, especially during the summer season when extraordinary work of all kinds is under way. The larger roads will employ from 200 to 500 men the year round, with increases up to 1500 or more in summer. The number of men per mile of track steadily employed is usually somewhat greater than is found in steam-road work, due largely to the necessity for opening and closing pavements where the lines are located in larger communities. There are a number of special lines of work, which require a class of men having ability considerably above that required of the common laborer, such as bonders, drill operators, pavers, grinder men, welder men, hard-center men, and electric-switch maintainers. The efficient direction of so many classes of labor in several almost distinct lines of work requires the placing of dependence upon organization and discipline in order to harmonize their endeavors into the finished product, which is the track.

What Constitutes a Good Organization?

Organization has been defined as the systematic union of individuals in a body whose officers, agents and members work together for a common end. It requires little argument to prove that any undertaking which involves the services of a number of people, can secure satisfactory results in economical management only through co-ordinated direction by one head. Neither our industries nor the various activities of government could have reached the comparatively high state of efficiency now enjoyed, but for the beneficial effects of organization.

In planning an organization, the main object must be kept well in mind, and the following general principles will be found essential to the successful organization†:

1. At all points where action must be taken or decision made, authority should be centralized in one person. Division of authority encourages evasion of responsibility.
2. The authority and responsibility of each position must be definitely outlined. Uncertain boundaries of authority lead to conflict and ill-feeling.
3. The duties of each position must be made to conform to the capabilities of the incumbent. This may often best be done by supplanting the incumbent.
4. One person should not be made subordinate to two or more others, especially in regard to matters closely related.
5. The disciplinary authority should be placed in the same hands as the responsibility.
6. The work of administration should be distributed in such a way as to avoid unequal loading of officers.
7. There should be no positions which do not permit of promotion therefrom. Otherwise there is no incentive for incumbents to put forth their best efforts.

In reference to the foregoing, Willard‡ says: "In following these principles two things must constantly be kept in mind, namely, (1) that the individual is the most important unit in any organization, and (2) that nothing makes a man so conservative as responsibility. The former is lost sight of in many cases, but always to the detriment of the organization." Having planned the organization and filled the positions, the work is only started. The individual must be instructed, developed and trained to harmonize his work with that of his fellows. A co-operative spirit must be kindled and fanned to the flame of enthusiasm if the organization is to be successful.

It may be well to again quote Willard on a point which often comes up in electric railway service. He says: "One of the most difficult tasks in outlining any organization is to correlate the activities of the outside workers with the necessary correspondence, records and accounting on the inside. The man out on the job always has his troubles with the man in the office, but much of the friction will be avoided if the man in the office has a first-hand knowledge of the work outside." This means that an office man in charge of records, for instance, is better able to get correct information promptly if he knows what he is after and how the work which he is trying to record is done. It also recalls the famous verses on the reports of one Finigan, the trackman, who was so often called upon to boil down his reports of derailments that his final report simply read "Off agin, on agin, gone agin, Finigan."

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*Report Committee on Way Matters, American Electric Railway Engineering Association, 1911.

†See "Economies of Railway Operation," by M. L. Byers.

‡Willard: "Maintenance of Way and Structures."

The way department is only one of several departmental agencies by means of which the operation of the road is carried on. In course of its activities the department comes in contact with these other departments in many ways and it must co-operate with them to the fullest extent. The other departments chiefly concerned are as follows: (1) Operating, (2) electrical, (3) mechanical, (4) legal, (5) accounting and (6) purchasing.

Matters requiring co-operation with the several departments above enumerated may be classified in the same general order.

1. *Operating.* The operating department must be consulted on such matters as car schedules during reconstruction work; temporary diversions of traffic; location of crossovers; design of special-work layouts to give proper facilities; carhouse layouts; station facilities on interurban lines; special terminal track facilities; installation of electric track switches; removal of snow and ice and cleaning, sanding and greasing track.

2. *Electrical.* The electrical department must be kept in touch with matters of joint bonding; cross-bonding;

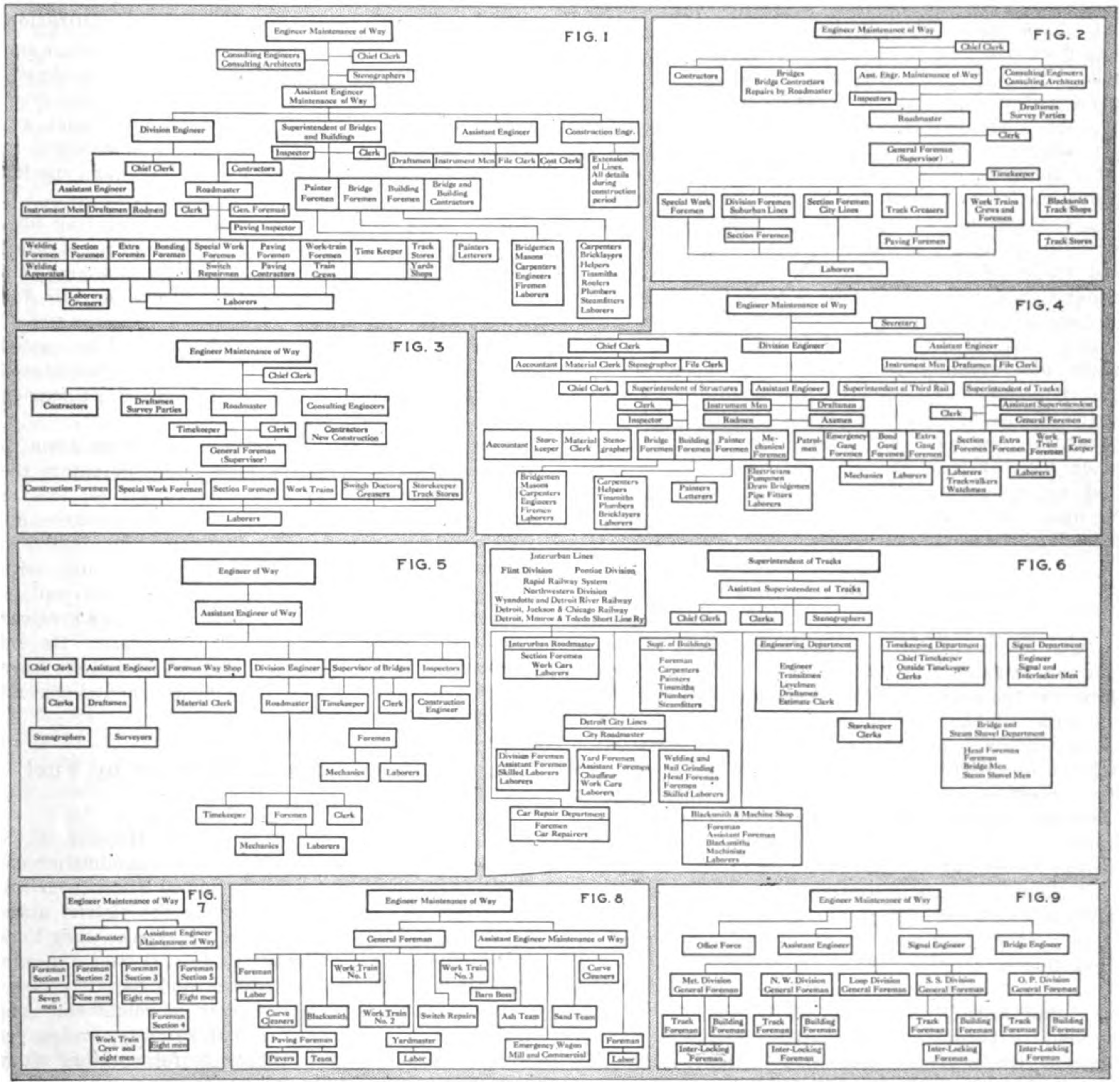


FIG. 1
Engineer Maintenance of Way
Consulting Engineers Consulting Architects
Chief Clerk
Stenographers
Assistant Engineer Maintenance of Way
Division Engineer
Superintendent of Bridges and Buildings
Assistant Engineer
Construction Engr.
Inspector
Clerk
Draftsmen
Instrument Men
File Clerk
Cost Clerk
Extension of Lines. All details during construction period
Chief Clerk
Contractors
Assistant Engineer
Roadmaster
Instrument Men
Draftsmen
Rodmen
Clerk
Gen. Foreman
Paving Inspector
Painter Foremen
Bridge Foremen
Building Foremen
Bridge and Building Contractors
Welding Foremen
Welding Apparatus
Section Foremen
Extra Foremen
Bonding Foremen
Special Work Foremen
Switch Repairmen
Paving Foremen
Paving Contractors
Work-train Foremen
Train Crews
Time Keeper
Track Stores
Yards Shops
Painters Letterers
Bridgemen Masons Carpenters Engineers Firemen Laborers
Carpenters Bricklayers Helpers Tinsmiths Roofers Plumbers Steamfitters Laborers
Laborers Greasers
Laborers
FIG. 2
Engineer Maintenance of Way
Chief Clerk
Contractors
Bridges Bridge Contractors Repairs by Roadmaster
Asst. Engr. Maintenance of Way
Consulting Engineers Consulting Architects
Inspectors
Draftsmen Survey Parties
Roadmaster
Clerk
General Foreman (Supervisor)
Timekeeper
Special Work Foremen
Division Foremen Suburban Lines
Section Foremen City Lines
Track Greasers
Work Trains Crews and Foremen
Blacksmith Track Shops
Section Foremen
Paving Foremen
Track Stores
Laborers
FIG. 3
Engineer Maintenance of Way
Chief Clerk
Contractors
Draftsmen Survey Parties
Roadmaster
Consulting Engineers
Timekeeper
Clerk
Contractors New Construction
General Foreman (Supervisor)
Construction Foremen
Special Work Foremen
Section Foremen
Work Trains
Switch Doctors Greasers
Storekeeper Track Stores
Laborers
FIG. 4
Engineer Maintenance of Way
Secretary
Chief Clerk
Division Engineer
Assistant Engineer
Accountant
Material Clerk
Stenographer
File Clerk
Instrument Men
Draftsmen
File Clerk
Chief Clerk
Superintendent of Structures
Assistant Engineer
Superintendent of Third Rail
Superintendent of Tracks
Clerk
Inspector
Instrument Men
Rodmen
Draftsmen
Axemen
Clerk
Assistant Superintendent
General Foremen
Accountant
Storekeeper
Material Clerk
Stenographer
Bridge Foremen
Building Foremen
Painter Foremen
Mechanical Foremen
Patrolmen
Emergency Gang Foremen
Bond Gang Foremen
Extra Gang Foremen
Section Foremen
Extra Foremen
Work Train Foreman
Time Keeper
Bridgemen Masons Carpenters Engineers Firemen Laborers
Carpenters Helpers Tinsmiths Plumbers Bricklayers Laborers
Painters Letterers
Electricians Pumpmen Draw Bridgemen Pipe Fitters Laborers
Mechanics Laborers
Laborers Trackwalkers Watchmen
Laborers
FIG. 5
Engineer of Way
Assistant Engineer of Way
Chief Clerk
Assistant Engineer
Foreman Way Shop
Division Engineer
Supervisor of Bridges
Inspectors
Clerks
Draftsmen
Material Clerk
Roadmaster
Timekeeper
Clerk
Construction Engineer
Stenographers
Surveyors
Foremen
Mechanics
Laborers
Timekeeper
Foremen
Clerk
Mechanics
Laborers
FIG. 6
Interurban Lines
Flint Division
Pontiac Division
Rapid Railway System
Northwestern Division
Wyandotte and Detroit River Railway
Detroit, Jackson & Chicago Railway
Detroit, Monroe & Toledo Short Line Ry
Superintendent of Tracks
Assistant Superintendent of Tracks
Chief Clerk
Clerks
Stenographers
Interurban Roadmaster
Section Foremen Work Cars Laborers
Supt. of Buildings
Foreman Carpenters Painters Tinsmiths Plumbers Steamfitters
Engineering Department
Engineer Transitmen Levelmen Draftsmen Estimate Clerk
Timekeeping Department
Chief Timekeeper Outside Timekeeper Clerks
Signal Department
Engineer Signal and Interlocker Men
Detroit City Lines
City Roadmaster
Storekeeper Clerks
Bridge and Steam Shovel Department
Head Foreman Foreman Bridge Men Steam Shovel Men
Division Foremen Assistant Foremen Skilled Laborers Laborers
Yard Foremen Assistant Foremen Chauffeur Work Cars Laborers
Welding and Rail Grinding Head Foreman Foremen Skilled Laborers
Car Repair Department
Foremen Car Repairers
Blacksmith & Machine Shop
Foreman Assistant Foreman Blacksmiths Machinists Laborers
FIG. 7
Engineer Maintenance of Way
Roadmaster
Assistant Engineer Maintenance of Way
Foreman Section 1
Foreman Section 2
Foreman Section 3
Foreman Section 5
Seven men
Nine men
Eight men
Eight men
Foreman Section 4
Eight men
Work Train Crew and eight men
FIG. 8
Engineer Maintenance of Way
General Foreman
Assistant Engineer Maintenance of Way
Foreman
Labor
Work Train No. 1
Work Train No. 3
Curve Cleaners
Barn Boss
Curve Cleaners
Blacksmith
Work Train No. 2
Switch Repairs
Ash Team
Sand Team
Paving Foreman
Pavers
Team
Yardmaster
Labor
Emergency Wagon Mill and Commercial
Foreman
Labor
FIG. 9
Engineer Maintenance of Way
Office Force
Assistant Engineer
Signal Engineer
Bridge Engineer
Met. Division General Foreman
N. W. Division General Foreman
Loop Division General Foreman
S. S. Division General Foreman
O. P. Division General Foreman
Track Foreman
Building Foreman
Inter-Locking Foreman

Fig. 1—For large property. **Fig. 2**—For property of moderate size. **Fig. 3**—Suggested for small property. **Fig. 4**—Alternative suggested form. **Fig. 5**—Chart recommended by committee on way matters of the American Electric Railway Engineering Association. **Fig. 6**—For Detroit United Lines, prepared in 1912. **Fig. 7**—For New York State Railways, Rochester Lines (interurban), 1911. **Fig. 8**—For New York State Railways, Rochester Lines (city), 1911. **Fig. 9**—For Elevated Railroads of Chicago, 1915.

Organization Charts for the Maintenance of Way Departments

minimum clearance under trolley wire at close points under bridges; location of wire in track diversions; location of track facilities for handling coal and ashes at power stations.

3. *Mechanical.* The advice of the mechanical department is needed in matters having to do with car clearance; special departmental work cars; transfer tables in shops; grades and vertical curves; minimum curves in special work; repair of special, heavy track tools; upkeep of track which may be causing equipment damage.

4. *Legal.* The legal department must furnish advice in regard to accidents due to alleged track or pavement defects; franchise plans and petitions for additional track facilities; discussions with civic authorities in paving projects; supposed violations of ordinances or regulations affecting tracks.

5. *Accounting.* The auditor's department and the way department must be in touch with respect to payrolls; distribution of charges to proper accounts; furnishing of authorization numbers for all special expense appropriations; payments to contractors; records of expenditure; inter-departmental bills; bills against other concerns for work done, and all additions to or deductions from capital due to changes in structures.

6. *Purchasing.* The purchasing agent must be consulted in matters affecting purchase of supplies; standard stocks of materials; storage and withdrawal of materials; inspection of material; pricing of material and supplies for estimates.

It is obvious that the number and extent of the departmental organizations must depend upon the size and character of the property. On small properties the duties of several department heads are assumed by comparatively few men, while the larger properties will often have at least the six departments above noted and sometimes more. These departments will often be made up of several subdivisions, each handling a branch of the work.

Organization Charts Help to Co-ordinate Duties and Personnel

It is the practice on most electric railways to have a diagram or chart of the organization of the way department for the purpose of clearly defining the duties and authority of the individuals in charge of the varied phases of the work. While it is true that there is no scheme of organization which will suit more than a few properties, there are features which are much in common and in the main such organizations are only variations of the general organization schemes shown in the accompanying charts.

It should be remembered that the organization diagram or chart will be largely controlled by the size and scope of the work undertaken by or in charge of the department.

In respect to these charts it may be of interest to note that Figs. 1 to 4 were charts prepared for discussion by the way committee of the American Electric Railway Engineering Association in 1911, while Fig. 5 is the final chart which was presented by that committee in its report on organization and rules for the way department.

Fig. 6 shows the scheme in effect in Detroit in 1912, while Figs. 7 and 8 present the organization in Rochester in 1911. Fig. 9 is presented to give an idea of the organization used in the way department of the Elevated Railroads of Chicago.

In carrying out the work of the way department, there are many rules and regulations governing the performance of work and duties of individuals, but in general these rules are not in book form and have been put in effect in the shape of letter instructions or bulletins. Many rules and regulations are in force simply as unwritten law, so to speak. There is no doubt but that much good would result if the way departments paid more attention to this subject along the lines suggested by the 1911 way committee in its report, which contains an admirable set of rules and regulations for the government of the way department.

Results Are Dependent Upon Discipline in the Organization

Discipline has been defined to include instruction and government. Instructions to way department employees are usually given in the form of oral instructions from roadmasters and foremen. These in turn must get their instructions from the head of the department in the form of oral instructions, printed rules and specific plans.

Government consists in directing and securing obedience to the rules and instructions. The best of rules and instructions will not secure good workmaship; this must be had by proper supervision, which calls for frequent and careful inspection with a judicious use of incentives and penalties. Willard may well be quoted here on this point as follows: "Discipline is administered in maintenance departments by a reprimand, suspension or both.

A record of the services of each man, even down to the track laborer, should be made when he enters the service and record kept afterward of his services to the company. For minor offences a personal reprimand, given with the understanding that it will be entered in the man's record, will produce the best results with most men. The severity of any sentence, as well as promotions, should largely be based on a man's previous record. That organization which recognizes its old and faithful employees in the way of promotion when vacancies occur, will always have more loyal and efficient employees."

Combustion Engineers Wanted by Fuel Administration

The Bureau of Oil Conservation, Oil Division, U. S. Fuel Administration desires to secure a combustion engineer for each of the districts named below, who will act as inspector of all plants within the district using fuel oil and natural gas: Boston, Providence, New York City, Philadelphia, Pittsburgh, Buffalo, Detroit, Chicago, Minneapolis, Tulsa, New Orleans and San Francisco. It is desired that these men shall act as volunteers. The administration will pay a reasonable compensation for men who cannot give their services for nothing. Only those who have had experience in the combustion of fuel oil and natural gas would be of value to the administration. Application can be made to W. Champlain Robinson, Director of Oil Conservation, Oil Division, United States Fuel Administration, Washington, D. C.

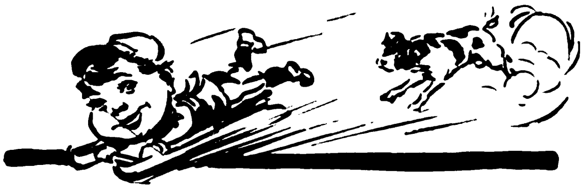
Increased Economy Results from Correct Operation of Car Equipment

By C. W. Squier
Electrical Engineer

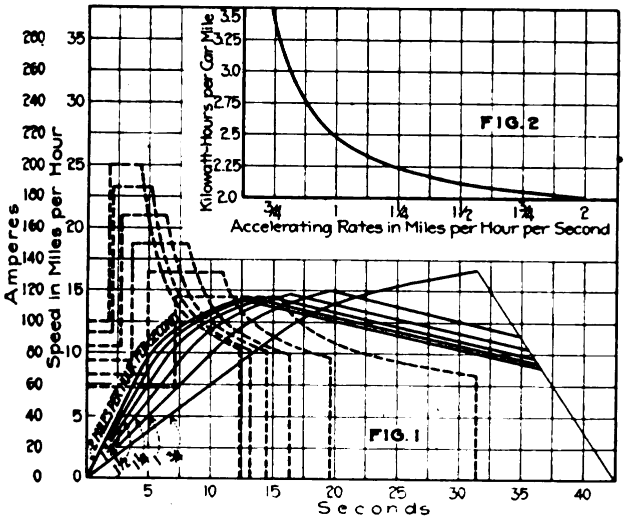
The Effects of Various Rates of Acceleration and Braking on the Schedule Speeds and Power Consumed in Car Operation Are Discussed, Together with the Relation of the Length and Number of Stops to the Cost of Operation

IT IS THE DUTY of a good motor designer to determine all the factors of possible waste in the equipment he is designing and endeavor to eliminate or reduce them. The operation of the motors involves some losses that cannot be avoided, but all can be kept at a minimum by correct operation, and much energy can be saved by careful and efficient operators.

The energy wasted in car operation includes the losses in the grid resistors, the iron and copper losses in the motors during acceleration and the energy absorbed in braking which is dissipated as heat in the brakeshoes and wheels. The useful energy is that which is used in overcoming train resistance, including the resistance due to grades and curves. In considering the means available for reducing the power necessary in operating a car over a definite run at a certain schedule speed, the effect of varying the different cycles of operation will be shown. The accelerating cycle which forms the first part of every run extends from the starting of the car through the period in which it is brought into motion. The ultimate speed of a car depends on the duration of this accelerating period and the grades or curves encountered. The efficiency obtained during the accelerating period depends on the waste in energy and time that takes place.



Even the small boy knows that coasting saves energy



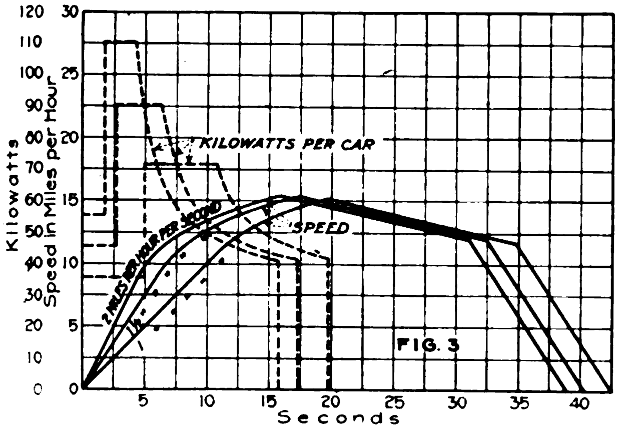


FIG. 1—INFLUENCE OF VARIOUS RATES OF ACCELERATION ON THE POWER INPUT OF A CAR. FIG. 2—RELATION BETWEEN POWER INPUT PER CAR-MILE AND ACCELERATING RATES IN MILES PER HOUR PER SECOND. FIG. 3—EFFECT OF VARIOUS RATES OF ACCELERATION ON THE SCHEDULE SPEED MADE BY A CAR

The aim of control designers is to provide for increasing the car speed at as nearly a uniform rate as possible in the shortest time consistent with current peaks, wheel slippage and comfort of the passengers. Such a consideration is quite independent of the manner of manipulation of the apparatus.

The only way in which a designer can control manipulation is by making the apparatus automatic in its functioning. The accelerating force is a certain constant amount to which impulses are added as the various steps of the starting resistors are cut out. For any given average rate of acceleration the same amount of energy is wasted in the car resistors every time the car is started and the controller is brought to the full parallel position. This is entirely independent of the length of the run, the number of stops per mile, the rate of braking, or the length of stop. As the length of the run increases this constant rheostatic loss becomes a smaller percentage of the total power used. It is thus on short runs that the economy of rapid acceleration is most apparent. As a study of the effect of different rates of acceleration on the energy input for a car operating under average conditions I have plotted the several graphs shown in Fig. 1, for rates of acceleration of ¾, 1, 1¼, 1½, 1¾ and 2 m.p.h.p.s. The operating conditions assumed are the same as those already given in this series of articles, and are for a 23.56-ton car making a run of 620 ft. at a schedule speed of 8½ m.p.h. with a 7.2 second stop, the rate of braking being taken at 1½ m.p.h.p.s. The results are given in Table I.

The difference in energy saving is considerably less between the higher rates of acceleration than it is between the lower rates. For example, the saving through accelerating at 1 m.p.h.p.s. instead of ¾ m.p.h.p.s. is 27.8 per cent, while the saving through acceleration at 2 m.p.h.p.s. as against 1¾ m.p.h.p.s. is only 0.1 per cent.

To illustrate this decreased variation the graph shown in Fig. 2 has been constructed, with varying rates of acceleration plotted against the energy per car-mile required. It will be noted that there is a "knee" in the graph between the 1 and 1¼ m.p.h.p.s. points, and for rates higher than this the difference in energy saving is comparatively small.

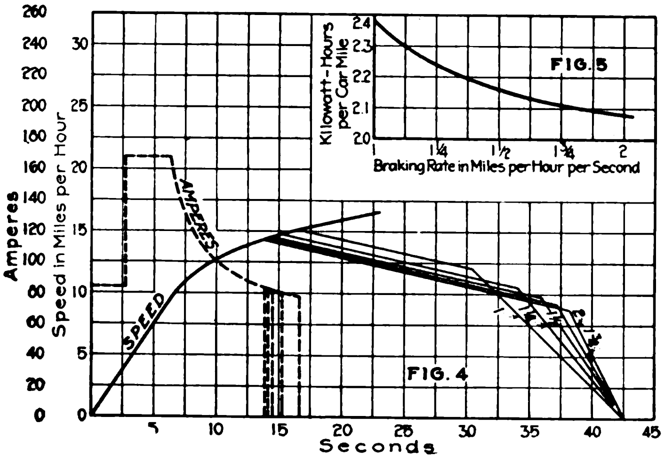


FIG. 4—COMPARISON OF POWER INPUT FOR A CAR OPERATED WITH VARIOUS RATES OF BRAKING. FIG. 5—RELATION BETWEEN POWER INPUT PER CAR-MILE AND THE BRAKING RATE IN MILES PER HOUR PER SECOND

In this particular case it appears that the economic limit of acceleration is reached at about 1½ m.p.h.p.s., and the small additional economy that results from a higher rate of acceleration would more than likely be offset by the increased cost of maintaining the equipment and the resulting decreased comfort of passengers.

Referring to the graphs in Fig. 1 we find that when accelerating at the low rate of ¾ m.p.h.p.s. it is necessary to operate the car without coasting in order to make the schedule speed of 8½ m.p.h. This, of course, could not be done in regular service, so that the average rate of acceleration must be higher than ¾ m.p.h.p.s. if the desired schedule is maintained.

TABLE I—COMPARISON OF ENERGY TAKEN WITH DIFFERENT RATES OF ACCELERATION

Acceleration Rate M.p.H.p.S.	Speed at Which Last Resistance Step Is Cut Out, M.p.H.	Rheostatic Accelerating Period, Seconds	Total Accelerating Period, Seconds	Kilowatt-Hours For Rheostatic Accelerating Period	Kilowatt-Hours For Total Accelerating Period	Kilowatt-Hours Per Car-Mile	Per Cent Power Saving Over Rate of ¾ M.p.H.p.S.
¾	11.65	15.5	13.3	0.210	0.4012	3.42	....
1	10.79	10.8	19.7	0.167	0.2896	2.47	27.8
1¼	10.05	8.0	16.3	0.139	0.2648	2.23	34.8
1½	9.49	6.3	14.5	0.124	0.2502	2.12	38.0
1¾	8.92	5.1	13.2	0.116	0.2400	2.04	40.3
2	8.55	4.8	12.3	0.101	0.2377	2.02	40.9

TABLE II—EFFECT OF THREE RATES OF ACCELERATION ON SCHEDULE SPEED AND OPERATING COSTS

Acceleration Rate M.p.H.p.S.	Schedule Speed, M.p.H.	Energy Kilowatt-Hours per Car-Mile	Car-Hours for 40,000 Car-Mile Operation	Platform Wages at 60 Cents per Car-Hour Plus 10 per Cent	Power Cost at 1½ Cents per Kilowatt-Hour	Total Cost	Per Cent Saving
1	8.5	2.47	4,706	$3,105.96	$1,482.00	$4,587.96	...
1½	8.9	2.44	4,494	2,966.04	1,464.00	4,430.04	3.5
2	9.2	2.39	4,348	2,869.68	1,434.00	4,303.68	6.2

Further Economies Result from Increasing Schedule Speeds with Rate of Acceleration

In making these comparisons of energy taken for various rates of acceleration, the point should not be lost sight of that we are considering that the cars and equipment have a definite service to perform. Other advantages of a higher rate of acceleration can be obtained by increasing the schedule speeds as the rate of acceleration is increased. This, of course, takes more power, so the saving results from operating fewer cars to perform the same service, and is shown by the decreased cost of platform expense as well as by a small total saving in power.

To show the economies that may be expected in this direction I have plotted the graphs shown in Fig. 3 for the same equipment used for the previous graphs. The rates of acceleration taken are 1, 1½ and 2 m.p.h.p.s. and the basis for determining the point at which power is cut off is arrived at by making the number of seconds consumed in coasting equal to the speed in miles per hour at the point of cut-off. Thus, when accelerating at a rate of 1 m.p.h.p.s. the point of cut-off is 15.1 m.p.h. and the car is allowed to coast for 15.1 seconds before the brakes are applied. This method of making the amount of coasting in seconds equal to a constant times the speed in miles per hour at cut-off is very convenient for comparing runs of different lengths at different schedule speeds, and the results obtained for a continuous run with various stops by using this method will approximate very closely to the service obtained from a typical run.

To make certain that the continuous current rating of the motors is not exceeded, a typical run should be laid out and the speed-time and power-input graphs plotted. The ratio of the amount of coasting in seconds to the speed at cut-off in miles per hour for this typical run will be the constant desired.

Operating Cost Decreases as Acceleration Rate Increases

In Table II the resulting operating cost for three different rates of acceleration are shown for comparison. To illustrate the annual saving it may be assumed that each car will operate 40,000 miles during the year, that the average platform expense will be 60 cents per car-hour plus 10 per cent, and that the cost of energy at the car will be 1½ cents per kilowatt-hour. A total saving of $157.92 per car per year is obtained by increasing the rate of acceleration from 1 to 1½ m.p.h.p.s. and the schedule speed from 8.5 m.p.h. to 8.9 m.p.h. The total saving per car per year obtained by an increase in acceleration from 1 to 2 m.p.h.p.s. and increasing the schedule speed of from 8.5 to 9.2 m.p.h. is $284.28, or 6.2 per cent. If we consider a single line 8 miles long operating a service at five-minute intervals, this would take twenty-four cars at a schedule speed of 8.5 m.p.h. and twenty-two cars at 9.2 m.p.h., or a saving of two cars for the line. We thus see the advantages which are to be gained by keeping the accelerating rate up to the maximum consistent with the equipment operated.

A High Braking Rate Reduces the Power Input

To illustrate how the energy input varies with different braking rates, the graphs shown in Fig. 4 have been plotted. These are made on the basis of accelerating at 1½ m.p.h.p.s. and results are shown for rates of retardation of 1, 1¼, 1½, 1¾ and 2 m.p.h.p.s. The saving in energy is obtained by cutting off power sooner and coasting to a lower speed before applying the brakes to produce a higher rate of retardation.

Fig. 5 is a graph for the various braking rates plotted against the energy required to make the run. As in the accelerating graph, Fig. 2, we see that there is a "knee" in this curve beyond which the energy saving is comparatively small. The "knee" in the retardation graph, however, is less pronounced than that in the accelerating graph. In actual service for surface lines it has been found that the most economical braking rate lies between 1½ and 2¼ m.p.h.p.s., depending on the characteristics of the equipment and the service operated. Beyond this it is better to consider careful handling of the equipment and the comfort of passengers in preference to the slight additional economies that result.

With Shorter Stops Smaller Motors Can Be Used

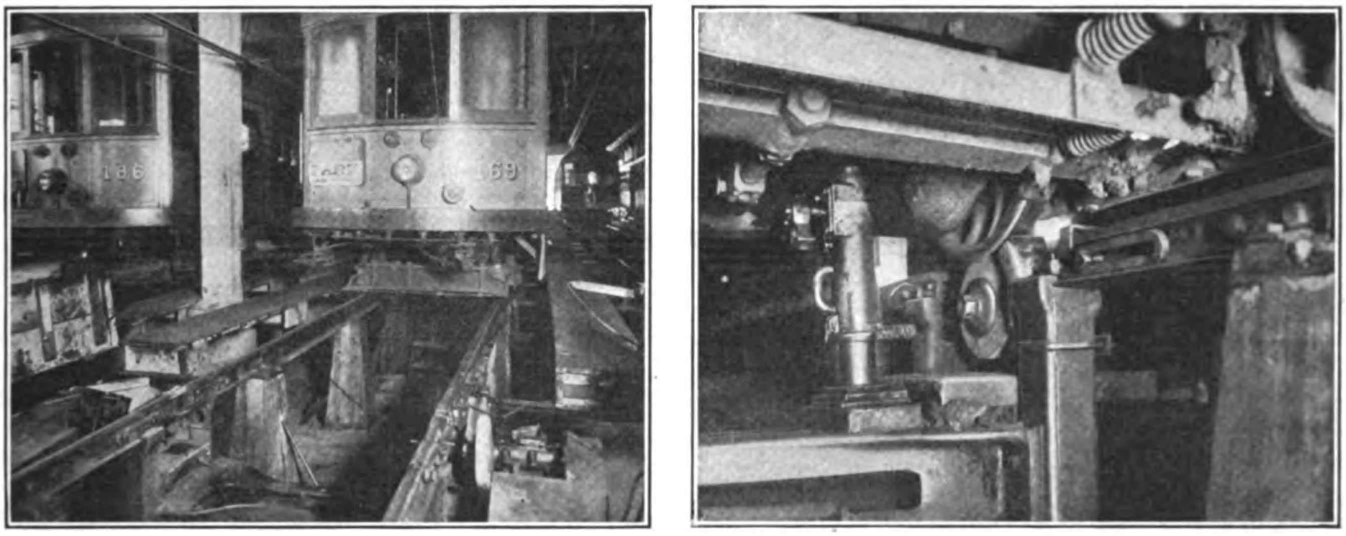
The number and length of stops are two factors of prime importance in car operation. They determine, in a measure, not only the size of the motors but also the energy consumed, the schedule speeds obtained, the number of cars necessary for a given service, and the capacity of the line and power house. This is one of the largest fields for operating economies that can be found in electric railway operation to-day. In my article in the ELECTRIC RAILWAY JOURNAL of April 20, I showed how the number of stops affects the schedule speeds and really forms an operating characteristic for the selection of the motors. The duration of stop is determined largely by car design, by the size and type of doors, steps and platforms, and by the efficiency of the operating crew. A very little confusion will lengthen a stop from two to three seconds. In the service that we are considering, with eight and one-half stops per mile and a run 8 miles long, 6.8 minutes would be lost in a round trip by incrèasing the average length of each stop three seconds. This would necessitate using an additional car on the line, and when the cost of the power used for operating this car, together with the additional cost of the platform wages is figured, a good idea of the effect of a few seconds at each stop can be obtained.

Operating a Pit Grinder Without Rheostatic Losses

TO TRUE flatted car wheels with a pit wheel grinder it is desirable to reduce the speed of the car wheels much below that obtained with 500 to 600 volts applied to the car motors. As the use of grid or water rheostats for reducing the voltage at the motor terminals involves large losses, Homer MacNutt, superintendent of motive power San Diego Electric Railway, used 110 volts obtained as follows:

To the pit grinder motor he has connected a countershaft which drives a 110-volt generator. This in turn supplies the current for running the railway motors at the lower speed with a very small loss of power. Another advantage of this plan is the greater safety provided for the operator inasmuch as the 600-volt trolley circuit is entirely disconnected from the grinder. A field rheostat gives a range of 80 to 110 volts.

This pit grinder is of the usual Q. M. S. type equipped with Norton crystalline wheels No. 20, 14 in. in diameter by 2 in. face. About thirty minutes is required to grind the average wheel. This rapidity is due in part to the use of scotching pieces or stops on the rails whereby the operator of the car can center the car wheels quickly without help. The stops are simply metal shoes with enough of a central depression to make itself felt to the shopman who is running the car. Because of the time saved in jockeying for position one man can make all preparations necessary for grinding in five minutes.



AT LEFT, PIT GRINDER WITH SCOTCHING PLATES FOR ASSISTING IN LOCATING WHEELS PROPERLY; AT RIGHT, CAR IN POSITION FOR GRINDING WHEELS

Applying Common-Sense in Line Construction

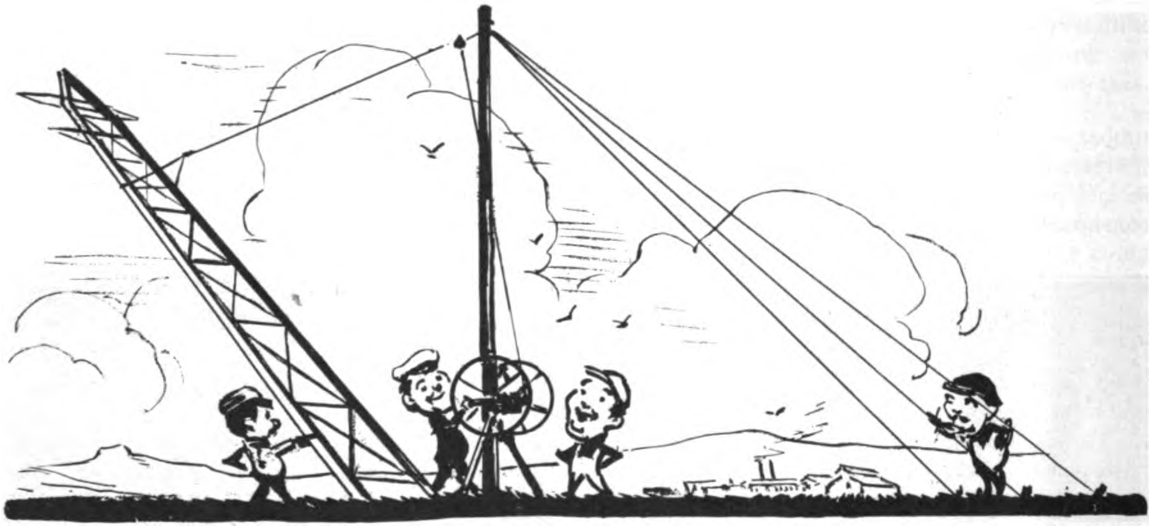
Money and Time Can Be Saved by Close Co-operation of Designer and Constructor and by Attention to Details Commonly Overlooked

By Charles R. Harte
Construction Engineer,
The Connecticut Company, New Haven, Conn.

THE locations and heights of the supports for a line are usually first laid out in the office, from the location plans and profile. This preliminary determination should then be tested in the field to insure that due regard has been given to the actual conditions. If the plotted information has been complete, the paper location will require little changing, but it frequently happens that the preliminary survey was rushed and that important factors have been overlooked.

An Extreme Case of Failure to Apply "Horse-Sense"

On one important transmission line there was a stretch of rolling ground having a distance from top to top of the "rolls" practically that of the spans of the line. The "engineer" who made the profile took his levels in the valleys and the office located the towers also in the valleys, bringing the high spots under the middle of the span. Not until the wires were up was it discovered that in this section the lower conductors were normally only 8 ft. from the ground at mid-span.



No "pikers" needed. Apply to the foreman of the wood pole gang

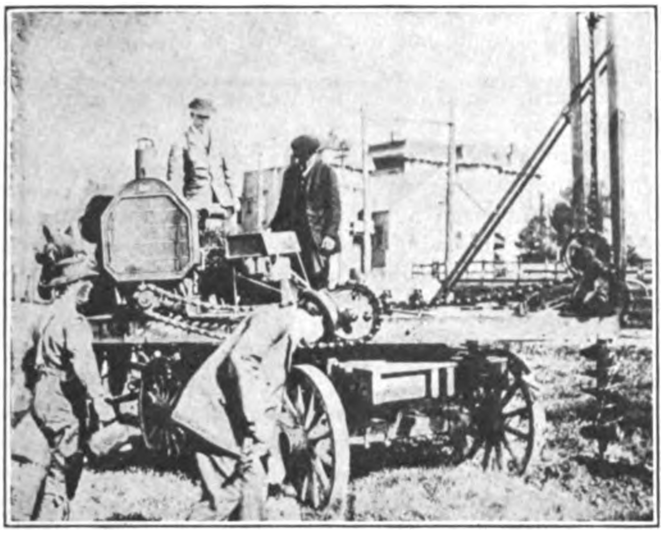
On the same line at one point a tower was located on a bit of level ground, but just at the foot of a sharp slope. The outside wire on the side of the slope could actually be touched by a "six-footer" at one point. The undoubtedly high cost of the extensions by which the line was given proper clearance would have been saved, and a number of other undesirable but not actually dangerous conditions prevented, had some one familiar with line construction checked the paper location against the actual conditions. For that matter if the "engineer" in charge of the work had listened to the contractor in a spirit other than one of open hostility the same result would have been secured.

In all construction work there should be close co-operation between the designing and the constructing branches. A contractor's suggestion may be only an effort to get an "extra," but it is always a good plan to have it looked into on general principles.

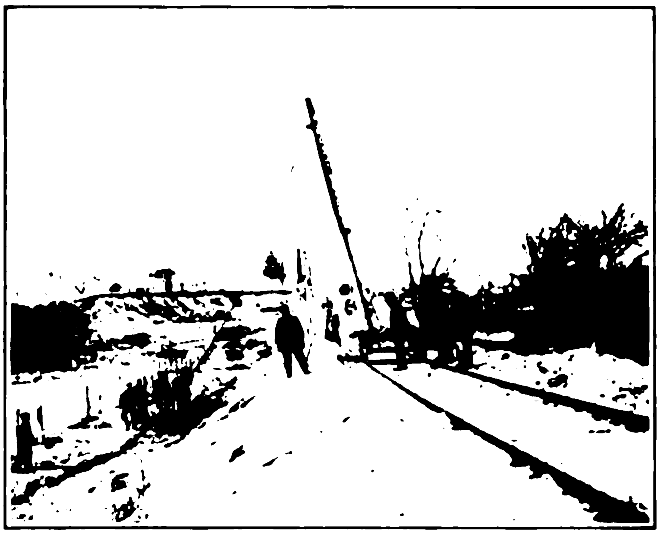
Ordinarily the kind of support to be used will be determined first, and the locations and heights afterward. It is possible also that in very rough country, across thickly settled sections and in similar cases, the locations and heights may be fixed and so determine to a considerable extent the character of support required.

If the choice has been wood poles and native wood is used, the poles can generally be purchased delivered at the hole. In this case the seller should be furnished with a schedule giving the pole number and the height of the corresponding pole, together with such notes as will enable him to find about every fifth stake from local references familiar to him, such as farm houses, roads, etc., or from objects readily seen. With such a list he can deliver without further help from the buyer, but it is much better to have an inspector present. The work then moves faster, provided of course that the inspector knows the line in advance, and disputes and delays from errors are largely prevented.

Poles from outside and treated poles—of which more hereafter—are usually delivered on cars, and must be distributed. Treated poles should be framed before treatment. Other carload poles are best framed in the yard where they are unloaded. Indeed, framing is always best done in the yard, but where, as is usually the case with native poles, delivery at the hole is as cheap as delivery in the yard, this saving more than offsets the gain of yard framing. Where poles are field framed the arms and attachments are put on at the same time, making some saving here. But in a properly arranged



POWER AUGER USED FOR DIGGING TELEPHONE LINE POLE HOLES



SETTING POLES BY CAR DERRICK—POLE HOOKED ON. HORSES HOISTING

yard there is no time lost going from pole to pole, and particularly if the poles are to be shaved, the derrick used for unloading makes a very considerable saving in labor.

It is still the practice, in many cases, simply to roll the poles off the car by hand after as many as can do so have fallen when the stakes are out. This, however, is dangerous to the men, is apt to break some of the poles, and necessitates much additional labor in rolling the poles into piles. A derrick, on the other hand, unloads with safety to men and materials in a fraction of the time, and places the poles where wanted, particularly if, as it should, it has a long boom. A derrick saves the cost of helpers for the framers, and is usually invaluable in handling heavy material, other than poles, from cars to trucks. .

A Good Inspector Would Have Prevented This

In order to determine whether the pole was a live cut it is customary to specify that the pole shall not be shaved. This is usually interpreted to allow knot and branch projections, although the latter are usually "to be trimmed close," so that quite a little draw-knife work is necessary after delivery. Following this, the butt is cut square, the top roofed, and the gains and faces made. In firm soil the requirement of a square butt is not as essential as in soft soil, where it is very important.

The writer was once delighted with the speed with which a new foreman set poles—until a day or two later, when the crossarms were apparently all that kept them from toppling over. The "villain" had sharpened the butts, dug a hole about a foot deep, wiggled the pole with the spikes after it was up, and moved on to the next!

The roof treatment depends somewhat on the attachments, for there are several special top pin fixtures requiring individual framing. If none of these are to be used, the most general practice is to form a wedge, although an almost equally common method is to sharpen to a point, the pitch angle in either case being about 45 deg. The wedge is usually set with the edge at right angles to the direction of the line, but where roof pins are employed and are doubled the edge should be parallel to the line.

Gains are cut of just the width of the arm, from ½ in. to 1 in. deep at the center. They should be slightly concave, so that the arm will bear on the edges, thus preventing rocking. With the best of care, however, it is difficult

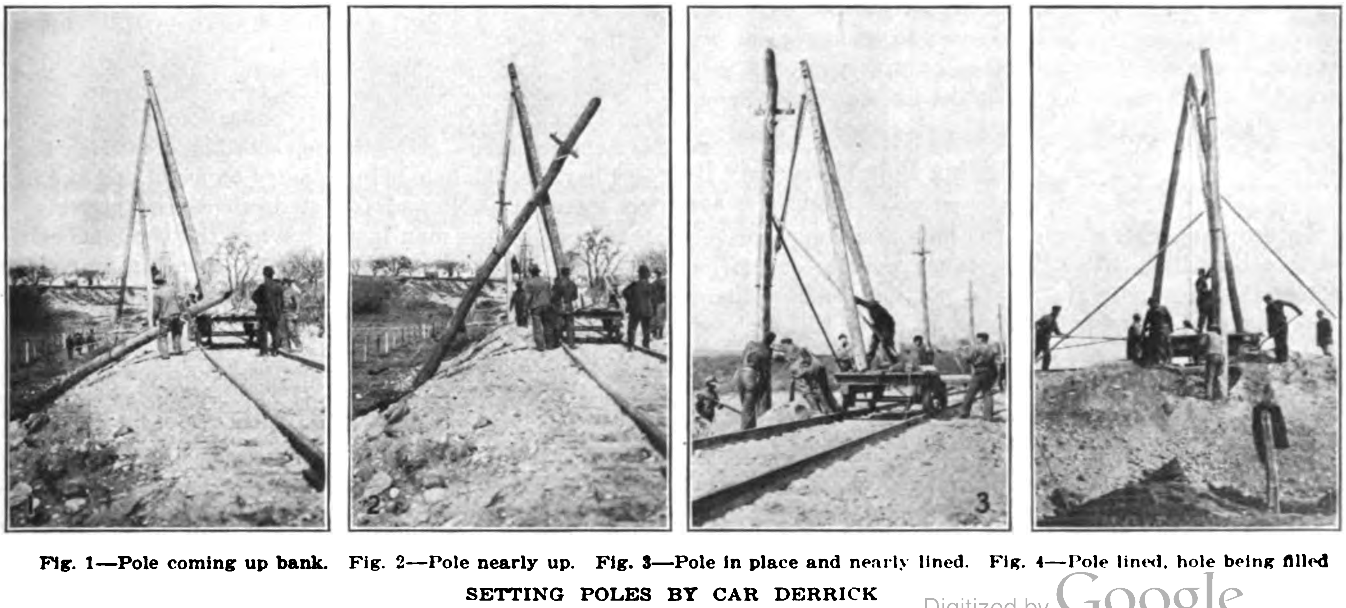


Fig. 1—Pole coming up bank. **Fig. 2**—Pole nearly up. **Fig. 3**—Pole in place and nearly lined. **Fig. 4**—Pole lined, hole being filled

SETTING POLES BY CAR DERRICK

to get a good fit, and as the average "pole butcher" comes far from being careful, there have been developed several patent metal gains, which are lagged or spiked to the pole. These do not require cutting of the pole otherwise and give as good a fit to the arm as the dimensions of the arm permit, for crossarms are not always true to a hair.

Faces are required for many of the patent fittings, and for some that are not patented, for that matter. The shape is of course fixed by that of the contact surface of the fitting, but the face should be at least ½ in. larger all around, and like the gain should be hollowed a little to insure a firm bearing.

After the framing is completed, including the boring of holes for the bolts, all of the cut surfaces should receive at least one, and, better, two coats of some good preservative. If the pole is not to have butt treatment it should also receive at least a "belly band" or belt of preservative extending 1 ft. each way from what will be the ground line when the pole is set.

Some Minor But Important Points in Line Construction

If the pole is yard-framed the attachments will not be installed until the pole has been delivered at the hole. If it is field-framed they go on immediately after the preservative, and there are one or two little points that should be remembered in this connection. For example, bolts should be so driven that the nut is always next the attachment. No one who has ever tried to back out a bolt in order to replace an old crossarm needs to be told why, but there are many so-called "linemen" who do not stop to think of maintenance, and unless closely watched can cause much trouble later on.

The projecting ends of bolts should be cut off close to the nut. This is rarely done, but it should be the rule. With the best of judgment in getting materials and distributing them there will be occasions when it is cheaper by far to use a long bolt on a short grip. The resulting end sticks out like a sore thumb and is a menace to the linemen's clothes if not to their persons.

Care should be taken that the fittings all make the same angle with the center line of the pole. Nothing makes a line look worse than a little variation in crossarms, brackets or other fittings that should line up. It is quite customary to install crossarms but leave the braces free until the poles are set to insure good line, but with reasonably straight poles practically as good results can be secured by completing the work on the ground.

Digging Pole Holes May Be Quite a Job

In ordinary soils digging the hole is a comparatively easy proposition, although it takes a little experience efficiently to handle the lower portion. An ordinary short-handled round-point shovel is much the best tool for the first 3 ft. or 4 ft., and if the hole is large enough for a man to stand in it and work it is best for the entire depth. For most holes, however, a long-handled round-point shovel and a spoon will be required from about 4 ft. on. A pick for the surface and a digging bar for the deeper portions are also needed unless the soil is soft and free from stone. Patent diggers are used in some instances, with varying success; in general they do not work as well as the usual shovel outfit.

Ordinarily conditions do not warrant the use of power diggers, but on a Western telephone line a gasoline earth auger is said to have been very successful. Unless the ground was fairly free of stone and unless there were a large number of holes the overhead cost would eat up all saving unless the time saved was worth the difference, particularly as the device would have to pay for itself on the job.

Sometimes It May Not Pay to Blast Out Rock

Rock is always a nuisance, and often considerably worse than a nuisance. In the open a heavy charge will often so shatter the rock that it can be readily taken out, but it is important that it is not merely cracked into large blocks, as these are very difficult to handle, while the blocks necessitate heavy charges to further break them up.

Where the rock is at the surface and is of good quality the pole may with advantage be set on the top and held in place by a special shoe stone-bolted down, or by three strap bolts set in holes 120 deg. apart on the outside edge of the butt. Such bolts should extend at least 12 in., or better, 18 in. into the rock, and may be held by filling the space between them and the hole, which should be about ⅛ in. larger than the bolt itself, with melted lead, sulphur or Portland cement grout. In place of using one of these the end of the bolt may be split to receive a wedge which, when the bolt itself is driven down, jams the sides against the sides of the hole. It is hardly necessary to point out that, if lead or sulphur is used, the holes should be perfectly dry. A little moisture converted to steam by the hot material can throw a small amount of melted lead or sulphur over an astonishingly large area.

The upper ends of the bolts should be about a foot long, measured from the rock, and should be flattened and lagged to the pole. For poles up to 40 ft. high above the rock ¾-in. bolts will serve unless the line is exposed to heavy winds. In the latter case, and for higher poles the bolts should be of inch stock, and the lags should be about 6 in. long as against 4-in. lags for the smaller bolts.

Soft Ground Requires Reinforcing for Pole Support

Very soft material is often even harder to handle than rock. If they are too "quick" and if the poles are not too large, soft soils can be conquered with headless barrels, the hole being started as usual and the barrel then set in it and forced down as the material is taken out by the man inside. When the top reaches the surface a second barrel is set on it, three or four cleats inside keeping it in line. The bulge of the barrels and the poor connection usually limit the "string" to two, giving less than the proper depth just at the point where deep setting is needed. By filling the space between the barrels and the pole with concrete this difficulty is removed.

The hole may be dug inside of driven sheeting, in which case it will usually be made square for convenience. For this a square frame of 6-in. x 6-in. timber, having clear inside dimensions slightly greater than the diameter of the pole is placed in position and a similar square with inside dimensions greater than the outside dimensions of the first by an amount about ½ in. more than twice the thickness of the sheeting to be used is placed outside it. The sheeting is then set up in the space between the braces and driven down as the excavation inside proceeds.

By sharpening the sheeting so that the cutting edge is at the outside and slants to a point on the edge next to the previous piece it can be kept fairly straight and tight, but additional bracing rings should be set inside every 3 ft. or 4 ft. If the hole is much more than 6 ft. deep it may be necessary to use a second set of sheeting, in which case the first set should form a square enough larger than the required hole. With 6-in. bracing and 1½-in. sheeting this would require 15 in. additional width and breadth in the top, the bottom inside ring of the first set forming the top outside ring of the second set.

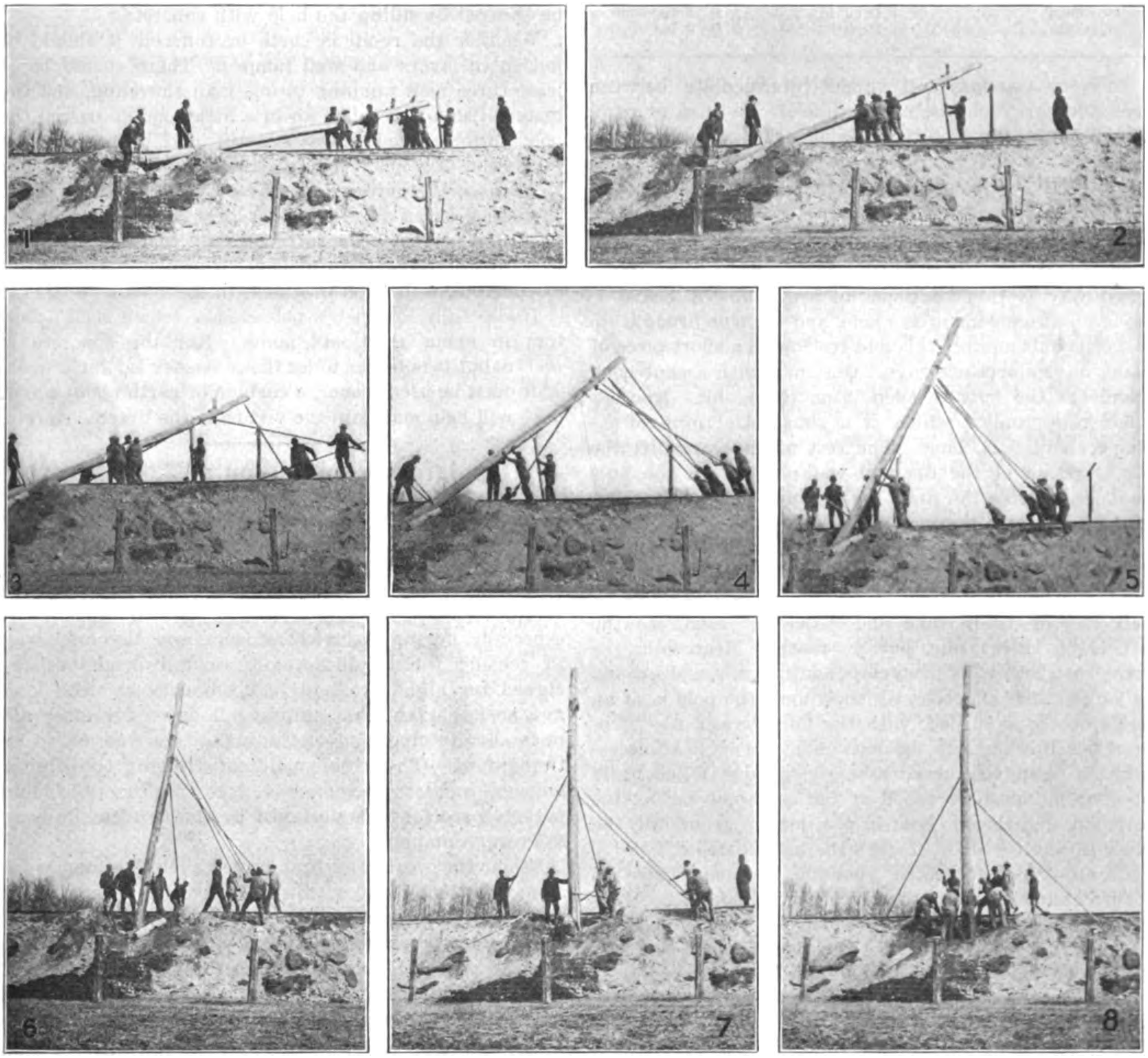


Fig. 1—Lifting. Fig. 2—Ready for pikes. Fig. 3—First pikers piking. Fig. 4—All pike poles in, note butt man twisting pole with cant hook. Fig. 5—Jinny at end of its service. Fig. 6—Butt sliding into hole. Fig. 7—Pikes grounded, butt man giving last twist before filling in. Fig. 8—Pole in place and lined up, hole being filled.

SETTING POLES BY HAND

If there are many soft holes, by far the best device is a steel cylinder in halves, of a length equal to the deepest hole required, and a diameter sufficient for the largest pole. The outside should be free from any projections, the clamps coming inside, and there should be two stout rings on each half. It is used just as are barrels, but after the pole has been set it is pulled out by tackles or jacks and taken off the pole by separating the halves. It is then ready for the next hole.

How Deep Should Poles Be Set?

The question as to what should be the depth of setting has been answered in different ways by different people, but the values adopted by the American Electric Railway Association have been largely used. They are as follows:

Length of pole in feet	Depth of Hole	
	In rock or with concrete setting	In earth
30	5 ft. 0 in.	6 ft. 0 in.
35	5 ft. 6 in.	6 ft. 0 in.
40	5 ft. 6 in.	6 ft. 6 in.
45	6 ft. 0 in.	6 ft. 6 in.
50	6 ft. 6 in.	7 ft. 0 in.
55	6 ft. 6 in.	7 ft. 6 in.
60	7 ft. 0 in.	8 ft. 0 in.
65	7 ft. 0 in.	8 ft. 6 in.
70	7 ft. 0 in.	9 ft. 0 in.

In very compact soil values intermediate between rock and earth may be used, while if one-third or more of the bottom part of the hole is rock, rock values will be ample.

Economy in Man-Power Is Essential in Pole Raising

The poles having been framed and delivered and the hole dug, it remains to erect them. The good old-fashioned way is to pike them up by hand. A board is stood up at one side of the hole, and the pole brought up with the butt against this and resting on a short piece of plank on the opposite edge. One man with a cant hook stands at the butt to keep it on the plank. Another holds the "jinny," which is a substantial prop of Y-shape about 7 ft. long. The rest of the gang lift the top, starting at the top and walking toward the butt as it rises, while the jinny man follows along to prevent any drop in case the men should slip.

As soon as the top is 8 ft. or 10 ft. above the ground the two first pikers "stick" it and lift as far as they can. The others in turn "stick" in pairs and lift, each pair moving in in turn and "sticking" again as the lift takes their point out of reach. Meanwhile the jinny man keeps his prop close against pole and ground as long as it is effective, which is until the pole is at an angle of about 60 deg. with the horizontal. As it approaches the vertical the butt man twists it if necessary to keep the arms properly lined. When fully up it is plumbed, or raked as the case may be, by the foreman, and then is held in position by grounding the pikes in a circle about it until the hole is well filled.

Chestnut poles require, roundly, as many pairs of pikers as one-third of the pole length in feet, together with one jinny man and one butt man for poles up to 45 ft. long. Two butt men are required for longer poles. Cedar poles are considerably lighter, and the gang for the shorter lengths may be reduced by a pair of pikers.

Mechanical Pole-Raising Devices Have Their Place

To-day, however, the tendency is to employ some form of mechanical setter, either in the simplest form, a gin pole, or, if the extent of the work warrants, a more elaborate form of derrick mounted on a car or truck and operated by hand winch, horse tackle or gasolene hoist. With these there will be required four laborers, a driver, or an operator, depending on the form of hoist, two men to hook on to the poles, one of whom can also serve as butt man, and one or two pikers for lining up. For the shorter poles there is not much if any saving in number of men, the economy coming in the greater speed. For the longer poles there is a large saving both ways, and there is far less liability of accident.

If the pole is to be subject to heavy strain it is now "keyed" with wood, stone, or concrete, at least 4 in. thick, and with a cross-sectional area not less than 32 sq.in. One key, at least 2 ft. long, is placed on edge at the bottom of the hole on the side opposite the anticipated strain; the other, 4 ft. long, is placed on edge at the surface, on the side of the strain. At least, this is the case in firm soil; in soft ground the keys may have to be considerably larger, or the desired result may be secured by filling the hole with concrete.

Whether the re-fill is earth or concrete it should be put in in layers and well tamped. There should be at least three men tamping to one man shoveling, and the material should be piled up in a little mound around the pole both to shed water from it and to prevent the formation of a small pond by the settling which is sure to occur. If there are pieces of rock available these should be saved for the upper part of the hole unless needed to stiffen up a soft bottom. In the latter case it is often desirable to make a "pancake" or "biscuit" of concrete, 6 in. or 8 in. thick, in the hole.

If carefully lowered, a pole can be set on such a bottom in about thirty-six hours after the concrete is placed, but it is better to let the converter set for a week. If it must be used sooner, a cushion of earth about a foot deep will help maintain the virtue of the green concrete.

Insulators Replaced on a 23,000-Volt Live Line

THE Elmira Water, Light & Railroad Company recently changed the insulators on one its 23,000-volt lines without interrupting service. The old insulators gave considerable trouble due to breakdowns especially during electrical storms, and the only way to remedy the trouble was to install insulators designed for higher voltage. This line is 20 miles long and so important that shutting it down for intervals necessary to change over the insulators was not to be thought of. The problem of substituting the higher voltage insulators was solved by the use of some patented special tools designed by the Georgia Railway & Power Company.

When the work was first undertaken the men were somewhat timid but with a few days' experience they developed confidence and speed so that the gang of three men averaged sixteen poles per day. The handles on the tools with which the wire was gripped were from 6 ft. to 12 ft. long and so well insulated that at no time was the slightest shock experienced. The only sensation felt was due to a static discharge which took place whenever a tool touched the live wire. This was loud enough to be heard by the men on the ground.

The method used in replacing the insulators was as follows: There were two pole pins and an inside pin on each arm. A short ladder was hooked over the arm in order to work on the outside pin. The tie wire was then cut by using a bolt cutter with a 3-ft. wooden handle and the live wire was lifted from the insulator by using a special anchor pole with a block and fall attached to the ends. This held the wire in an elevated position where it was then pulled over by guy lines. The insulator was then replaced and the wire again lowered into place by using the block and fall.

What Is the Cure for Condenser Tube Corrosion?

Longer Life Will Be Secured from Condenser Tubes by Proper Selection of Material and Care in Manufacture Rather Than by Modification of Conditions Directly Under the Control of the Operator

By Hartley LeH. Smith
Chief of Testing Bureau
Brooklyn Rapid Transit System

IN THE modern power plant, operated with surface condensers, corrosion of the innumerable and tiny tubes which make up the "internal economy" of the condensing apparatus has long been the bane of the operator's existence. There is daylight ahead, however, in this matter for, like most of the problems of these days of increasing use of research methods, the condenser tube problem promises a real solution at no very distant date.

For many years the development of ideas concerning tube corrosion was very slow, but recently it has been greatly accelerated. The earlier condition was due partly to the fact that, important as the matter seems to power house operators, the corrosion of condenser tubes is only a part of the general corrosion trouble. In the whole field it is of relatively minor commercial significance. If, however, iron and steel corrosion are excluded, as well as that of the alloys used in engineering structures, the waste of money occasioned by the short life of condenser tubes becomes relatively very important. In fact, it is so large as to be exceeded by few other wastes among applications of alloys in which the corrosive influence is a factor. It is worthy of careful study.

You knew little about your condenser tubes until the microscope told the story

The whole corrosion difficulty has been attacked with great vigor in recent years, both theoretically and experimentally. Theories have been extensively modified and, as is generally the case where this occurs, progress in experimental lines has kept pace with the theory.

Electrolysis Has Been Blamed for a Great Deal of the Corrosion

An important fact in this connection is that but a few years back many of the large steam turbine condensers were equipped with Muntz metal tubes. Another is that in the early days it was quite commonly supposed that much condenser tube corrosion was caused by electrolysis from the return current of electric railway circuits.

Expensive experimental installations were made in a few cases for the purpose of electrically insulating the condensers. Another line of experiment consisted in coupling a special motor-generator set to the condenser so that electric current of considerable magnitude would flow from the condenser shell to the tubes. This idea has been very persistently advocated in England, where it has produced the "Cumberland system" of condenser protection.

Another, and fairly recent, theory of corrosion is that electrolysis may occur without the assistance of electric currents from outside. The idea is rather that corrosion of apparently homogeneous metals occurs through the operation of tiny local electric circuits. These may be almost molecular in dimensions. They are produced by non-uniformity in the metallic structure, or perhaps it would be more accurate to say in the metallic microstructure to indicate the diminutive character of the action.

Muntz Metal Is Very Susceptible to Salt Water Attack

It is well known that Muntz metal is attacked quite vigorously by salt water. This metal contains two constituents known as "alpha" brass and "beta" brass. Under microscope these two constituents can be easily distinguished. The "alpha" constituent is a solid solution of zinc in copper which may contain, under circumstances dependent upon heat treatment, as much as 37 per cent zinc, and which, when less than 30 per cent zinc is in the brass, is the exclusive solid solution present. It is a comparatively soft and very ductile body. The "beta" constituent is a solid solution of zinc in copper which is always present when brass contains more than 37 per cent zinc. This constituent is much harder and stronger than the "alpha" constituent but it is at the same time much less ductile.

Each pair of these constituents can act as electrodes in local electric circuits when an electrolyte is present—for example, salty circulating water. These electrodes, that is the "alpha" and "beta" constituents, have very considerable inherent potential difference. There can scarcely be any doubt that this circumstance explains, for the most part, the special susceptibility of Muntz metal tubes to corrosion by salt water. This conclusion will, I believe, be supported by all who have used such tubes with salty circulating water, or certainly it will be supported by those who, having used them, have changed to Admiralty metal tubes.

Admiralty metal contains 70 per cent of copper, 29 per cent of zinc and 1 per cent of tin, while Muntz metal contains 60 per cent of copper and 40 per cent of zinc.

Electrolysis Theory Applies with Admiralty Metal Also

Any brass having as much copper as Admiralty metal consists of a single solid solution of zinc in copper, that is, "alpha" brass. This is true of all brass alloys still more rich in copper.

While the electrolytic theory of corrosion still serves to explain, or at least helps to explain, the corrosion of Admiralty metal tubes and other "alpha" brass alloy tubes, it is evident that the homogeneity of the crystals of the single "alpha" solid solution is much greater than in the case of Muntz metal. The theory requires the presence of tiny electric currents due to lack of uniformity, but obviously the potential differences are very much less in this case than those which exist between the crystals of the "alpha" and "beta" solution of brasses having copper of about 60 per cent and zinc of about 40 per cent, of which Muntz metal is an example.

The point is often made that if 70 per cent copper is so much better than 60 per cent copper, why would it not be still better to use 80 per cent or 90 per cent copper or alloys even richer in copper than this?

There are several reasons for the use of a limited percentage of copper. In the first place, copper is more expensive than zinc, therefore the cost of the tubes rises with increasing copper content.

Why Not Use Condenser Tubes of Pure Copper?

Another important fact, already mentioned, is that brass containing as much as 70 per cent of copper or more consists of one rather than two solid solutions; that is, the "alpha" rather than the "alpha" and "beta" metal. It follows that once the "beta" constituent has been removed there is no further improvement to be effected by the addition of more copper.

It is true, of course, that as electrolytic corrosion goes on, it is the zinc which is dissolved and the copper which remains. The honeycombed structure which is left is very weak mechanically and is broken easily by vibration. It follows, therefore, that the less zinc originally in the tubes to be dissolved, the less is the resulting weakening of the tube as it deteriorates throughout its life.

Carrying this argument to its conclusion one might ask: "If the less the zinc in the tube the longer its life, why not use an all-copper tube?" The answer to this is that the omission of the zinc would be undesirable as a manufacturing matter. It appears from the metallurgy of tube manufacture that copper oxide is produced in the making of tubes and this is very soluble in molten copper. Copper oxide in a tube is very bad. Zinc in alloying with copper takes care of the oxidizing effect.

Many engineers believe that a little zinc will perform this oxidizing service as well as a great deal and that, therefore, condenser tubes of progressively higher copper content should have correspondingly longer life up to, say, 95 per cent of copper. To offset this increasing merit would only be the corresponding higher cost.

While the above opinion seems to be quite widespread among engineers, it cannot be said as yet that the use of tubes so rich in copper has been tried long enough in a practical way firmly to establish the validity of the theory. Certainly it is not established to so great an extent as the fact that Admiralty metal tubes are superior to Muntz metal tubes for condensers with water more or less salty in character. It may be said in passing that a tube of 70-per cent copper and 30-per cent zinc composition, possessing the merit of a single solid solution, "alpha" brass, is considered less durable for salt water service than one containing a slight amount of tin, hence the popularity of the well-tried Admiralty metal. The role played by the tin in giving this added protection is, however, not well understood.

So far we have discussed the chemical composition of tubes as affecting their durability against corrosion, but there are other factors which have an important bearing on the subject. Some of the most important work done in this line is so recent that manufacturers have not as yet had time to provide equipment to make the fullest use of it.

Before taking up this latest work it may be well to state first that for some years engineers have felt that very important influences were at work, other than variation in chemical composition, which would account for tube deterioration. These men were convinced that not much improvement was to be secured until these factors had been identified and brought under practical control.

The investigators turned naturally to the microscope to assist them, and the character of grain structure and its relation to annealing were carefully studied. The literature of this subject is now quite extensive.

In spite of all this study, however, it did not seem possible to distinguish accurately between good tubes and poor tubes. About five years ago, however, the brass industry got a very heavy "jolt" which brought about important investigations and had far-reaching effects.

On the New York State Barge Canal work, and also earlier, on the Panama Canal work, large quantities of brass and bronze were used under conditions subjecting the material to considerable stress. These materials had been chosen under the circumstances as substitutes for steel in order to insure against corrosion. The structures in which they were used were carefully designed for the applied stresses.

In no small number of cases these materials failed, causing genuine alarm among engineers for the safety of some of the structures in which they were used. The result was a decided skepticism as to the suitability of such alloys for structural purposes. In some cases steel was substituted for the alloys.

In the investigation which followed the United States Bureau of Standards took a leading part, applying its rigorous research methods to this work. The result seems to have been very satisfactory.

What is the Cause of "Season Cracking?"

One evil to which alloys are subject, known as "season cracking," has long been widely known in the brass trade. It has seemed in some way to be connected with moisture conditions. Brass and bronze kept quite dry might be entirely free from this trouble even though long in service, whereas these alloys kept in storage and, therefore, subject to no stress at all, might give evidence of "season cracking" if subjected to moisture conditions. The failure of such alloys in service when subjected to high but carefully calculated stresses and to corrosive influences have already been commented upon.

In a general way it was known fairly accurately that "season cracking" was related to internal strains produced in manufacture and not subsequently removed. Recent investigation has clarified and amplified our knowledge of the whole subject, however, very much indeed. We now know that "season cracking" and "corrosion cracking" are one and the same. Consequently an organized effort to allow the former term to die out of use meets with no opposition.

We now know that "corrosion cracking" and initial *tensile* stress are not only associated phenomena but also that without the latter "corrosion cracking" does not occur.

Initial tensile stress, which is a cause of corrosion cracking, is bound up with the matter of electrolytic solution potential. Some of the best recent research work seems to establish definitely that this potential increases continuously with tensile stress.

The way in which corrosion cracking comes about is therefore as follows: Newly manufactured metal, say brass condenser tubing, is in a state of initial stress of such nature that the surface layers are in tension. There is always sufficient lack of homogeneity on the surface to start electrolytic corrosion if an electrolyte is present. This may be assumed to be the case when the tubes are in service in a condenser.

The early surface corrosion grooves the surface and, as it is a law of mechanics that the unit stress at the bottom of a groove is far higher than the average stress over the surrounding section, the early surface corrosion produces higher unit stresses at the bottoms of the grooves as these deepen.

We have assumed a case where the initial surface stresses are tension stresses. Therefore as the grooves deepen the electrolytic solution potentials at the bottoms of the grooves increase, and as this occurs the differences of potential between the bottoms of the grooves and the general tube surface are increased. As a consequence the electrolytic corrosion is not only maintained but accelerated.

What Are We Going to Do About It?

Now as to some hope of cure for these ills. Initial compression unit stresses seem harmless—that is, they do not seem to favor corrosion cracking. The reduction of initial tension stresses from the high values, which are often very high indeed, is obviously a cure for the evils caused by high-tension stresses.

Either one of these conditions may be deliberately brought about by a finishing operation during manufacture. Annealing after the final drawing, with the annealing temperature kept to the low figure of 400 deg. C., or thereabouts, will completely remove the internal strain. At the same time it will produce a finely grained microstructure, completely eliminating the coarse structure which results from annealing at temperatures within or above the critical range.

This very important conclusion of recent research work will doubtless in the near future be much better appreciated than it is to-day. As yet the brass works are not generally equipped with the control apparatus needed for the maintenance of such low annealing temperatures.

As a substitute, however, efforts are being made so to spring the metal after the last drawing as to change the stresses which have resulted from cold working, from tension stresses at the surface to compression stresses. This is being done with a fair degree of success in the case of brass rods, but whether it can be done with similar success in the case of seamless tubes, the writer cannot say at the moment. In this connection, however, it must be remembered that the present advance in this field is very rapid, both in research work and manufacturing.

A very pertinent question with which to close the present discussion is this: "What are some of the main features which are being embodied in progressive condenser tube specifications?" In answering this question it would be well to state that these features will undoubtedly become much more important in the near future, as they have for their purpose the securing of tubes which will stand difficult corrosion conditions with sufficient durability to cut down condenser maintenance costs. Moreover, they will tend to eliminate general power station troubles resulting from contaminated hot-well water. This is a very serious item of power station expense where circulating water is in any way bad.

Modern Condenser Tube Specifications Are Quite Comprehensive

Among the items which may well be included in these specifications are the following:

Chemical Composition: (a) Such as will exclude the "beta" solid-solution constituent. (b) Presence of small amount of tin (about 1 per cent) if condenser water is salty. (c) Limitation to very small quantities of those elements generally believed to be injurious, such as lead, iron, arsenic, cadmium.

Initial Surface Stresses: (a) Elimination of such stresses by low-temperature annealing after final drawing. (b) Creation of initial surface compression stresses after final drawing by deliberate springing as a possible substitute for (a).

Grain Size: Specification of grain size and enforcement of the specification by grain-size measurement, using one or another of the authoritatively recognized methods.

Hardness: Specification of hardness number on some recognized scale, preferably the Brinnel.

Applying Gas Welding in the Boiler Room

IN THE boiler rooms of the Doherty properties in Toledo, Ohio, all bagged and leaking boiler tubes are being welded by the oxy-acetylene process. William Long, superintendent of production, states that as many as fourteen welds have been made on one tube before it was discarded. The process is first to heat the bag on the tube with the torch, using a slow heat until the bag is a bright cherry red. The bag is then driven back, beginning at the outer edge and working in toward the center. In case there is a hole in the bag this is first welded shut. Boiler tubes are also being reclaimed by welding sections of tubes onto damaged tubes that have been removed. The cost of welding is approximately 75 cents per single weld, including all labor, material and cost of setting up the apparatus. When several welds are made on one boiler, the cost is less.

Crystallized boiler tubes are also being successfully annealed by use of the oxy-acetylene process. The two ends are heated to a bright cherry red and allowed to cool, after which they are rerolled and given a hammer test. After treatment the tubes are found to be as soft as new ones.

The Toledo Railways & Light Company reports that by use of these methods a great saving is being made in boiler tube costs. The process is another illustration of the extent to which modern welding is being applied in all technical fields.

Forces Acting Directly or Indirectly Upon the Truck Side Frame

By Norman Litchfield

The Author Concludes His Series of Articles on Electric Railway Bodies and Trucks by Considering the Factors Which Affect Side Frame Design

IN AN ARTICLE on a few of the engineering principles entering into truck design in the Mechanical & Engineering edition of the JOURNAL for July 20, certain forces were enumerated as being largely controlling. At the risk of repetition, and for the convenience of the reader these may be listed again, as follows:

1. The weight carried with car standing straight.
2. The shifting of the weight from the center of the truck partly to one side by the action of centrifugal force.
3. The shifting of a portion of the load from the rear to the front trucks by action of the brakes.
4. A similar shifting of the truck load from the rear of the truck to the front by action of the brakes.
5. Forces set up by the torque of the motor through the motor nose during periods of acceleration.

Truck parts must withstand these excessive strains from emergency stops

6. The so-called "flywheel effect" or tendency of the rotating parts of the truck to continue rotating during periods of retardation.
7. The forces set up by the friction of the brakeshoes on the wheels, and transmitted to the truck structure through the brake hangers.
8. The distortional effect of the horizontal force applied to one corner of the truck by virtue of the thrust of the forward outer wheel against the rail in rounding curves.

To these might be added a somewhat similar distortional effect of inequalities and depressions in the track.

Truck Loads Are Not Uniformly Distributed, by Any Means

In considering the forces acting on the side frame and the stresses thereby induced, it is to be remembered that primarily the side frame is a beam or a truss, designed to carry a load more or less centrally applied at the truck transoms. It is supported by two abutments which as a general rule are springs, either helical or elliptic, located near or over the journal boxes.

The primary load transmitted through the transoms to each side frame is, of course, one quarter of the total car-body weight, including passengers. In the previous article on bolsters it was pointed out that the effect of centrifugal force on a car rounding a curve is to relieve the center plate of a portion of its load and to throw a corresponding load on the outer side bearing. By reason of this action the bolster no longer presses with equal force on each elliptic spring, but throws a greater load on the outer one and so throws correspondingly greater load on the side frame at the outside of the track curve. The total load carried by the side frame between its supports consists of this eccentric load on one spring, plus a portion of the bolster weight, the weight of the spring itself plus its swing hangers, etc., and a portion of the weight of the transoms and brakebeams, motor weight, etc.

As it is desired to conclude the present series of articles on car construction with this number, it seems well to omit any detail calculations of the forces and stresses, and simply point out the general lines along which a study of design may be followed.

The effect of the centrifugal force having been covered in its relations to shifting of the load from one side of the truck to the other, the next condition to consider is the transferring of a portion of the car-body load from the rear center plate to the front. This will occur during an application of the brakes, the effect of which is readily seen after a short study of the conditions. To make this clear the reader should be reminded that the retarding force of the brakeshoes has to be applied to the car body through the center plate, at a point about 3 ft. above the rail, whereas the center of gravity of the car body and its passenger load is some 7 ft. above the rail. Consequently the effect is somewhat similar to a pedestrian stubbing his toes, causing him to fall forward.

How the Weight Transfer Force Is Calculated

To determine what the force is which produces this weight transfer we may proceed as outlined in the following: Electric passenger cars are now customarily equipped with brakes designed to give a braking force at the wheels equivalent to about 110 per cent of the weight of the car without its passengers. That is to say, an empty car weighing 50,000 lb. would have a braking force applied in service application of 55,000 lb., or if a light-weight car, a force of 6875 lb. per shoe. This is figured with a cylinder pressure of 50 lb. per square inch. With the brakes applied in emergency the cylinder pressure increases to 60 lb. per square inch and the maximum braking force will then run up as high as 132 per cent of the light weight of the car. The pressure of the braking force applied to the shoe is, of course, radial on the wheel, and its stopping or frictional effect will depend upon the nature of the wheel and of the brakeshoe itself. But in general it may be assumed that at the speeds under consideration the maximum coefficient of friction between shoe and wheel will amount to about

0.25, thus giving a tangential frictional force of $0.25P$ where P is the total radial braking force.

Not all of this frictional force, however, is available for stopping the forward motion of the car itself. A portion of it is used up in overcoming the stored-up energy in the rotating parts, including the wheels, axle, gears and motor armatures, which tends to keep these parts in rotation. The effect of this is especially noticeable in the case of the motor armature. This is evidenced by the fact that a truck without motors cannot successfully utilize a braking pressure of much more than 85 per cent on account of the danger of sliding the wheels under poor rail conditions. The same truck with motors can be braked up to 110 per cent as before stated. This matter is fully discussed in Richey's "Electric Railway Handbook," page 172, under the caption "Ratio of Linear Inertia to Total Inertia." In this he states that for a high-speed electric motor car this ratio will vary from 0.935 to 0.91.

If we assume that a braking force equivalent to 25 per cent of the light weight of the car is used up in overcoming the energy of the rotating parts, then with a maximum braking force of 130 per cent in emergency, 105 per cent would be available for stopping the car and, allowing 0.25 as maximum coefficient of friction between wheel and shoe, the actual retarding force becomes $F = 1.05W \times 0.25 = 0.2625W$.

Retarding Force Is Divided Between Body and Trucks

The total retarding force may be considered as divided between the car body and the trucks in proportion to their respective weights. Thus if C be the weight of complete car, B that of body, and T that of trucks, the retarding force acting on the body will be $F_1 = 0.2625 \frac{B}{C} W$. As before pointed out, the center of gravity of the body and passenger load is 7 ft. above the rail and the center plate about 3 ft. The onward impelling force of the inertia of the loaded car body and the retarding force applied at the center plate form a couple 4 ft. apart. If L be the distance between front and rear center plates, the downward force at the front plate caused by the turning movement of the couple will be:

$$P = 0.2625 \frac{BW}{CL}$$

This force must be added to the weight on the front center plate to give the total load carried by the front truck. Inasmuch as this force is not affected by centrifugal force of the car rounding curves, one-half may be considered as caused by each truck side frame.

At the same time that the retardation causes a downward force to act at the front center plate, a similar upward force of equal intensity is induced at the rear center plate, and thereby correspondingly lessens the load on the rear truck.

This Force Acts Through the Center Plate Also

Another factor which may affect the load carried by the side frames is the downward force on one transom of the motor nose and a corresponding upward force on the other transom from the other motor, assuming that the truck carries two motors. Each force amounts as a maximum to about the weight of the motor itself. But inasmuch as there is little likelihood of the maximum torque of the motors occurring at the same instant as the exertion of the maximum retarding force of the brakes, this feature may be omitted from consideration and the forces acting on the side frame be limited to those coming from the weight carried and the action of the brakes.

Truck Is Subjected to a Turning Moment During Braking

Having given consideration to the forces acting through the truck center plate, attention must next be paid to the forces acting within the truck structure itself. The retarding force, which as explained applies a turning movement to the car body, adding weight to the front center plate and taking from that on the rear plate, also applies similar turning movements to the trucks. This tends to lift the rear pair of wheels of each truck.

Thus, the inertia of the car body applies a horizontal force at each center plate equal to one-half the force of retarding the car body (if both trucks are of equal weight), and the inertia of the truck a horizontal force at the center of gravity of the trucks about 18 in. above the rails, equivalent to the force exacted in retarding the truck.

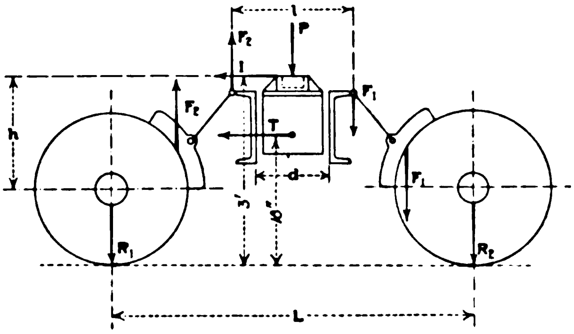


DIAGRAM SHOWING THE FORCES CONCERNED IN THE DESIGN OF A TRUCK SIDE FRAME.

In addition thereto, there are the vertical forces set up by the friction of the shoes against the wheels and applied to the truck structure through the brakeshoe hangers and transoms. This couple is opposite in direction to the others, tending to raise the front end of the truck and depress the rear.

How the Several Truck Forces Combine

To make these points more clear, reference to the accompanying figure will show that the inertia of the body I exerted against the front center plate exerts a downward force at R_1 equivalent to $\frac{3I}{L}$, and similarly the inertia of the truck T a corresponding downward force $\frac{1.5T}{L}$.

The couple exerted through the brake hangers is $F_1 \times l$ and the upward force at R_1 is $\frac{F_1 l}{L}$.

To sum up then, the forces acting directly on the side frame at the outside of the track curve are as follows:

The load applied at the transoms consists of one-half the dead load on the center plate, augmented on the one hand by a transference of weight from the rear truck to the front by braking action, and further augmented by the shifting of a portion of the load from the center plate to the outer side bearing by action of centrifugal force.

The vertical forces at the transoms due to the turning movement produced by the horizontal retarding force at the center plate, $I/2$, which is applied at a distance h above the center of the wheel. This may be taken as the horizontal point of support of the frame against retarding forces. The distance between transoms being d, the vertical forces induced are $\frac{I}{2} \times \frac{h}{d}$ downward on the forward transom and upward on the rear transom.

The vertical forces at the transoms due to the friction between the shoes and the wheels, equal to the brakeshoe pressure times the coefficient of friction between shoe and wheel, upward on the forward transom and downward on the rear.

The algebraic sum of these forces gives the net force at the transom.

Applying the Principles in the Side Frame Design

The side frame between supports may be treated as a simple beam and the bending moments calculated.

The stress that may safely be allowed in the side frame will depend upon the character of the structure and the service to which it is to be put. As somewhat of a guide, however, it may be pointed out that under the conditions given for the calculation, axles which are subject to the maximum of vibration and reversals of stress run successfully at stress of 15,000 lb. per square inch and over. Therefore it would seem that the side frames could also be stressed equally high. Against this, however, are the facts that passenger car axles are made of special steel designed for its exacting work, while the side frame material may be of more or less uncertain character.

Furthermore, it should be remembered that the frames are of more or less complex construction and liable to have points within where the so-called localization of stress occurs. That is to say, there may be short stretches where the stress will run very much higher than is general throughout the structure. Localizations of this character have been proved conclusively to exist in many structures by laboratory tests through the use of strain gages. These gages consist essentially of micrometers for measuring the elongation of the structure between any two points. Ascertaining the proportion of this elongation to the original length and with a known modulus of elasticity of the metal, the local stress may be calculated.

In addition to the vertical loads on the side frame attention must be given to the transverse loads due to the sidewise thrust of the outer wheels against the rails. In this case the side frame acts as a beam loaded at the middle and supported at the ends at the center lines of the wheels.

The distortional effect of the thrust against the outer wheel and also that of inequalities of the track are difficult of analysis and are generally met in the design by a proper combination of gussetting and flexibility of transom construction.

It is obvious that in the limits of these papers on car and truck construction little more than the most salient points could be covered. It is hoped, however, that they may be of service in pointing out the lines along which one interested may pursue investigations.

Will a Cushioned Gear Save Power in Car Operation?

The Energy Expended in Vibration and Shocks Is Commonly but Improperly Included with the Gear Losses

By G. W. Remington
Assistant Engineer Division of Passenger Transportation and Housing, Emergency Fleet Corporation

The tremendous amount of energy wasted annually in the ordinary spur gearing used in the motor car equipment of our street railways is not generally appreciated by operating men and others interested in fuel economy. This gearing universally employs the involute type of tooth, and power is transmitted through sliding contact. Friction is therefore bound to be present and every operating man endeavors to reduce this to a minimum by considering his own local conditions and by applying such lubrication as he finds practical.

The graph in Fig. 1 gives the losses in gears and bearings found as an average of many tests in which two railway motors were mounted on a testing stand, one driving the other as a generator through standard gearing of the kind in question. It is impossible, or at least impracticable, to provide the user with gears in which the tooth pitch, profile, etc., are perfect, and as a result vibration of the entire motor is very noticeable when commercial shop tests like the above are made. The energy required to produce this vibration is charged to gear loss and appears as such in the curve shown, though, correctly speaking, it is a loss incident to the use of gears as now constructed.

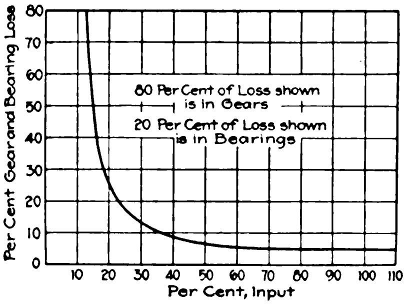


FIG. 1—GRAPHS OF LOSSES IN GEARS AND BEARINGS OF RAILWAY MOTORS

High rail joints, special work, flat wheels, poor alignment of track and normal roughness of the track itself are largely responsible for the breaking of gear teeth in service and the general deterioration of the motor equipment, the vibrations from these causes being added to those due to the gear teeth. It is therefore safe to say that the so-called gear losses when the motor is running on the road are considerably in excess of those shown in Fig. 1 even when the gears, armature and axle linings are new. When the armature and axle linings wear, and the pinion and gear centers in consequence recede from each other, and when the pinion and gear teeth wear, the efficiency of the gearing decreases in proportion so that, all told, the curves shown in Figs. 1, 2, 3 and 4 represent ideal conditions and minimum gear losses.

Fig. 2 shows the characteristic curves of a motor having a commercial (one-hour) rating of about 110 hp. and include the speed, torque and efficiency, with gears, at 600 volts. Looking at these curves, in conjunction with that shown in Fig. 1, it appears that at full load of 160 amp. the gear loss is 4 per cent or 3840 watts, the torque 2050 lb. and the speed 20.2 m.p.h. As the actual gear (friction) loss should decrease directly with the torque and increase directly with the speed, the loss at

56 amp., which is a fair estimate of the average load when the car is making a stop every 2 miles, might reasonably be expected to be about

$$\frac{3840 \times 31 \times 440}{20.2 \times 2050} = 1263 \text{ watts.}$$

This is only 3.76 per cent of the input, whereas the average of many tests shows 8.65 per cent, a discrepancy which is accounted for by the energy wasted in vibrating the motor.

As an example of what this loss amounts to, we may assume a 30-ton car making a stop every 2 miles and a schedule speed of 28.6 m.p.h. Were this car to run 90,000 miles during the year on a system where the distribution efficiency from generator bus to trolley wheel is 80 per cent, the calculated energy required at the bus is 213,000 kw.-hr. This figure drops to 190,000 kw-hr. if the over-all motor efficiency is increased by an amount which it seems reasonable to believe would accompany the elimination of the vibration due to gear teeth alone. The result would be a saving of 23,000 kw.-hr., or about 35 tons of coal per year for each car so operated.

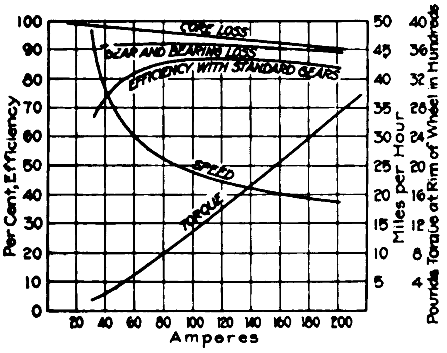


FIG. 2—CHARACTERISTIC CURVE FOR 110-HP. RAILWAY MOTOR STANDARD GEAR

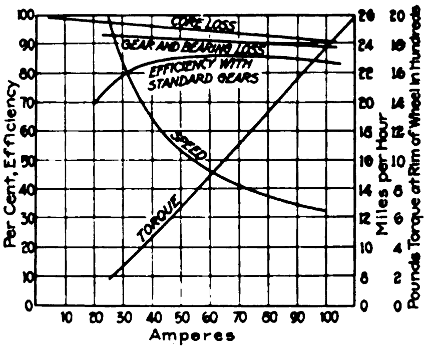


FIG. 3—CHARACTERISTIC CURVE FOR RAILWAY MOTOR WITH STANDARD GEAR

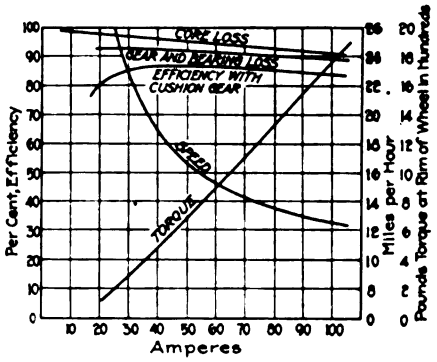


FIG. 4—CHARACTERISTIC CURVE FOR RAILWAY MOTOR WITH CUSHION GEAR

In city service the average load on the motor can be somewhat nearer full load for the reason that the time power is on is a comparatively small proportion of the total time which the motor has to radiate its heat and the gear losses are not, therefore, as large a proportion of the total input as when the stops are infrequent. We will assume a 20-ton car making seven stops per mile and a schedule speed of 10.68 m.p.h. Using the characteristic curves of the motor on 525 volts shown in Fig. 3, we see that were the motor to run 40,000 miles during the year on a system where the distribution efficiency is 80 per cent, the calculated energy required at the bus is 124,000 kw.-hr. This figure drops to 107,300 kw.-hr. if the over-all motor efficiency shown in Fig. 4 is used, thus showing a saving of 16,700 kw.-hr., or about 25 tons of coal per year for each car so operated.

It would seem that what is required is a cushioned gear. Such a gear has not been developed perhaps because operating men have failed to give the subject the consideration which it deserves. It is unnecessary to say that the spring gears now in use on certain locomotives were not employed with the object of conserving power and there is some doubt whether springs form a suitable cushion. Rubber offers much greater possibilities, both as to cost, reliability, and the characteristics which govern the amount of compression produced by a given force.

Summarizing, then, the possibilities which lie along this line, it may be suggested that such a gear would: (1) Have a first cost considerably higher than the ordinary gear. (2) Prolong the life of both pinion and gear. (3) Have a replacement cost involving only the purchase of the rim bearing the teeth. (4) Be more readily substituted for a worn gear. (5) Materially increase the life of armature windings, brush rigging, and all mechanical parts now deteriorated by vibration. (6) Greatly decrease flashing at the commutator. (7) Facilitate a smoother, and therefore more rapid, acceleration and braking of the car. (8) Be quieter in operation. (9) Offer excellent possibilities of saving at least 10 per cent of the present total power input to the car, without the installation of instruments or the keeping of an additional set of records.

It is probably no exaggeration to say that were the blows to the car body not cushioned, transportation by rail would be impossible and the maintenance and depreciation of roadbed, track and rolling stock would be prohibitive. The facts that the railway motor is a very rugged piece of apparatus and that the vibration is not felt by the passengers are perhaps responsible to a great extent for the lack of development along this line which would appear to be well worth while.

Axle Generators for St. Paul Locomotives

One of the features used on the Baldwin-Westinghouse locomotives being built for the heavy passenger service of the Chicago, Milwaukee & St. Paul Railway is the axle-driven generator. This was referred to briefly in the description of these locomotives given in the ELECTRIC RAILWAY JOURNAL of Feb. 2, 1918, page 237. There are two of these generators, mounted and geared to the trailing axle of the guiding trucks in the same way as the ordinary street-car motor. They are used for generating current for the excitation of the fields of the main motors during operation, and they are the source of power for the auxiliary motors used in driving the compressors and blowers.

These generators are regulated for a normal voltage of 100 during the period that they are furnishing current for the auxiliary motors. During the period of regeneration the voltage of the machine varies from 25 to 100 volts.

The generator fields are excited from a storage-battery circuit and the voltage is controlled by a power-operated rheostat automatically controlled during the time the machine furnishes current for the auxiliary motors, and manually controlled by the engineer during the time when the locomotive is regenerating.

It is possible to control a train on a down grade with the power off the line, since these axle-driven generators, separately excited from a storage battery, will furnish current to drive the compressor motors, which furnish the air for the brakes. Due to the heavy grades over which the locomotives have to operate, this is regarded by the railway company as one of the important characteristics of the axle generator. The fact that the auxiliary apparatus on the locomotive is operated at low voltage, which is practically independent of the line current, is also a great advantage.

Causes of Two Accidents

Interstate Commerce Commission Analyzes Reasons in Last Accident Bulletin—Attention Is Called to Disregard for Operating Rules

AT A TIME like this when many new men are being added to their forces by all electric railways, special attention should be given to the prevention of accidents which are caused by disregard of operating rules.

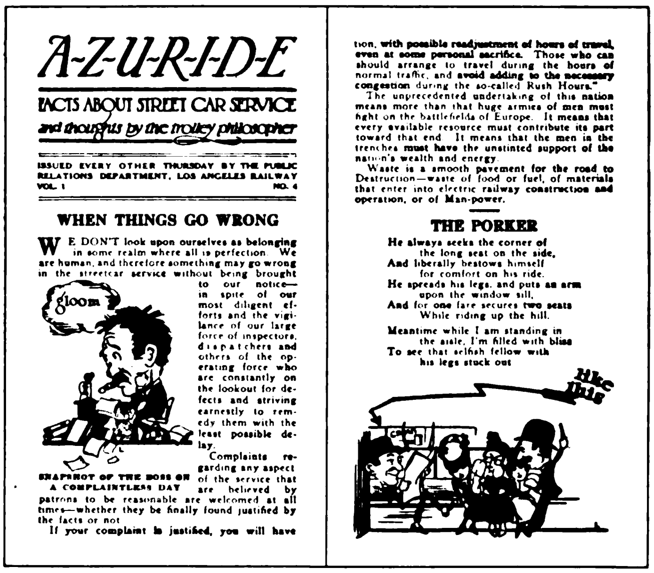
The last report on accidents of the Interstate Commerce Commission gives accounts of two collisions on electric railways last summer. One of these was on the Washington, Baltimore & Annapolis Electric Railway on Sept. 2, the other on the Shore Line Electric Railway in Connecticut on Aug. 13. Both were serious as regards the number of persons injured.

The accident first mentioned was a rear-end collision during a fog, the trains being operated on the train order and time-table system. The report says that the direct cause of the accident was that the crew of the following car did not operate their train under control as required by rule, and a contributing cause was the failure of the conductor on the forward car to provide protection for the rear end of the car, when operating at reduced speed. The commission calls attention to the ineffectiveness of a rule requiring trains in the same direction to keep 1 mile apart when the motorman of the following car has no means of determining the location of the car ahead. The commission also speaks of the protection offered by block signals and the importance of having special rules printed on the timetable or incorporated in a printed book rather than to post them in the form of bulletins in the trainmaster's office.

In the case of the Shore Line Electric Railway, the report says that train movements were governed over this single-track line by schedule and dispatcher's orders and regular trains were run on an hourly schedule, but this schedule was not printed—simply written and posted at the various terminals. The schedules for extra trains also were not printed but written out as occasion required and placed on the bulletin board or attached to the regular schedule as a supplement. The direct cause of the accident, according to the report, was the failure of a motorman and conductor of an extra train running west to wait at a turn-out for the arrival of an opposing train, as required by the running schedule of their trains. The motorman on the extra gave no definite explanation of why he failed to stop at the proper turn-out but said that he was not paying attention and thought he was on a regular train, the schedule of which called for no meet at that point. The conductor seems to have been asleep when the car passed the turn-out at which it should have stopped. The commission criticises the discipline in vogue at the time of the accident and calls attention to the absence of mechanical safeguards for accident prevention.

A-Z-U-R-I-D-E Riding Well

SINCE mid-February the public relations department of the Los Angeles Railway has been issuing fortnightly a cheery car folder entitled *A-Z-U-R-I-D-E*, with the sub-title "Facts about Street Car Service and Thoughts by the Trolley Philosopher." The philosopher in question is George Baker Anderson, who is putting a lot of zest in the work. Wherever possible the message of the railway is put over indirectly in the form of a story, as in the soliloquy of Iva Strong Huntsch on his failure to use the Safety Zone; on the passenger ahead who fumbled for change; of the passenger who also delays cars by failing to pick up his bundles in time, etc. Other pamphlets describe the rush hour, the late-shopper trouble, the woman who gets off backward, the avoidable accident, etc. A particularly good feature is the use of diagrams to show how certain accidents occur in running after a moving car or getting away from one to be caught by another.



A-Z-U-R-I-D-E

FACTS ABOUT STREET CAR SERVICE
and thoughts by the trolley philosopher

ISSUED EVERY OTHER THURSDAY BY THE PUBLIC RELATIONS DEPARTMENT, LOS ANGELES RAILWAY
VOL. 1 NO. 4

WHEN THINGS GO WRONG

WE DON'T look upon ourselves as belonging in some realm where all is perfection. We are human, and therefore something may go wrong in the streetcar service without being brought to our notice—in spite of our most diligent efforts and the vigilance of our large force of inspectors, dispatchers and others of the operating force who are constantly on the lookout for defects and striving earnestly to remedy them with the least possible delay.

Complaints regarding any aspect of the service that are believed by patrons to be reasonable are welcomed at all times—whether they be finally found justified by the facts or not.

If your complaint is justified, you will have

SNAPSHOT OF THE BOSS ON A COMPLAINTLESS DAY

tion, with possible readjustment of hours of travel, even at some personal sacrifice. Those who can should arrange to travel during the hours of normal traffic, and avoid adding to the necessary congestion during the so-called Rush Hours."

The unprecedented undertaking of this nation means more than that huge armies of men must fight on the battlefields of Europe. It means that every available resource must contribute its part toward that end. It means that the men in the trenches must have the unstinted support of the nation's wealth and energy.

Waste is a smooth pavement for the road to Destruction—waste of food or fuel, of materials that enter into electric railway construction and operation, or of Man-power.

THE PORKER

He always seeks the corner of
the long seat on the side,
And liberally bestows himself
for comfort on his ride.
He spreads his legs, and puts an arm
upon the window sill,
And for one fare secures two seats
While riding up the hill.

Meantime while I am standing in
the aisle, I'm filled with bliss
To see that selfish fellow with
his legs stuck out

TYPICAL PAGES FROM A RECENT ISSUE OF *A-Z-U-R-I-D-E*

In addition to the pamphlets, service advertisements, accident warnings, etc., are also run in the newspapers. These announcements explain some rerouting. A particularly clever advertisement on safety was headed:

The ESS Sense of Safety

Slow	*vs.*	Swift
Security	*vs.*	Surgeon
Sanity	*vs.*	Suicide
Safety	*vs.*	Sorrow

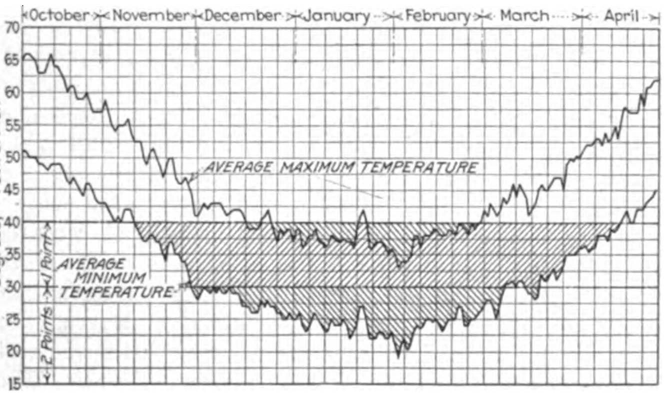
Many commendatory letters and very few complaining ones have been received, indicating that the public is not averse to getting the facts.

Why Not Use Wasted Energy to Help Heat Cars?

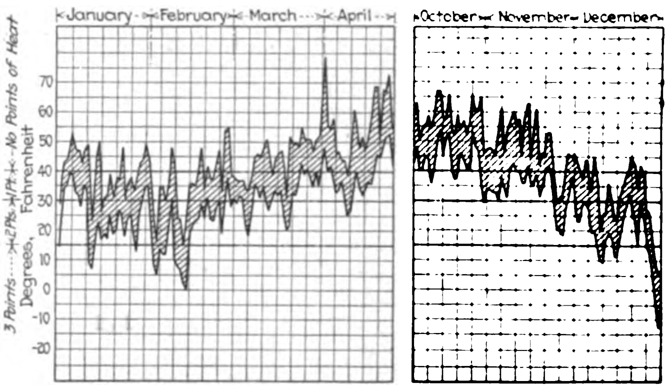
The Possibilties of Utilizing the Heat from Car Motors and Resistance Girds Are Discussed and the Results of some Tests Are Given

IN EXTREMELY cold weather the energy used to heat a car may amount to from one-quarter to one-third of that required to propel it. By a coincidence, this is about the quantity which is dissipated in the core and copper losses of the motors and in the resistance grids of a car in ordinary city service. The utilization of this energy for heating a car has been frequently suggested as a possible economy in car operation but the idea has never been adopted, principally, as we understand it, due to the following reasons: (1) This heat is generated spasmodically and is not readily subjected to control or regulation. (2) Heat is generated only while the car is being propelled, so that some other means to assist in heating is necessary. (3) There is danger of an offensive odor if this heated air is admitted directly to the car body. (4) The additional cost and complication involved in such an installation might offset the economy expected.

Several railway companies have conducted some very extensive tests to determine the amount of heat obtainable from the resistance grids. The results vary widely with the service and with different motormen operating the cars, as would be expected. Table I shows some of these results, selected as representing the average from the test data available. These particular tests were made with wooden elevated cars 47 ft. long by 8 ft. 7 in. wide. The cars were operated in regular passenger service and comparisons are made for cars in the same train.



AVERAGE TEMPERATURES DURING WINTER MONTHS FOR FORTY YEARS IN NEW YORK CITY



TEMPERATURE RANGE DURING WINTER MONTHS OF 1917 IN NEW YORK CITY

This table gives results of heating with electric heaters with one and two points of heat, and taking 8 amp. and 16 amp. respectively, and also the results of heating the cars by means of the grid resistors. Three different arrangements for heating by means of the resistors were tested. In one case the resistors were mounted inside the car so that all heat generated would be used for heating. No passengers were carried in this car but the doors were opened and closed at each stop as in regular operation. In the second and third cases the resistors were mounted under the car and inclosed in a sheet-iron box lined with asbestos. The heat was conducted to the inside of the car through ducts. In one of these two cars the circulation of heat was accelerated by the use of a blower and in the other no artificial means of circulation was employed.

These results indicate that the total heat available from the resistors will give about the same rise in temperature inside the car as two points of heat from the heaters. Without forced circulation of air approximately one-half of this is lost in conducting it to the car. When the hot air is circulated by means of a blower a slightly greater amount of heat is obtained for heating but probably not enough more to pay for the extra expense of installing and maintaining the blower. The cost of boxing-in the resistors and making the necessary connections to the inside of the car varies from $35 to $50 per car, and where a blower is used it is about $100 per car. The box inclosing the resistors should be arranged to be opened during the season when no heat is required and closed off from the car body. On one road making such a test the resistors were kept in service with the box closed during the summer months and no evil results were experienced from overheated resistors.

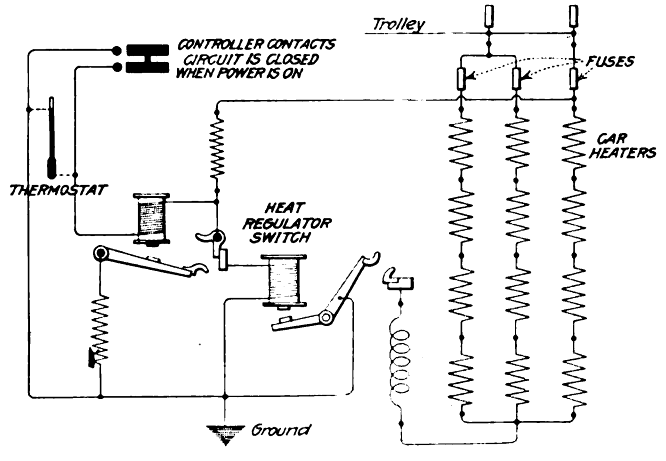
The results from these tests indicate that heat equivalent to that obtained from approximately 4800 watts with electric heaters can be obtained from the resistors. This is equivalent to one point of heat, or about one-third the amount usually available for heating when heaters are used. It would be necessary to supplement such a system with electric heaters to provide this necessary capacity, and to provide for heating the cars while standing or previous to entering service. In order to obtain satisfactory results the heaters should be automatically controlled with thermostatic regulation. In all of the tests conducted there was no noticeable offensive odor.

Efforts of the designers of control apparatus have always been directed toward producing resistors that will run cool. If new equipment was designed with an idea of using the heat available from the resistors better heating results could doubtless be obtained.

In New York City the usual practice is to turn on one point of heat when the outside temperature falls to 40 deg. Fahr., two points when 30 deg. Fahr. is reached and three points for temperatures below 15 deg. Fahr. In order to indicate the relative amount of time that each degree of heating is required in one locality, graphs have been plotted of the average maximum and minimum temperatures during the winter season for New York City during the past forty years. In extending the average values over such a long period the high and low points are smoothed out but average conditions are indicated.

It is seen from these graphs that, if average conditions always obtained, two points of heat would meet most of the requirements, as the lowest average temperature is but 19 deg. Fahr. The heating season extends from Nov. 1 to the middle of April. Between Dec. 1 and the first week in March there would be periods when two points of heat are necessary.

Similar graphs for the maximum and minimum temperatures during the winter months of 1917 are also shown. These indicate that there were 168 days during the year with temperatures of 40 deg. Fahr. and below. During portions of twenty-four days three points of heat were required, two points for portions of sixty-seven days and but one point for portions of seventy-seven days. It is also seen that during the three winter months of December, January and February there were thirty days out of the total of ninety on which temperatures above 40 deg. were recorded, when no heat was required. The full capacity of the heater equipment installed is thus required but a small percentage of the time in this climate.



CONNECTIONS FOR INTERLOCKING HEATER CONTROL WITH CAR CONTROL

Some tests have been made to determine the practicability of utilizing the heat from the main motors for car heating, but the results so far obtained indicate that the cost of the necessary air connection to the motors is high and that the hot air itself must be prevented from entering the car due to liability of offensive odor. In all-steel car construction there is a type of floor used with air space to provide heat insulation. The hot air from the motors could be led through this space and so aid in heating the floor without allowing the air to enter the car.

TABLE I—COMPARISON OF HEAT PRODUCED BY RESISTORS AND HEATERS IN CARS WITH SAME SERVICE

		Average Outside Air, Deg. Fahr.	Average Inside Air, Deg. Fahr.	Average Rise, Deg. Fahr.
Three cars in same train.	Car heated by heaters, 16 amp., 600 volts	39.2	53.5	14.3
Elevated passenger service	Car heated by resistors under car; no blower	39.2	46.2	7.0
	Car heated by resistors inside car	39.2	54.2	15.0
Three cars in same train..	Car heated by heaters, 16 amp., 600 volts	34.7	47	12.3
Elevated passenger service	Car heated by resistors under car; no blower	34.7	40.4	5.7
	Car heated by resistors inside car	34.7	48.3	13.6
Two cars in same train....	Car heated by heaters, 16 amp., 600 volts	45.9	60.3	14.4
Elevated passenger service	Car heated by resistors under car; air circulated by blower, two intakes, two outlets	45.9	55.8	9.9
Three cars in same train..	Car heated by heaters, 16 amp., 600 volts	35.2	48.5	13.3
Elevated passenger service	Car heated by heaters, 8 amp., 600 volts	35.2	43.5	8.3
	Car heated by resistors under car; one intake, one outlet	35.2	42.2	7
Three cars in same train..	Car heated by heaters, 16 amp., 600 volts	33	54	21
Elevated passenger service	Car heated by heaters, 8 amp., 600 volts	33	47	14
	Car heated by resistors under car; air circulated by blower, one intake, two outlets	33	50.3	17.3

During the past winter, owing to the difficulty in obtaining coal, many electric railways cut off the heat entirely from their cars during the rush-hour peaks. The heating current load occurs exclusively in winter when both the power and lighting loads are at their maximum and the top of the peak costs most. With an idea of smoothing out these peaks the Interborough Rapid Transit Company has conducted some tests on car heating by having the heater circuit interlocked with the control connections so that heat will be on only when power for operating the car is off. As already pointed out, in this particular climate the full capacity of the heater equipment is seldom required, and by using this method the reserve capacity of the heater equipment can be turned to good advantage. An accompanying illustration shows a diagram for connecting a standard heat regulator with thermostatic control so that this interlocking is accomplished. With connections made as indicated heating current will be used only when power is not being used for operating the car and then only when the inside car temperature is below that at which heat would be cut off by the thermostat. Where thermostatic regulation is not desired the thermostat with the dotted connections can be omitted.

A comparative test made with the heater connection interlocked as described gave the following results:

Outside temperature	12 deg. Fahr.
Car temperature (heat on when power for operation is off)	40.9 deg. Fahr.
Car temperature with two circuits of heaters on continuously	49 deg. Fahr.

It is thus seen that the average temperature obtained inside the car with such an arrangement for heating was sufficient when the outside temperature was as low as 12 deg. Fahr.

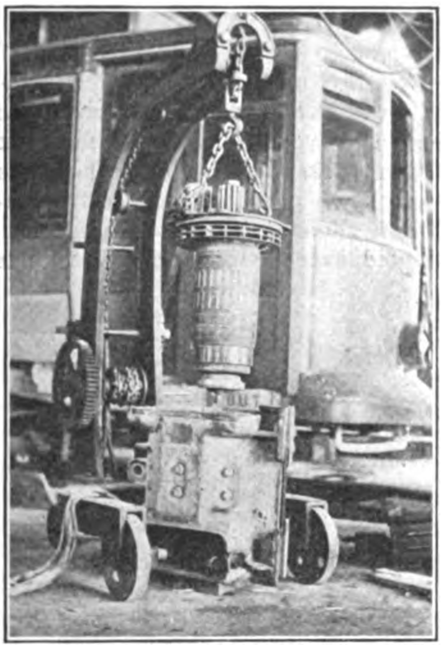
The advantages of this method of interlocking the heater circuits with the car control lie in its ability to smooth out the peaks, for manifestly, if cars are heated to the same temperature in the two cases, the same amount of power will be used.

The GE-258 Motor in the Shop

The Writer Describes the Overhauling Methods Used and the Resulting Cost, Together with Some Operating Troubles Experienced

By Walter Fink
Master Mechanic, Austin (Tex.) Street Railway

FOR a small railway there are many advantages in using the safety car, not the least of which is the ease of handling and maintaining the smaller and more efficient motors that go with it. We are now operating seven safety cars, all of which are equipped with GE-258 motors. The simplicity of handling this motor may be judged from the accompanying illustrations, one of which shows how the armature is lifted out of the frame by means of a Franklin portable crane. The second illustration shows the armature and motor frame set up for inspection in positions which make accessible all parts of the frame, coils, wiring and brushholders.

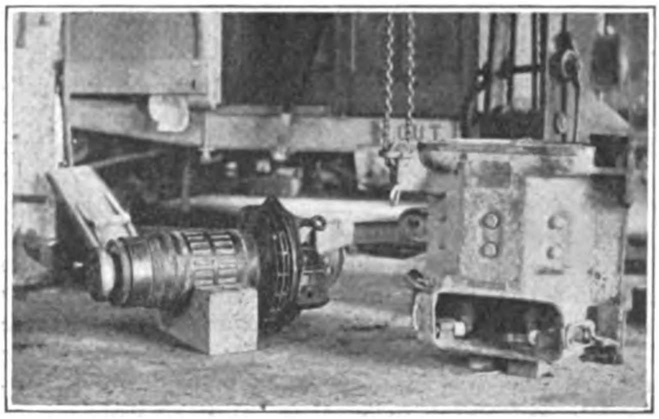

LIFTING AN ARMATURE OUT OF A BOX FRAME MOTOR BY USING A PORTABLE CRANE

The armature is shown resting in a simple block. With the armature in this position, the pinion and ball bearings can be readily removed and replaced.

We remove the motors from the truck by means of a chain block fastened over the trap door of the car. The motors are lowered into the pit after removing the axle bearings and gear case, and then lifted onto the floor of the shop for inspection as shown in the illustrations. This operation might be simplified by means of a suitable pit jack.

The average cost of a recent inspection of our two-motor equipments was $6.90 per car. The cost covered the work of removing and replacing the motors on the truck, removing and replacing the pinion and ball bearings, and thoroughly washing the latter in gasoline. We endeavor to give our motors an inspection every six months, in order to watch the service they are giving. However, it should not be necessary to inspect them oftener than once a year.

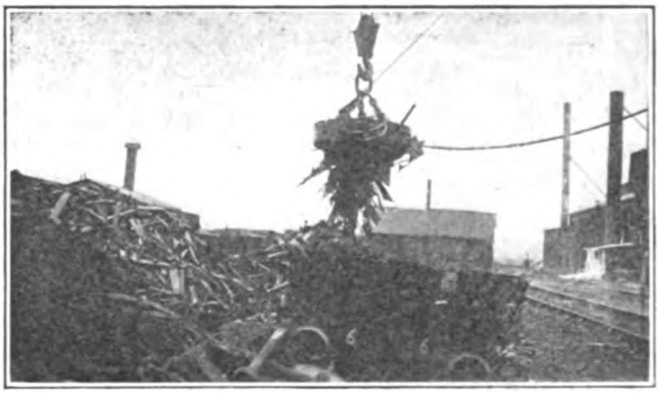
Operating troubles of this motor have proved gratifyingly small. Owing to the small clearance of the motor above the paving, holes were knocked or worn in the gear case, with the consequent intrusion of sand and grit. This condition, of course, is simply a question of better paving or a larger diameter car wheel. The earlier design of the GE-258 motor as used by us was also subject to loosening of the retaining collar which holds the pinion-end bearing. The collar was screwed on and held in place by means of a locking spring. Sometimes the pin of the locking spring broke and fell out, allowing the collar to unscrew. While the pinion prevented the collar from unscrewing entirely the ball bearing would get loose and be subject to accident. Both ourselves and the maker have cured this defect by shrinking instead of screwing the retaining collar onto the shaft.


ARMATURE SUPPORTED BY BLOCK AFFORDS EASY ACCESS FOR INSPECTION

We have not had to rewind a single armature. The first pinion was not removed from these motors until it had given 100,000 miles wear, or three times the wear with older motors on our property. Our experiences in studying the wear of the ball bearings of these motors will be considered in another article.

Lifting Magnets Aid in Loading Cars

A LIFTING magnet conforming in general to the accepted standards of construction but with several improvements has been placed on the market by the Ohio Electric & Controller Company. The height of the magnet is but slightly more than 8 in. and the parts are bolted together with heavy chrome-vanadium steel studs having nuts on top of the case. These nuts are protected by ribs raised from the outer rim, and heat radiating ribs have also been added to the top and bottom. The wires leading to the coil have been securely anchored to the case to prevent them being pulled loose and grounded and they are also provided with flexible protecting armor. The connections are welded directly to the coil. Asbestos insulation is used throughout.


LOADING SCRAP MATERIAL WITH A MILL-TYPE LIFTING MAGNET

Emergency Auto-Ladder Truck Used in San Francisco

Provision Is Made for Carrying All Necessary Tools and Equipment as Well as a Crew of Ten Men

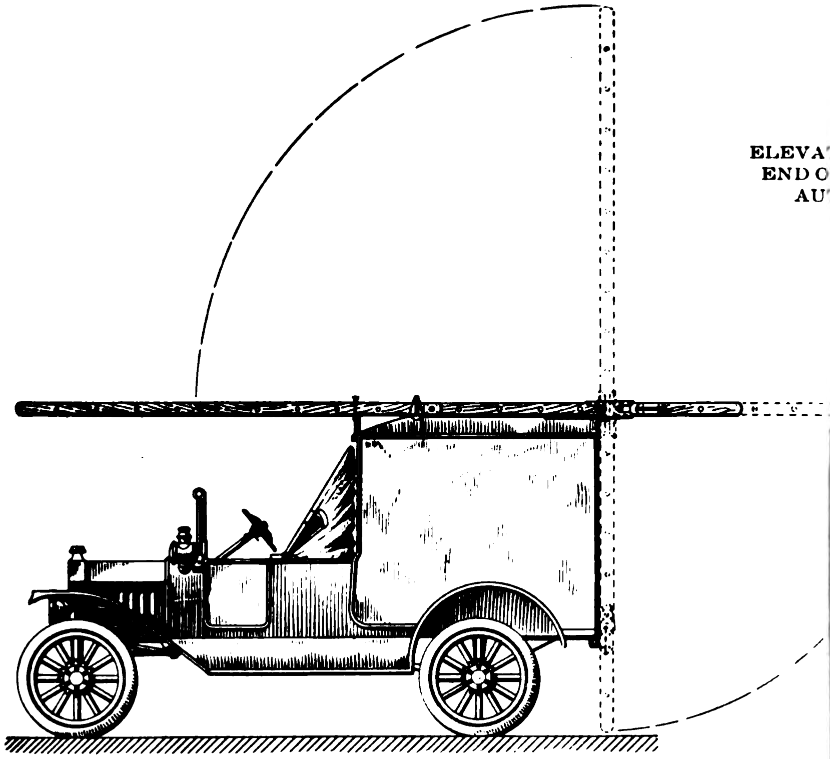
BY S. L. FOSTER
Chief Electrician United Railroads of San Francisco

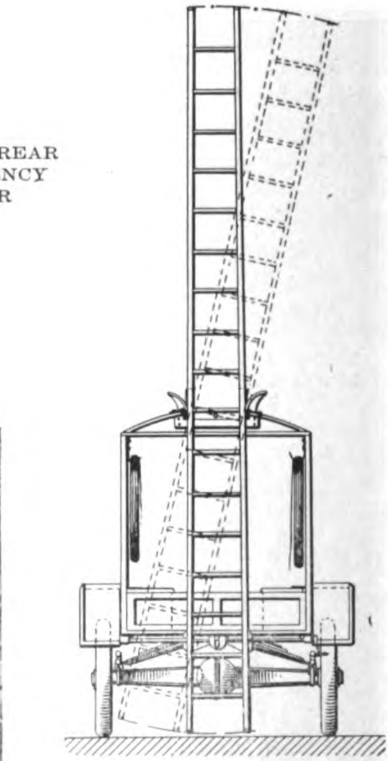
WHILE the use of a hinged ladder on a roofed vehicle for emergency line repairs on electric railroads is not new, the details of its application by the United Railroads of San Francisco may be interesting.

The accompanying illustrations tell the story. The chassis is a six-cylinder Haynes with pneumatic tires. The vehicle was otherwise built in the company's shops.

When on the way to the job the ladder lies flat on the roof with one end flush with the front of the headlights and the other extending slightly over the rear. There is thus little or no danger of this projecting ladder striking other vehicles. The ladder is held firmly in this position both on top and on the sides by a pair of hinged spring hooks until it is desired to raise it to the erect position. Then both hooks are pulled apart by the chauffeur and the ladder is pushed up above them. At the same time the ladder is pushed backward until a pin on either side engages the jaws of the hinges on the rear end of the roof. The parts of the ladder are then so nearly balanced on either side of the hinge that it is readily raised to an erect position by a slight pull on the projecting rear end, and is fastened by a movable latch on the body of the truck below the floor level. If the work to be reached is directly overhead the workman can at once climb the ladder. If the work is located to one side of the center of the truck and at a point inaccessible with the ladder erect, the ladder can be thrown over at an angle to reach beyond the side of the car by means of a worm attached to the latch actuated by the crank seen at the rear of the truck in the illustration with the ladder erect. This is also shown in outline drawing of this truck. The top of the ladder is provided with an iron strap permitting a short extension to be added to it if additional height is needed.

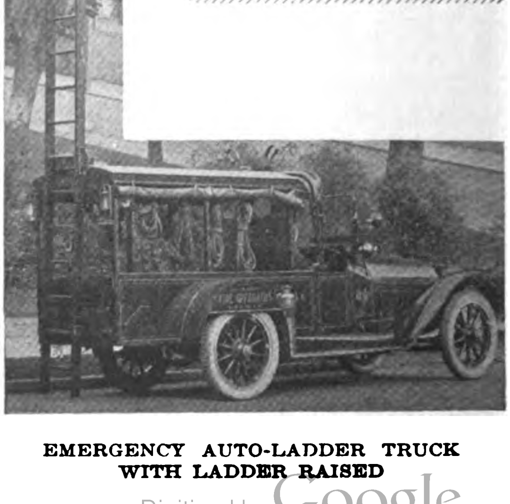
The vehicle is roofed over and provided with side





ELEVATION AND REAR END OF EMERGENCY AUTO-LADDER TRUCK

EMERGENCY AUTO-LADDER TRUCK READY FOR SERVICE



EMERGENCY AUTO-LADDER TRUCK WITH LADDER RAISED storm curtains for use in rainy weather. The "Auxiliary Fire Apparatus" sign, the portable fire extinguisher and the siren secure for it a clear path on the streets and the Haynes six-cylinder equipment provides ample speed to reach the scene of trouble promptly. Forty miles per hour is often exceeded on outside boulevards. The ladder can be raised in five seconds after the auto stops.

In lowering the ladder, it readily drops in between the large hooks and is drawn ahead until the catches on the sides slip behind the hooks as the auto pulls out of the track. These features can be more readily noted in the accompanying illustrations.

This emergency outfit is provided with the usual equipment of ropes, blocks, come-alongs, splicers, tools and materials for making repairs to the overhead wires, electric track switching devices, block signals, sectionalizing switches, lamp clusters, etc. Its long body furnishes ample room for transporting a crew of ten men, the tool and material bins serving for seats. The space between bins is ample for carrying tools for digging, and for raising, moving and straightening poles, and stretchers or extension ladders as the exigencies of the case may require.

The truck is also provided with a drawhead in the rear whereby light vehicles like a trolley-wire two-wheeled gig or a light derrick wagon or ornament-hoisting wagon can be towed to the scene of the trouble.

The truck has an electric self-starter, electric head and tail lights and a speedometer, a spotlight in front, a mirrorscope or safety mirror for watching the rear, and an extension ladder strapped to the ceiling of the roof. Two men usually respond to calls in this machine, although one man could handle most cases.

Shopwomen Doing Good Work in Quaker City

Female Workers in the Philadelphia Rapid Transit Shops Wash and Paint Cars, Wind Armatures, Run Drill Presses, etc.

LIKE all of the other established industries located in munition manufacturing, shipbuilding or other war industry districts, the Philadelphia Rapid Transit Company has been hard hit in the repair shops in the matter of labor. To replace the workers drawn away by the high wages offered in the manufacturing plants new workers have had to be employed. Hence, as about the only existing reserve in this line is female labor the introduction of the shopwoman on a considerable scale has been the result.

The Philadelphia Rapid Transit first began taking on women workers just before the holiday season of 1917. At first they were put at small-coil winding in the large Kensington Avenue and Cumberland Street shops of the company. These shops are not simply operating or maintenance shops, but are the main repair shops. The repairs made here are not of that class sometimes called "running repairs" but correspond rather to the "back shop" work of a steam railroad. To illustrate the variety of work in which the women are engaged, the following may be mentioned: One woman is engaged in the painting of destination and route signs and all other lettered or stencil notices which permit the use of the ordinary paint stencil. Another varnishes the window sashes, shutters, doors and other light parts of the cars. The paint and oil spots are removed from the windows of the cars coming out of the paint shop by women workers. In the machine shop they are now operating drill presses and the company expects to put women workers on lathe and shaper work as soon as opportunity offers. In the winding department the greatest number of female workers are to be found. Practically all of the coil winding and taping is done by girls as well as a large amount of armature winding including the winding of armatures of the elevated car motors.

WOMEN EXCEL IN PREPARING CARS FOR THE PAINT SHOP

In one type of work, women workers seem particularly to excel. This is in scrubbing and cleaning car interiors preparatory to painting and varnishing. This kind of labor was always shunned by the men and it was difficult to employ men who would do this work in a satisfactory manner. Women, however, take to the work readily.

In all the work in which they have been tried out so far they have given satisfactory service, doing not only better work, but more of it than the men and boy workers formerly employed. About eighty-five women and girls are employed in the shops at present. Practically all the work is on a piece basis and conditions are very similar to those in a manufacturing plant. The working day is nine and three-quarter hours in length except Saturday on which it is five and one-quarter hours. Thus the weekly work time is fifty-four hours.

THE WORKING CONDITIONS ARE THE SAME AS FOR MEN

The women are paid the same rate as the men for similar classes of work and are in general put on the same working basis. Special facilities, of course, have been provided for them in the way of rest and wash rooms. A standard working uniform for the female worker has not been adopted, but suitable "all-over suits" costing $1.50 are bought by the workers at local department stores. The piece rates at which they are paid would, in terms of hourly rates, range from 27 cents to 33 cents per hour. The workers, depending on their experience and the kind of work, make average weekly wages ranging from $16 to $22, while some of the more proficient, of course, exceed these averages. It is noticeable that the younger women prefer the winding and machine shop work, while the older ones, who would normally do scrubbing in hotels or office buildings, apply for the car cleaning work. So far the company has had no difficulty in getting women workers as fast as needed to fill gaps in the shop force.

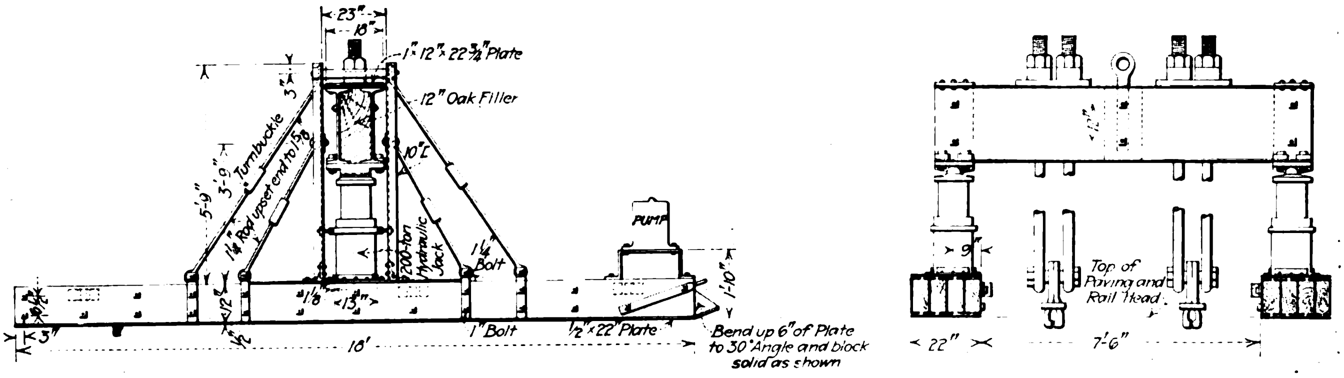
The women are proving steady and willing workers, asking for "time off" no oftener than the men. They learn very quickly. Probably one of their greatest faults is the tendency to become discouraged if they do not master completely a new operation the first day they work on it. In general, however, their work has been very satisfactory and the company is gradually increasing both the number employed and the diversity of the employment. Time is kept by their signing "in" and "out" with the gateman at the shop entrance.

A Track Puller for Paved Streets

A Machine Used By the Los Angeles Railway Makes Rapid Removal of Tracks from Paved Streets Possible

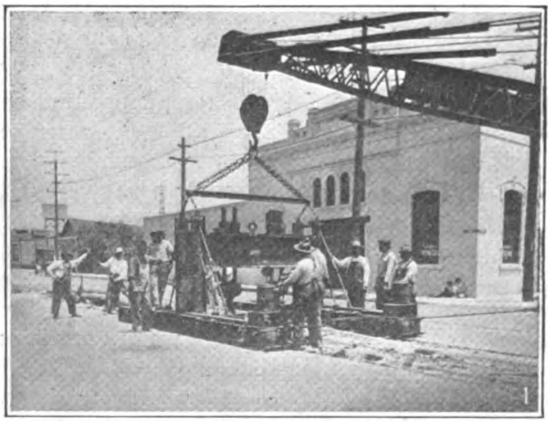
By THOMAS W. BULPIN
Chief Engineer, Los Angeles Railway

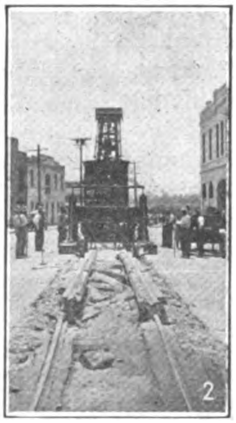
THE standard type of railway construction for paved streets for urban and interurban lines, usually consists of high groove or girder rail paved with cement concrete and often with a cement grouted base or ballast. The placing of these tracks in city streets is sufficiently difficult to tax the ingenuity of most construction men when present traffic and service conditions are considered, and the officials of the roads have been looking forward with real apprehension to the time when these same tracks must come out.



DETAILS OF TRACK PULLER

About eighteen months ago our company constructed approximately 700 ft. of double track in paved streets. The rail was P. S. Co. No. 292 section, 7 in. high and weighing 116 lb. to the yard. This rail was laid on 6-in. x 8-in. x 6-ft. redwood ties spaced 20-in. centers. These ties were placed on a 6-in. crushed rock, cement grouted ballast and the entire rail paved in with cement concrete, making a solid concrete pavement 19 in. in thickness. This particular portion of track was part of a line recently abandoned by the company, and under the abandonment proceedings was required to be removed within a time limit.





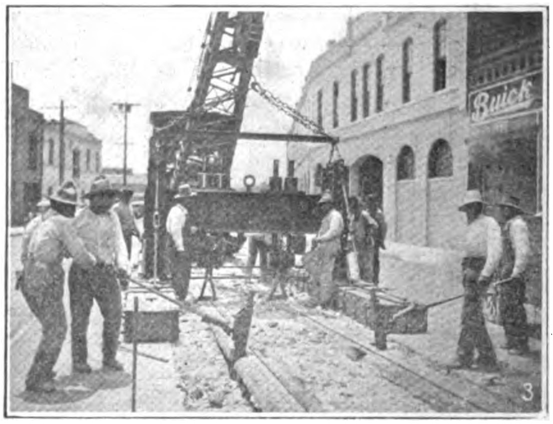


FIG. 1—PULLER IN POSITION READY TO PULL TRACK. FIG. 2—CONDITION OF TRACKS AND PAVING AFTER PULLING THE TRACK. FIG. 3—HAND JACKS USED TO REMOVE BROKEN CONCRETE

To remove these tracks the company designed and constructed a machine which consists of two 200-ton hydraulic jacks, mounted on horizontal beams which straddle the track as shown in the accompanying illustrations. These beams prevent the breaking of the pavement outside of the railway strip. The rail tongs are made to fit the special section of rail upon which work is being done. Although our practice has shown that there can be considerable leeway in this regard, the jacks are placed directly under the beam from which the rail tongs are suspended.

The preliminary work necessary consists of cutting out sufficient paving along the rail to permit of the placing of the tongs under the ball of the rail. This must be done at intervals of 10 ft. to 20 ft., depending upon the construction of the track to be pulled. The jacks are started and a lift of from 6 in. to 9 in. is sufficient to pull the rails entirely free from the ties and thoroughly break the concrete within the railway strip. This operation, including the moving of the machine, requires from four to six minutes.

The machine is moved along the track with an electrically operated Brown-Hoist crane, the operation consisting of raising the puller a few inches above the pavement and moving it entirely suspended to the next position.

We have found it desirable to follow immediately behind the machine with two 15-ton hand jacks, as this facilitates the removal of concrete and paving blocks.

As yet we have prepared no comparative estimates of cost, but we find that we are able to pull out about 120 lineal feet of track per hour. We have estimated that with this machine and six men, we can remove more track than we could with 200 men under the ordinary method of sledging and gadding.

Pacific Electric Adopts Flood-Control Measures

Shifting of Stream Beds Furnishes Difficult Problems for the Way Department of This California Company

By Clifford A. Elliott

Cost Engineer, Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

BETWEEN 1905 and 1910 the Pacific Electric Railway in southern California completed some of its most important double-track lines. These ran through localities where it was necessary to construct many pile trestle bridges across streams and in some instances across dry washes or old channels which are often flooded by the heavy spring rains.

The bridges were located as nearly as possible at right angles to the streams, as these flowed at the time of construction; in many cases, however, the shallow and sand-shifting beds have caused the main channels to change from season to season. The flood control boards and the various county engineers are now endeavoring to remedy this situation.

SINGLE-TRACK TRESTLE WITH STEEL SPAN BRIDGE ACROSS ARROYO SECO

SINGLE-TRACK STEEL BRIDGE UNDER CONSTRUCTION ACROSS THE SANTA ANA RIVER

Frequently six to eight bridge bents have been damaged or carried away by the uncontrollable flood waters, and in one or two instances that portion of the double-track pile trestle nearest the stream has been entirely carried away. This necessitates temporary repairs being made immediately to keep the bridge in safe condition for operation until permanent repairs or reconstruction can be undertaken.

In reconstructing these bridges the timber structure is replaced with steel-span type where possible. In the interest of economical reconstruction, and to minimize future maintenance expense, either the outbound or inbound double-track trestle is sometimes abandoned, depending upon which trestle is most in need of general repairs, and only a single-track bridge is left over the stream. In such reconstruction, steel spans are placed over the main channel only, the balance of the structure being reconstructed as a timber trestle. At the same time it is strengthened to provide for handling the increased heavy freight and passenger traffic and the increased weight of added equipment.

The average length of such steel spans is from 50 to 100 ft., and they are placed either on concrete footings, concrete piers or steel supports. Usually two or three steel spans will clear the average channel. Where practicable, and in the interest of economy, efforts are made to obtain in the open market second-hand steel spans which have proved too light for the latest type of heavy locomotives now in use on steam roads but which are desirable for interurban electric lines.

When altering the bridges in the manner outlined, the double track at each end of the bridge is connected by a switch layout for single-track operation, and an all-electric automatic block signal layout is installed for operating the single track over the bridge. Four signals in all are required for the operation of the single track over the bridge, one being a distant signal and one a home signal. Small back-up, two-position light signals are also placed. One set of signals controls operation from the inbound track onto the single track, while the other controls similar operation onto the outbound track.

This program of improvement in the interest of flood control, as initiated by the company some two years ago, is approved by various flood control and drainage committees, while the State Railroad Commission is favorable to such steps as the company has taken to protect the interests of the outsider as well as that of the company.

The accompanying illustrations show new steel bridges recently installed in reconstruction work on the company's lines. One spans the Arroyo Seco on the South Pasadena line near the famous Cawston Ostrich Farm. This bridge, as reconstructed, is 761 ft. long and 40 ft. high, and consists of 593 ft. of single-track standard frame trestle, two 60-ft. deck-plate steel girder spans, and two 24-ft. deck-plate girders on steel towers, a total of 168 ft. of single-track steel span structure. One view shows a steel bridge on the company's San Bernardino-Redlands line, spanning the Santa Ana River. Three 100-ft. single-track combination truss spans on cylinder piers were replaced with three common standard 100-ft. single-track pin-connected truss spans on concrete piers.

As mentioned in a recent issue of *Revue Générale de l'Electricité*, the Swiss Association of Electricians has appointed a committee to study, in conjunction with the Swiss Society for the Gas and Water Industries and the Union of Secondary Railway Lines, the subject of electrolytic corrosion of underground conductors by return currents. The association has just approved two reports from its general secretary, one on the present status of the corrosion question, the other on some cases of corrosion in Switzerland.

More Than Recommendation Needed

Frank Putnam, of Milwaukee, in Open Letter to Messrs. Elmquist and Eastman, Urges Federal Action Rather Than Suggestion

FRANK PUTNAM, of the Milwaukee Electric Railway & Light Company, has addresed an open letter to Charles E. Elmquist, president National Association of Railway & Utility Commissioners, and to Joseph B. Eastman, chairman of the special war committee of the association. The subject of Mr. Putnam's letter is the communication which these gentlemen sent to the President under date of July 30 and mentioned on page 208 of the issue of this paper for Aug. 3, urging the appointment of a federal administrator with "power of recommendation, advice or request to the state and municipal authorities" on electric railway rates. Mr. Putnam's letter follows:

I have read a copy of your letter, addressed to the President, suggesting the appointment of a National Administrator, or board of three, "with power of recommendation, advice or request to the state and municipal authorities," as a means of establishing, for the period of the war, street and electric railway rates adequate to assure continued and efficient operation of these railways.

It is apparent to me, as a close student of the American street railway business for several years past, that your letter to the President fails to present to him certain facts which he and others who may have to deal with your proposition should know. In order to get these missing facts to the President and his advisers, and in order to give you opportunity to answer any statements I shall make, I write this open letter to you, sending copies to the President and to others by whom he may be guided, and to the press.

The facts to which I call particular attention are these:

First: The street railway business in the United States, as a whole, is at the verge of bankruptcy. This fact has been painfully apparent to men engaged in the business during the past two years, although many members of the state public service commissions have been slow to see it. It is brilliantly and truthfully made known to the general public for the first time in an article published in the current number of *Collier's Weekly*.

Second: The street railway business of the United States is in this condition chiefly because state and municipal regulation has strangled it by fixing fares too low to permit the business either to pay good wages, or to supply adequate good service, keeping pace with increasing public requirements, or to pay investors a fair return on their savings engaged in the industry.

Third: Your proposition that the suggested National Administrator, or board of three, should be given only advisory powers, and that war relief of revenue for street and electric railways shall remain as now subject to determination by state and municipal authorities, affords no guaranty that these railways will get the relief they desperately need and which public welfare requires that they shall obtain, in time to make them more efficient contributors to the nation's war program, or to save their investors from further vast, unmerited losses. Your suggestion that the National Administrator's requests for relief of street and electric railways during the war would be "almost uniformly" granted by state and municipal authorities must be measured against the last ten years' record of state and municipal authorities. What is that record? They have imposed rate and service limitations which have brought the industry to the verge of bankruptcy. They have condemned street railway employees to low wages and long hours. They have subjected street railway investors to the unjust loss of millions of dollars legitimately invested to serve the public. They have compelled the public to put up with service which in kind and quantity was and is grossly inadequate to public needs.

Your statement that the state commissions "have with few exceptions acted favorably upon meritorious applications for rate increases for the war period"; that the state commissions are "keenly alive to the emergency which confronts these utilities, and have proved a readiness to act promptly in giving necessary relief"; and your expressed opinion that "no joint complaint could be made, by utilities or others, as to the action taken by state commissions in dealing with these matters during the war" is, I must believe, a sincere expression of your belief. I must add, however, that it challenges squarely the judgment of ninety-nine of every 100 men actively engaged in the street and electric railway business during the war period.

Fourth: Your suggestion that the National Administrator should depend upon the state commissions "for all purposes of inquiry, investigation, ascertainment and report of facts, and co-operation in recommendations" for revenue relief, and that the granting or withholding of such relief should continue to be as now at the option of the state commissions, impresses me as being substantially a proposition to leave the whole issue of relief in the hands of the local agencies whose policies during the past ten years have chiefly created the present alarming condition.

Fifth: It is the firm conviction of the ablest and most public-spirited men in the street railway business that if revenue relief under war conditions is to reach this business in time to make it a fully efficient factor in winning the war, such relief must be granted by the federal government under its general war powers. And these men believe that if the federal government assumes to act in the premises at all, it should prepare to act with the promptness and authority requisite to save the industry from further imminent loss of efficiency and from further ruinous depreciation of its plant and business values.

Sixth: Your contention that street railway fares fixed in franchise ordinances enacted years ago and now inadequate, should not be changed to save the solvency and efficiency of the street railways, except after "the merits and equities of the particular situation" have been "weighed and determined by those most competent to know of them and to deal with them," impresses me as being substantially an argument that the federal government shall waive the nation's war need for efficient street railway service and shall stand aside helplessly while the local street railway baiters proceed with their hitherto politically profitable occupation, and while fee-hungry lawyers continue to involve the whole subject in money, time and service-wasting technicalities.

Your assumption that street railway franchises are "often priceless" amazes me, in view of the fact that the state commissions were created to squeeze all "franchise values" out of street railway rates and revenues and have done it most thoroughly. You must be aware, although you seem for the moment to have forgotten it, that street railway franchises—otherwise than as permits to engage in business for stated or indeterminate periods (and to do so under state and municipal regulation of rates, earnings, service accounting, capitalization, etc.)—have for years past possessed neither earning nor sale value to the street railway companies. Indeed, most of the franchises, because of the costly requirements which they impose upon the companies, are now listed not as "priceless" assets, but as grim liabilities.

In the large majority of the states whose public service commissions regulate the issuance and sale of street railway securities, none, as you are aware, can be issued upon franchise values. Securities issued upon franchise values in the years prior to state regulation, when such values were legitimately sold by cities and legitimately bought by companies, have with few if any exceptions been disregarded by state commissions in appraising the values upon which the companies are permitted to entertain the hope, in recent years illusory, of earning a fair yearly net income. It has happened, as you must know, that in some instances companies which purchased franchises then believed to possess large value, and which companies during subsequent years paid millions of dollars of franchise-value taxes (over and above their fair share of property and business taxes), suffered the confiscation of such franchise values without a penny of compensation, in the laws creating the state commissions.

I as strongly as any man oppose the unnecessary extension of federal authority over new areas of American business. I as strongly as any man believe in the theory of local self-government and in the local regulation of businesses which partake of a public character. I almost alone among street railway men believe that in times of peace the adoption by street railways of a vigorous merchandising policy would quickly silence professional agitators against the business and procure just treatment from state and municipal authorities. I have that firm faith in the American public's instinct for fair play and in the power of an aroused public opinion to enforce justice.

But we are at war, and in the words of the late President Cleveland, "It is a condition and not a theory which confronts us" in the street railway business of the United States. The condition is so grave, both financially and industrially, that it is an appreciable menace to the nation's war efficiency. It is a condition which the leaders of the industry believe can be effectively remedied only by prompt and forceful federal intervention. These men see no hope in your proposal to refer this condition back for treatment by the agencies which produced it.

There may be some question as to the federal government's legal right so to intervene. There is no question, in the minds of men best qualified to offer counsel, as to the federal government's power and its duty to intervene.

Finally—and you must pardon me for writing with entire candor—I am impressed with the probability that your want of such complete and exact knowledge of street railway needs as can be obtained only by sharing the labors and responsibilities of the business, together with a not unnatural desire on your part to retain the prerogatives and perquisites of your official positions, has perhaps led you to underrate the importance of making the street railway systems of the country fully efficient for war service and to overrate the importance of retaining in public control of the business those state and municipal agencies whose narrow, unbusinesslike, illiberal and too often politically-motivated policies are chiefly responsible for the present street railway crisis.

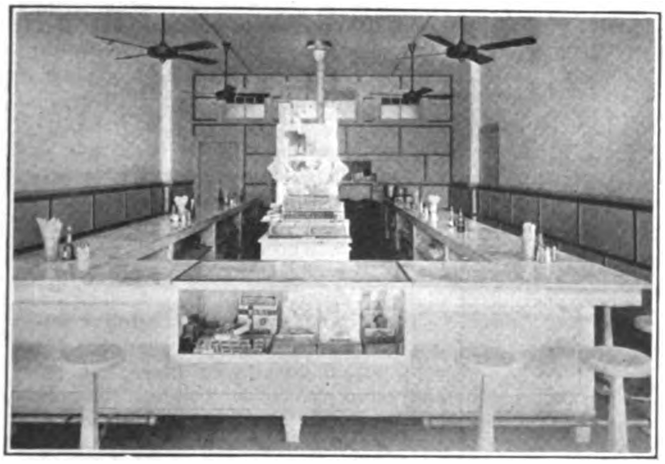
Mr. McAdoo Denies that Government Plans Railroad Electrification

IN AN INTERVIEW which Mr. McAdoo gave to the daily newspaper men on Aug. 12, following his two months absence from Washington, he was quoted in some of the papers as suggesting that probably electrification would be actually undertaken while the government has control of the railroads and that the problem would be attacked at the most favorable points in the country where the static value of unused water powers was most obvious and the cost of changing from steam to electricity was comparatively slight.

When this statement was called to the attention of Mr. McAdoo by the Washington correspondent of the ELECTRIC RAILWAY JOURNAL, it was stated that while Mr. McAdoo had briefly discussed the conservation possibilities of unused water powers with the newspaper men and the use of such power for railway operation, he had not forecast the possibilities of such electrification while the railroads were under government control.

Railway Restaurant Opened at Fort Worth

TO CONSERVE the health of its men and to save them money in these days of skyrocket prices, the Northern Texas Traction Company, Fort Worth, Tex., opened a high-grade restaurant near its East Front carhouse. The fittings are extremely durable, neat and handsome. The counters are topped with marble, and the twenty-eight stools are finished in porcelain. It is planned to sell to the men at discount, while outsiders who wish to do so can use the restaurant by paying full prices. The cost of outfitting totaled $3,000.



ATTRACTIVE INTERIOR OF NEW FORT WORTH RESTAURANT

Mitigating Inductive Interference

Leading Telephone Engineer Summarizes the Situation With Respect to Communication Disturbances Caused by Alternating Current Railways

IN A comprehensive paper read before the Philadelphia section of the American Institute of Electrical Engineers, H. S. Warren, electrical engineer American Telephone & Telegraph Company, gave details of the measures which have been taken on all of the principal railroad electrifications to minimize interference with telephone and telegraph communication. The paper has now been published by the Institute.

After outlining the fundamental principles by virtue of which interference with communication of circuits is caused, Mr. Warren said that alternating-current electrifications cause disturbances principally by electro-magnetic induction. The reasons for these disturbances are: (1) The railroad trolley current is large; (2) it is all residual current, and (3) the railway circuit from its nature and use is more subject to abnormal conditions, such as short-circuits, than ordinary power transmission lines.

Some of the ways in which disturbances manifest themselves in the telephone and telegraph plant may be classified as follows: (1) Interference with operation, such as interruption of service, false bell ringing, noise and interference with telegraph signals. (2) Physical injury to plant involving fire hazard and magnetization of loading coils. (3) Hazard to employees and to telephone using public including danger of electric shock and acoustic shock.

Among precautionary measures on the part of the communication companies are: Avoidance of "parallels," use of neutralizing transformers and drainage coils, sectionalization of telephone circuit, use of shielding conductor, resonant circuits and relay sets, balancing and insulation of telephone circuits and "biasing" of bells. The railway companies have used the double trolley, frequent power supply stations, sectionalization of trolley system, opposing polarities, application of balancing and booster transformers, etc.

After giving specific instances of the situation on the New York, New Haven & Hartford Railroad, the Norfolk & Western Railway and the Pennsylvania Railroad (Philadelphia-Paoli line), Mr. Warren gave these conclusions: Wherever alternating railway current can be kept sufficiently within control, except under abnormal conditions, means are now known whereby substantial interference with neighboring communication lines can be avoided, although the application of such means to the extent necessary may involve considerable expense. Even under abnormal conditions the interference can be greatly reduced by the application of suitable measures, but in some cases there still remains the problem of obtaining a sufficient reduction without incurring excessive cost. It is important in each electrification project that the railroad company and the communication company co-operate in determining what interference preventive measures shall be adopted. Each electrification requires a special study, as the best measures may be different in different cases. Railroad companies and electrical manufacturers have co-operated heartily with the telephone companies in searching for a satisfactory solution of this problem, a work which is still in progress.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

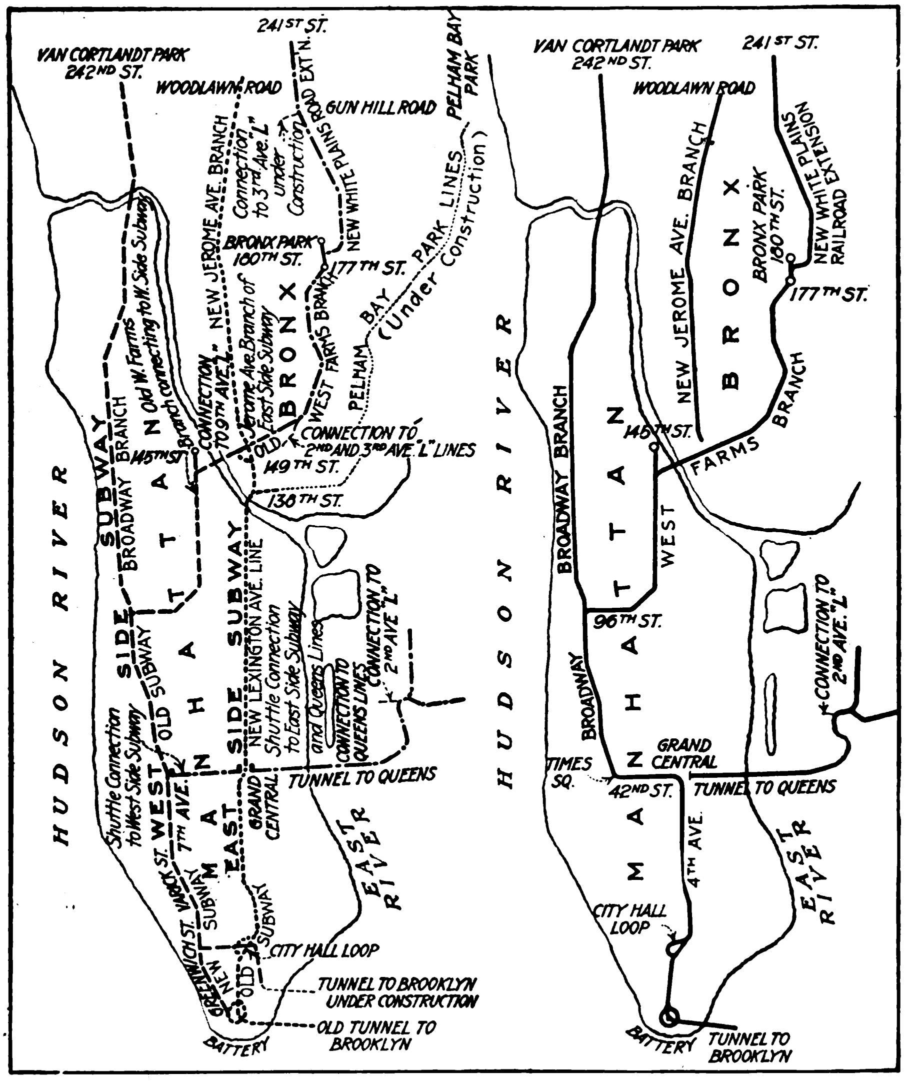
"H" System Troubles

Confusion Follows Initial Separate Operation of New York's East and West Side Lines

For about two weeks the subway system operated by the Interborough Rapid Transit Company, in New York City has been divided into two sections, the east side and the west side systems. The completion of the Seventh Avenue line and the Lexington Avenue line made this division possible. The principle underlying the present plan is that the streams of travel from the lower part of Manhattan Island to the west side and Washington Heights section and to the Bronx section, respectively, shall be separated as much as possible so as to avoid congestion.

Provision for connection between the two main lines is made by utilizing the section of the original subway on Forty-second Street between Times Square and Grand Central Terminal as a shuttle line.

Shuttle service on Forty-second Street was attempted on Aug. 1, as stated in the issue of the ELECTRIC RAILWAY JOURNAL for Aug. 3, page 208, but owing to the fact that the construction of the transfer stations was not complete, and further because the public seemed not to be fully informed as to the *modus operandi*, the congestion was so great that the service had to be discontinued temporarily. The stations are now in process of modification, and shuttle service will be resumed as soon as practicable.


241ST ST.
VAN CORTLANDT PARK 242ND ST.
WOODLAWN ROAD
GUN HILL ROAD
PELHAM BAY PARK
NEW WHITE PLAINS ROAD EXT N.
Connection to 3rd Ave. "L" under Construction
NEW JEROME AVE. BRANCH
BRONX PARK 160TH ST.
177TH ST.
PELHAM BAY PARK LINES (Under Construction)
WEST FARMS BRANCH
BRONX
Old W. Farms Branch connecting to W. Side Subway
CONNECTION TO 9TH AVE. "L"
Jerome Ave. Branch of East Side Subway
OLD
CONNECTION TO 2ND AND 3RD AVE. "L" LINES
149TH ST.
145TH ST.
138TH ST.
BROADWAY BRANCH
WEST SIDE SUBWAY
EAST SIDE SUBWAY
MANHATTAN
OLD SUBWAY
NEW LEXINGTON AVE. LINE
Shuttle Connection to East Side Subway
and Queens Lines
CONNECTION TO QUEENS LINES
CONNECTION TO 2ND AVE "L"
Shuttle Connection to West Side Subway
7TH AVE.
GRAND CENTRAL
TUNNEL TO QUEENS
VARICK ST.
GREENWICH ST.
SUBWAY
NEW
OLD
CITY HALL LOOP
TUNNEL TO BROOKLYN UNDER CONSTRUCTION
OLD TUNNEL TO BROOKLYN
BATTERY
HUDSON RIVER
EAST RIVER
VAN CORTLANDT PARK 242ND ST.
241ST ST.
WOODLAWN ROAD
BROADWAY BRANCH
NEW JEROME AVE. BRANCH
BRONX
BRONX PARK 180TH ST.
NEW WHITE PLAINS RAILROAD EXTENSION
177TH ST.
145TH ST.
FARMS
BRANCH
WEST
96TH ST.
BROADWAY
TIMES SQ.
42ND ST.
GRAND CENTRAL
TUNNEL TO QUEENS
CONNECTION TO 2ND AVE. "L"
4TH AVE.
CITY HALL LOOP
BATTERY
TUNNEL TO BROOKLYN
HUDSON RIVER
EAST RIVER
MANHATTAN

New System Old System

PRESENT AND FORMER INTERBOROUGH SUBWAY SYSTEMS IN NEW YORK CITY

At a hearing before the Public Service Commission on Aug. 15, Frank Hedley, vice-president and general manager Interborough Rapid Transit Company, said that the difficulties experienced in the operation of the new system were due to the newness of the mechanism, especially the intricate signaling apparatus, to lack of proper terminal facilities and to shortage of men. He stated that more than 500 men are still needed to handle the system properly in spite of the addition of 500 women to the company's payroll.

The accompanying outline maps of the Interborough subway system show the several component parts and the relations of these to each other. At the left is the entire system as completed to date, with further connections now under construction represented by light lines. On the right is the system before the Seventh Avenue and the Lexington Avenue lines were opened. The west side lines in the left-hand map are indicated by dash lines, the east side lines by dotted lines. Those portions of the system which are common to both east and west side are indicated by dot-and-dash lines.

From the left-hand map it is evident that, so far as Manhattan island itself is concerned, it should be possible for a large proportion of the patrons of the road employed in the southern section of the island and living in the northern section, either east side or west side, to be carried between their homes and places of business by a direct line.

There will be no direct service to the Borough of Queens on Long Island from either east side or west side lines, but passengers who desire to go to Queens can do so by using the present tunnel from Grand Central Terminal under the East River. Unfortunately, the tunnel connecting the west side line or Seventh Avenue line with Brooklyn is not yet completed, and for the present it will be necessary for west side passengers who desire to go to Brooklyn to use the shuttle or walk a short distance down town.

The whole system of rapid transit in New York is rapidly approaching completion, but its progress has been hampered by war conditions. The policy of the Public Service Commission and the operating company has been to put each section into service as soon as available. The difficulty with the Forty-second Street shuttle service was, however, much greater than anticipated, but when the transfer stations have been permanently improved and the traffic diverted to its normal channels the "H" plan should work out smoothly.

President Mitten's Talk

Head of Philadelphia Rapid Transit Company States Frankly How the Company Is Meeting War Problems

In announcing in *The Trainman* for Aug. 6 the increase in wages of the employees of the Philadelphia (Pa.) Rapid Transit Company to which reference was made in the ELECTRIC RAILWAY JOURNAL for Aug. 10, page 251, the company printed the talk made by T. E. Mitten, president, to members of the co-operative committee, division superintendents and heads of departments at a special meeting called on Aug. 4 to consider war service conditions. Mr. Mitten said that the company was carrying 250,000 passengers more a day than last year. He said in part:

One Hundred Cars Bought

"We have bought 100 cars for Hog Island and have just arranged to buy an additional thirty for the lines serving Chester, Essington and Lester; also 110 cars of similar type for League Island. This gives us a total of 240 new cars, and as their capacity is 50 per cent greater than the cars we now own, these 240 cars supply additional capacity equal to 360 of our present cars. Added to this, 100 open cars now being rebuilt at our shops and equipped with new trucks gives us an added capacity equal to 460 of our present cars, thus adding more than 20 per cent to the capacity of our equipment.

"Our shops are turning out fifty near-side cars per week, completely overhauled and repainted. We have contracted with the J. G. Brill Company to overhaul fifteen of the present pay-within cars per week, rewiring, repiping and repainting, and putting in manually operated doors.

"Mr. Senter (superintendent of rolling stock of the company) estimates that this, when done, will increase the efficiency of our present equipment at least 5 per cent, so that the total increased capacity of our equipment will be at least 25 per cent over that which we now have; this will give us sufficient capacity properly to care for the war workers in other plants throughout the city.

$2,000,000 for Track and Cars

"The cost of this work on track and cars now owned will run over $2,000,000. The cost of the 240 new cars, over $13,000 each, double the pre-war cost, will with the new power and other things incident to their operation require over $4,000,000 additional. We are arranging to borrow $4,000,000 from the government, and the $2,000,000 required to put our track and equipment in shape we have saved up in our renewal fund during the past few years of this management.

"Since the adoption of the co-operative plan by the Stotesbury management in 1911, the maximum wage has been increased from 23 cents to 43 cents an hour and accidents reduced almost 50 per cent. Since the shake-up occasioned by the draft almost 40 per cent of our force are of new and younger element who are in need of greater experience.

"As to those who may be subject to draft, but too old or otherwise unfit for service in the trenches, we shall, because we are such an essential industry, make urgent representations to the government requesting that such men be permitted to remain with us and 'do their bit' by helping to carry government workers to and from their places of employment.

"Conditions in Philadelphia have been misrepresented to the War Labor Board, who, however, seemingly have not felt that there was any reason for their taking jurisdiction. It is, however, a reflection upon us that there should be any question of our ability and willingness to handle the affairs of this company without troubling the War Labor Board, and what I now propose is a move toward relieving their minds of any doubt as to conditions here.

"We signify our willingness to re-employ any or all of the men who, after voluntarily leaving the service, did not report for duty on May 29 last, as required by the company, and that we will permit them to remain in the service without prejudice and during good behavior at the same rate of pay as they would have received had they continued uninterruptedly with the company.

"Now as to the button question, we all remember the condition of things in 1911 when some of us were wearing the Keystone button, the Amalgamated button and the button of the Prattites. Fights on duty were an ordinary occurrence. Accidents by collision of cars increased in number; in fact, the men were so busy trying to convert each other that they had little time left to devote to the performance of their duty.

"We still have the Keystone, the Amalgamated and the Prattites, and, therefore, cannot consider going back to the old condition of 'bedlam let loose' by allowing organization buttons to be worn while on duty—so we will have none of that.

"The meat of the button question elsewhere is that it denotes the willingness of the company to permit men to belong to the union. Well, we do that in an unqualified way without there being any need of recourse to the button to prove it, and in order to reassure the War Labor Board in this regard I suggest that we now reaffirm the principles of the co-operative plan, as adopted by the Stotesbury management in 1911, namely, that employees of the company may join and belong to any union or other organization without interference of any kind, but in order that the service to the public and to the war workers be safe and satisfactory, the rules of the company must be obeyed."

Electric Railway Executives of the Country to Meet in New York on Aug. 22

The executive committee of the American Electric Railway Association has issued a call for a meeting of executives of electric railways of the country to consider recent decisions of the Federal War Labor Board. The conference will be held at the United Engineering Societies' Building, 29 West Thirty-ninth Street, New York City, at 10 a.m. on Thursday, Aug. 22.

New Labor Policy for Washington

The Washington Railway & Electric Company, Washington, D. C., has announced to all of its employees that it accepts the principles adopted by the War Labor Board to govern relations between workers and employers for the duration of the war.

To the extent that any of the existing rules and regulations of the company are contrary to the letter or spirit of the announced policy of the National War Labor Board, they are, to that extent, modified for the duration of the war and until further notice.

This action does not in any way affect any of the contracts now existing between the company and any of its employees. All such contracts will be fully performed and lived up to by the company.

One of the principles adopted by the War Labor Board being that employers shall in no way interfere with the right of employees to organize in trade unions, the company voluntarily accepts that principle and will in no way interfere with its employees joining or belonging to any labor union they desire.

Another of the principles adopted by the War Labor Board being that employees in the exercise of their right to organize shall not use coercive measures of any kind to induce persons to join their organization nor to induce employers to bargain or deal therewith, the company announces that the employees will, therefore, be equally protected under the principle of the open shop from any interference with their right to remain out of labor unions if they prefer to do so.

This important change in policy on the part of the company was announced by W. F. Ham, vice-president.

Franchise Changes Proposed

Cincinnati Sub-Committee Report Approved by Joint Committee —Review of New Terms

The report of the sub-committee on revision of the street railway franchise at Cincinnati, Ohio, was approved by the joint council and citizens' advisory committee on Aug. 9. A complete draft of the proposed revised franchise to the Cincinnati Traction Company was embodied in the report. The rate of fare recommended will doubtless meet with opposition, but in all probability the revision will finally win, as the people of Cincinnati need improved service and an opportunity for interurban service into the city. The main provisions of the revised draft are as follows:

SERVICE-AT-COST PLAN PROPOSED

Six-cent fare, with provisions for increasing or reducing the rate, based on the cost-of-service plan.

Universal transfers.

Complete control of service and operation by the city.

Millcreek Valley line included as part of the city service.

City to have right to reroute cars at any time.

Reserve fund of $400,000 to be created by the company.

Council to have power to order extensions and establish new and additional routes.

Freight and express service may be authorized.

Return to the company on its investment.

Entrance of interurban cars over the company's tracks.

Franchise tax of $350,000 annually to be paid to the city, an increase of $25,000 over the present tax.

All leases, franchises, contracts, issues of securities or transfers of franchises to be submitted to the city for approval.

Bond for faithful performance of contract requirements to be furnished by the company.

Police officials and firemen to ride free.

Arrangements for rental for use of viaducts.

Amortization of the reducible debt of $4,000,000.

Expense of valuation and traffic survey to be repaid to the city.

Rental to be paid to the Cincinnati Street Railway, operated under lease.

Right of the city to purchase the property either by condemnation or at a valuation agreed upon.

All routes fixed in the ordinance to be retained.

RESERVE BAROMETER

The reserve fund of $400,000 to start with will be used as a barometer to control the rate of fare. Its operation will be about the same as that of the interest fund under the Tayler plan at Cleveland. When the amount of the fund, through surplus earnings, reaches $650,000, an automatic reduction of one-half a cent in the rate of fare will take place. On the other hand, if the reserve fund should be reduced to $150,000, through the necessity of having to draw from it for the payment of expenses, the rate will automatically increase one-half cent.

When the rate of fare is reduced to 5 cents, through accumulations of surplus, the company may retain 45 per cent of the surplus, the remaining 55 per cent going to the reserve fund. Then, when the rate is increased to 5½ cents, the company's share of surplus will be reduced to 30 per cent and when 6 cents is reached, the company may retain only 20 per cent of the surplus. When the rate of fare exceeds 6 cents, then the entire surplus is to go to the reserve.

In discussing the matter, the committee said that conditions brought about by the war made a higher rate of fare necessary. Efforts were made by various organizations to keep the maximum rate at 5 cents, as it has been, but data secured by the sub-committee showed that the cost of carrying passengers at this time is 5.746 cents per revenue passenger.

The committee commented on the intercorporate relations of the companies and it would seem likely that they will be simplified so that the city may deal more directly with the parties interested.

COMPANY OBJECTS TO FINANCIAL CONTROL

Walter A. Draper, vice-president, said that the company objected to several of the provisions of the tentative draft, but was willing to bring those objections before the sub-committee, in order that time may be saved in final action. One of these was the clause which gives the city unlimited control over its financial affairs. Another was the increase in the amount of percentage tax, and a third was the retention of the purchase price of $26,238,950 which was included in the former ordinance. The company also objected to the division of the surplus as stipulated and the inclusion of the Millcreek Valley road as a part of the city line.

After the first reading of this draft in Council, public hearings are to be held, so that the people may become acquainted with its provisions.

In approving the tentative franchise revision, before the sub-committee had reported to the main joint committee, Mayor Galvin said:

"I was very reluctant to sanction any increase in the rate of fare, but an investigation of conditions, together with the statement of the War Labor Board recommending fare increases where necessary to provide increased wages and to maintain adequate service, convinced me of the necessity for it.

"The proposed ordinance is a model instrument, and the sub-committee is entitled to praise for the fair and equitable manner in which it has disposed of all questions arising in the negotiations between the city and the railway company. Probably in no other franchise ordinance in the country are the interests of a municipality and its car riders safeguarded so carefully.

"However, before it is finally passed, I shall insist upon a clause providing that no village nor municipality adjoining Cincinnati shall have a rate of fare into Cincinnati lower than that enjoyed by Cincinnati residents."

The committee also recommended that the rate of fare on the Cincinnati, Newport & Covington Railway, or Green Line, be made 6 cents. Employees had petitioned the city to grant this rate.

The proposed new rates for both roads are meant to include a sufficient amount to allow the employees a substantial increase in wages.

Chicago Ordinance Passed

At midnight on Aug. 15 the Chicago traction ordinance was passed without important change by the City Council, to which it was referred on Aug. 5. Several minor changes, however, were made by the committee on local transportation before the measure was finally recommended for passage.

The most important change made in the ordinance was in the provision that all transfers be issued without extra charge. All previous discussion of the franchise had contemplated a charge of 2 cents for a transfer between rapid transit and surface lines. The Aldermen contended that the people would refuse to indorse the measure on this account although they now pay 10 cents for riding on both levels. The traction officials consented to the change because there is a safeguard in the provision that rates for fares and transfers may be altered to meet the cost of service, including a guaranteed return on the investment.

The pending ordinance was indorsed by representatives of the trainmen's union. The principal objections were from Aldermen who did not want the companies to have the right of nominating members for the first board of trustees. The high standing of the men who have been suggested has, however, silenced any real criticism.

Seattle Inquiry Nearing Completion

Thomas F. Murphine, superintendent of public utilities of Seattle, Wash., has practically completed the work of checking over the books of the Puget Sound Traction, Light & Power Company to determine the amount of revenue it will be necessary for the company to secure in order to meet the advance in wages which has been agreed upon, and to give the city the service demanded.

No Direct Federal Relief

Announcement has been made at the White House in Washington that President Wilson does not believe that the federal government has any authority under existing laws to take over or operate electric railways and lighting companies. This became public in connection with the local railway situation at New Orleans, in which the President was asked to interfere because of labor troubles. The Washington correspondent of the ELECTRIC RAILWAY JOURNAL reports that the announcement confirms statements frequently made in private during the last six months by W. G. McAdoo, director general of railroads. Acting for the President, Joseph P. Tumulty, secretary to the President, sent a telegram to Martin Behrmann, Mayor of New Orleans, expressing the attitude of the federal government. The telegram was as follows:

"The President asks me to acknowledge your important telegram of yesterday and to express his opinion that as the existing law is interpreted the federal government has no power to take over electric railways and lighting companies.

"The conditions under which such companies operate in different parts of the country vary by so wide a margin that no common rule, it would appear, or method of relief could be applied to them, and it is the President's judgment that it is imperatively necessary that local and state authorities should take the action necessary for immediate relief."

Two Extraordinary Steps

John Wanamaker has announced for both his New York and Philadelphia stores a six and one-half hour day of business, from 10 a. m. until 4:30 p. m. for two principal reasons:

1. The conservation of coal, a serious matter of importance.
2. To relieve the overcrowded street cars, trains and subways of a considerable part of their early and late rush-hour burdens, thus leaving this means of transportation free for the use of the greatly increasing army of war workers, who must in such a time necessarily get to and from their workshops without delay.

In making the announcement Mr. Wanamaker said:

"1. Whereas, in the exigencies of these critical hours, while our young men and women, relatives and employees are laying down their lives, the business men not yet called to field service are specially invoked to find a way to do something more than sell and buy Liberty Bonds and contribute to the humane and religious organizations.

"2. We business men should not wait for the officers of the government to enforce days or hours of economy. We should lead them and sustain them and do even more than we are asked."

James A. Hearn & Son, retail dry goods merchants of New York, have announced a business day from 10 a.m. to 6 p.m., for similar reasons.

News Notes

Reading Again Increases Wages.—The Reading Transit & Light Company, Reading, Pa., on Aug. 6 announced an increase in the wages of its motormen and conductors from 34 to 38 cents an hour, to be effective at once, and to 40 cents on Sept. 1.

Employees of Ohio Road Strike.—On Aug. 2 the employees of the local line of the Columbus, Delaware & Marion Electric Company at Marion, Ohio, went on strike for an increase of wages to 42 cents an hour. They had been receiving from 27 cents to 33 cents. The men refused an offer of 35 cents an hour.

Third Arbitrator Named.—Governor A. O. Stanley has named Clarence U. McElroy, Bowling Green, Ky., as the third man to compose the board to arbitrate the differences between the Kentucky Traction & Terminal Company, Lexington, Ky., and the local branch of the Amalgamated Association. The company and the men each named an arbitrator and asked the Governor to name the third.

Jersey Accepts Wage Award.—The Public Service Railway, Newark, N. J., on Aug. 9 announced through printed cards posted in the carhouses throughout the system that it had accepted the wage plan and schedule of the War Labor Board which call for 41 to 45 cents an hour. The back pay to which the men are entitled under the decision, dating June 7, will be computed and paid before Sept. 1, the date specified in the decision.

Hog Island Line Opened.—The extension of its lines into Hog Island has been completed by the Philadelphia Rapid Transit Company and service with two-car trains was begun on Aug. 5. On Aug. 3 the company operated the first unit of the Eastwick Avenue substation and on Aug. 5 the entire Hog Island line, providing for the greatly increased traffic caused by the launching of the first ship from this yard, was thrown open to the public. A review of some of the other war work of the company is contained in the statement reproduced on page 301 of this issue.

Interurban Men Get Increase.—The Ohio Electric Railway, Springfield, Ohio, has increased the wages of its interurban conductors and motormen, effective from Aug. 1. The rates of increase are: first year, from 30 cents an hour to 35 cents; second, from 31 cents to 36 cents; third, from 32 cents to 37 cents; fourth, from 33 cents to 38 cents; fifth year, from 34 cents to 39 cents; sixth year and after, 40 cents. This increase follows one on Feb. 15, which amounted to 4 cents an hour. There are no changes at present in the wages paid motormen and conductors on city lines. These men received an advance in wages of 3 cents an hour on June 1.

P. R. T. Gets $1,750,000 for Cars.—A contract between the Philadelphia (Pa.) Rapid Transit Company and the Bureau of Industrial Housing and Transportation, Otto M. Eidlitz, chairman, was signed on the morning of Aug. 16, under the terms of which the Philadelphia Rapid Transit Company is supplied with approximately $1,750,000 with which to purchase ninety new cars and accessories. All of the new cars are to be used for the betterment of transportation of war workers. Sixty of the cars will be used for League Island and thirty for the Chester Short Line, serving the Westinghouse plant at Lester and the Baldwin, Remington and other plants at Eddystone, also the yard of the Sun Shipbuilding Company at Chester.

Men Have Right to Appeal.—Paul Shoup, president of the Pacific Electric Railway, Los Angeles, Cal., has announced a radical departure in connection with the dismissal of employees from the company's service, the new plan involving the departments that choose to adopt it, but not including the clerical staff or heads of departments. The outstanding features of the new plan are, first, that every employee who is discharged has the right of appeal and the assistance of a fellow employee in investigating the facts relating to his discharge; second, that he may go all the way up the line to the president if he so chooses; and third, if then not satisfied with the justice of the decision reached, he may refer it to an impartial tribunal not named by the company and having no responsibility except to do justice.

Wage Increase in Minneapolis—The Twin City Lines, Minneapolis, Minn., has increased the wages of trainmen 3 cents an hour and added 50 cents a day to the minimum guarantee for men reporting on call. About 2500 men are affected. Previous wage increases were made on Oct. 1 and June 1. The advance now made dates back to Aug. 1. The scale is as follows: first year, 35 cents; second year, 36 cents; third year, 37 cents; fourth year, 38 cents; fifth year, 39 cents; sixth year, 40 cents, with $3 a day for extra men. The company's statement follows: "The whole subject of increased wages was discussed, and the inability of the company to pay increased wages without an increase in the rate of fare was thoroughly considered, after which the committee agreed with the management to accept an increase of 2 cents an hour for trainmen, with an additional 50 cents a day added to the present minimum guarantee for extra men reporting on call. The new scale is to be effective as of Aug. 1 and to continue pending investigation and arbitration of the question of wages and rates of fare by the Federal War Labor Board."

Financial and Corporate

Tennessee Net Drops 14 per Cent

Increased Operating Costs Hit Nashville—Chattanooga Railway & Light Company Suffers from Strike

The gross earnings of the Tennessee Railway, Light & Power Company in 1917 totaled $5,258,659, an increase of 7.7 per cent, but the operating expenses, rentals and taxes rose 24 per cent. As a result the net earnings at $1,798,923 showed a loss of 14.1 per cent, and the surplus for the year at $180,637 a loss of 72 per cent.

COMPARATIVE INCOME STATEMENT OF SUBSIDIARIES OF THE TENNESSEE RAILWAY, LIGHT & POWER COMPANY FOR THE CALENDAR YEARS 1916 AND 1917

	1917	1916	Increase	Per Cent
NASHVILLE RAILWAY & LIGHT COMPANY				
Gross earnings	$2,458,321	$2,383,041	$75,280	3.2
Operating expenses	1,350,361	1,245,937	104,424	8.4
Net earnings	$1,107,960	$1,137,104	$29144	*2.6
Taxes	239,057	207,251	31,806	15.3
Gross income	$868,903	$929,853	*$60,950	*6.6
Interest	490,071	508,971	*18,900	*3.7
Net income	$378,832	$420,882	*$42,050	*10.0
Preferred stock dividends	125,000	125,000	....	......
Balance available for renewals, depreciation and financial requirements	$253,832	$295,882	*$42,050	*14.2
CHATTANOOGA RAILWAY & LIGHT COMPANY				
Gross earnings	$1,356,342	$1,235,623	$120,719	9.8
Operating expenses	1,039,537	739,816	299,721	40.5
Net earnings	$316,805	$495,807	*$179,002	*36.1
Taxes	99,366	83,628	15,738	18.8
Gross income	$217,439	$412,179	*$194,740	*47.2
Interest	359,785	356,324	3,461	1.0
Net income	*$142,346	$55,855	*$198,201	*354.8

*Decrease or deficit.

During 1917 the electric railway gross earnings amounted to $2,263,457 or 43 per cent of the total, as compared to $2,260,482 or 46 per cent in 1916. It is said to be probable that the volume of electric railway business will be substantially increased by the service in connection with the government activities at Chickamauga Park near Chattanooga and by the construction and operation of the large government powder plant near Nashville.

The accompanying statements show the progress made during the last year by the two railway subsidiaries, the Nashville Railway & Light Company and the Chattanooga Railway & Light Company. While the gross earnings of the former company showed an increase of 3.2 per cent, this was more than offset by the unavoidable increases in operating expenses and taxes. As a result the net income fell off 10 per cent. Nashville has realized very little, if any, profit from war prosperity, but it has been affected by the universal increase in cost of labor and materials and by the great advance in taxation prevalent throughout Tennessee.

The unsatisfactory showing of the Chattanooga company — a 36.1 per cent decrease in net earnings and 354.8 per cent decrease in net income—was due to the September-January strike of trainmen. Without the strike the year's record would have been satisfactory on account of the business to and from Fort Oglethorpe. Normal conditions have been restored, however, and the earnings are displaying increases.

The rapid and extensive expansion of the government's requirements at Fort Oglethorpe made it necessary to complete the construction of the new high-speed electric line to Chickamauga Park, which was done during the summer of 1917 at a cost of $102,104. This was the only large piece of construction work done during the year in Chattanooga, other construction expenditures being limited to the usual unavoidable requirements.

Texas Properties Consolidated

Consolidation of the properties of the Beaumont Electric Light & Power Company, Beaumont Traction Company and Jefferson County Traction Company, in Beaumont, Tex., and of the Port Arthur Light & Power Company, Port Arthur, Tex., went into effect on Aug. 1. Under the new arrangement, the companies will be operated as the Eastern Texas Electric Company, under the management of A. F. Townsend, who has had charge of the Stone & Webster interests in the two cities for the last two years.

The consolidation was authorized about a year ago by a referendum vote of the taxpayers of Port Arthur and Beaumont, but the arrangements were not completed until a few days ago. Its object, as announced at the time of the authorization, is to simplify the management and financing of the properties, including their more economical operation and effective administration. There was practically no opposition.

Bankers Consider Financing Plans

Various Methods Proposed to Overcome Restriction on Lending Capacity of War Finance Corporation

Since bankers must drop the plan to organize a $100,000,000 corporation to help public utilities, because of the ruling of Attorney-General Gregory that Section 10 of the law limiting loans to any one borrower to 10 per cent of the War Finance Corporation capital would apply to such an intermediary company, they are considering new plans for aid. The above-mentioned ruling was referred to in the issue of Aug. 10, page 254.

The capital of the War Finance Corporation is $500,000,000, and the 10 per cent limitation would restrict loans made to any one borrower to $50,000,000. To get around this restriction, one plan is to form a separate intermediary corporation in each city where there is a large public utility interest. If six such companies would be formed, each could borrow to the extent of $50,000,000 from the War Finance Corporation, or a total of $300,000,000.

As an alternative proposition, and somewhat along the same lines, is a plan to form a separate company for each group of public utility properties, such as those managed by E. W. Clark & Company, H. M. Byllesby & Company, H. L. Doherty & Company, Stone & Webster, etc. Holders of public utility securities are scattered, but it is believed that they could be reached through such an arrangement.

An entirely new proposition being given consideration in some circles is to form a separate intermediary company for practically each transaction where the amount is a substantial one, and where the amounts are small to lump several refinancing plans in one company.

Loans thus far publicly announced by the War Finance Corporation do not indicate exceedingly heavy demands upon that organization, and it is said that those unannounced will not increase the amount to any great extent. The total of $41,655,000 represented in the four large loans announced is also subject to further modifications. There is small likelihood that the entire amount will be called for in the majority of instances. The loans include $17,320,000 to the Brooklyn Rapid Transit Company and $3,235,000 to the United Railways of St. Louis.

It is said that in probably all cases, loans are being made only after the applications have been submitted to the government organization best informed as to the particular war needs involved and has received its full approval.

B. R. T. Net Falls $1,083,184

President Williams Says Railways Will Gladly Share War Burdens But Cannot Serve Without Men, Materials and Money

The report of the Brooklyn (N. Y.) Rapid Transit Company for the year ended June 30, 1918, shows net income of $4,112,054, a decrease of $1,083,184 compared with the previous year's figures. The gross earnings from operation amounted to $30,506,497, an increase of slightly more than $1,000,000, but the operating expenses totaled $18,111,804, an increase of more than $1,370,000. The increase in taxes and fixed charges alone amounted to $695,189.

SERVICE IS IMPAIRED

After presenting detailed figures, which will be published later, T. S. Williams, president of the company, says that a serious impairment of service would, in the large cities, cripple the activities related to war, or that a radical curtailment of service might almost paralyze war preparations. Yet these results have already been partially realized or are imminent because the government at Washington, under war necessity, has directly or indirectly taken the following steps: Drafted tens of thousands of experienced electric railway men; diverted additional thousands to war industries; established competitive standards of wages which electric railways cannot meet with existing revenue; doubled the price of coal and made it difficult to get at any price; increased the price of every commodity which electric railways buy; absorbed or withheld materials essential to construction and maintenance; commandeered the supply of money; increased the rates of interest, and imposed millions of new taxes.

At the same time, Mr. Williams declares, the government at home has in most cases refused, or seems reluctant to grant, even the partial relief which it could give, namely, the right to increase fares and the suspension of expensive and onerous exactions. There can be but one result from a continuance of these opposite influences. Only the strongest companies can long furnish transportation at less than cost, and there are few of such companies. Whether the end be financial losses, far reaching in their affliction, or merely impairment of facilities and service, or both, the adverse effects will be a public injury and a government handicap in the national struggle.

PUBLIC IS GRAVELY CONCERNED

Continuing, Mr. Williams says:

"Electric railways and their investors will gladly bear their part of the burden of this war. Much sacrifice they must necessarily make, and of this they do not complain. Their problem is no longer one of reduced profits but of excessive losses. It has become with some a question even of preservation of corporate existence, and with all it is a question of continued ability to serve. In any aspect of the situation grave public interest is involved. If local transportation is not an essential industry, then it must accept conditions and reconcile itself to their consequences. If it be an essential undertaking, then the systems must not merely be permitted to live but must be fully empowered to serve. They cannot serve without men, materials and money.

"The figures for 1917-1918 by no means reflect the measure of burdens to which our system will be subjected during the succeeding year. The renewal of our short-term notes for subway financing will call for $1,154,700 of additional interest; our coal will cost at least $1,000,000 more; our wages will increase much more than $1,000,000; nobody now knows how much larger our taxes will be, and our other costs will correspondingly reflect the higher standards of prices and the increasing difficulties of operation.

"We need more revenue, not for dividends but for bare necessities, made abnormally severe by conditions for which we are not responsible. Nearly half our patrons are now being carried on rapid transit lines, built with public and private capital, and these as well as those carried by the surface lines are receiving their transportation for less than its cost. Certainly there is neither justice nor wisdom in such a situation."

President McCarter Fearful for Future

In the course of a review of conditions which confront his company, President T. N. McCarter of the Public Service Railway, Newark, N. J., in a statement supplementing a renewal of the company's fare appeal to the Board of Public Utility Commissioners, said:

"If the public would only stop to consider that there is no power which absolves street railways from the effects of economic laws which govern business generally, it would realize that the Public Service Railway cannot go on absorbing steadily increasing costs without getting some increase for the commodity it sells. The company must have money enough to carry on its business. No amount of specious pleading or sophistry can alter that fact. If the company is not permitted to continue the result would be a public calamity.

"For fifteen years millions of money and unstinted effort have been expended in building up the railway properties, making them a homogeneous entity. The public has benefited thereby, even to a greater degree than has the company itself. To permit the property to be disintegrated, such as would be the case were it to go into a receiver's hands, would be a step backward, from which the State could not recover for years. The people might just as well understand that unless relief is speedily afforded a receivership is not such a remote possibility as many persons might seem to think. Other important electric railway systems are already in the hands of receivers."

Big Oil Earnings for Cities Service

Despite the difficult conditions surrounding the operations of the subsidiaries of the Cities Service Company, New York, N. Y., during 1917, and despite the deductions which were made to provide reserves for war taxes, the most important development of the year was the large increase in income. The gross income of the Cities Service Company in 1918 totaled $19,252,493, an increase of more than 90 per cent over 1916, with net income of $18,892,402, a gain in excess of 96 per cent. The balance applicable to dividends on the common stock and reserves was $15,179,770, an increase of 110 per cent. This was equivalent to $60.73 a share on the common stock outstanding in the hands of the public.

During the year $13,898,572 was reinvested from income in properties, making a total of $28,393,160 so reinvested from income to Jan. 1, 1918. The property values are thus being built up out of earnings at the rate of more than $1,000,000 a month, against which no capitalization is being issued.

The great factor in the increase in earnings was the extension of oil operations. Of the gross income of the Cities Service Company, 24.6 per cent or $4,472,652 came from public utilities, while 75.4 per cent or $14,509,841 was derived from oil subsidiaries.

Pittsburgh Real Estate Appraisal

Under orders from the State Public Service Commission of Pennsylvania the receivers of the Pittsburgh (Pa.) Railways have appointed a board of real estate brokers to make a physical valuation of the company's real estate, which consists of about 800 parcels. The report is to be filed within the next sixty days. The men who comprise the board are A. J. Kelly, of the Commonwealth Real Estate Company, representing the city; Henry P. Haas, president of the Freehold Real Estate Company, representing the receivers, and J. W. Cree, representative of the Denny estate, who has been agreed upon by the city and the company as the third member.

The physical valuation of the company's entire property is being made at this time under the direction of a board of engineers consisting of F. Herbert Snow, Robert M. Feustel, George Warren Fuller, Morris Knowles and J. A. Emery in order that it may be determined what proper charge the company can make to the public for its service. The appointment of the valuation commission was noted in this paper for March 23, page 582.

Financial News Notes

Expects to Dismantle Road.—The Madison Light & Railway Company, Madison, Ind., expects to discontinue the operation of its railway system within the next two or three months. The company operates 3½ miles of line.

Seeks Receiver of Cumberland Railway.—A committee of security holders has applied for a receiver for the Cumberland Railway, Carlisle, Pa. According to the petitioners, the company defaulted on the July bond interest. It is claimed further that the property is deteriorating and that the company is running behind $2,000 a month on fixed charges and operating expenses.

Municipal Railway Operates at Deficit.—The report of New Orleans auditors on the books of the city of Monroe, La., for the last fiscal year has been submitted. According to Mayor Apgar, it shows that the municipally-owned utilities, except the local railway system, were profitable during the year. The railway lost more than $12,000 during the year. The system consists of 10 miles of road.

Commission Reserves Abandonment Decision.—Decision has been reserved by the Public Service Commission for the Second District of New York, after hearing the final arguments on the petition of the Dunkirk (N. Y.) Street Railway, leased to the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., for permission to abandon parts of its line in Dunkirk. All of the previous evidence was reviewed.

Maine Trolley Road to Be Junked.—The Rockland, South Thomaston & St. George Railway, Rockland, Me., which has been in the hands of a receiver for several weeks, was sold on Aug. 6 to the ex-president of the company, Alfred S. Black, for $36,200. The road connects Rockland with Crescent Beach and South Thomaston. It has not been operated since last winter. It will soon be dismantled and sold for junk.

Tiffin Line to Be Abandoned.—The Tiffin, Fostoria & Eastern Railway has announced that operation on the local line at Tiffin, Ohio, will be suspended, following the refusal of the city to give a three-months' trial to a cash fare of 10 cents or six tickets for 45 cents. The City Council agreed to a temporary rate of 8 cents, but would go no higher. It is said the tracks will be removed from the streets, although the city has had street car service for more than twenty years. The interurban line will not be affected.

Recent Plans of General Electric Traction.—The General Electric Traction Company announces that it has taken over the Philadelphia & Easton Electric Railway, which connects Doylestown and Easton. The General Electric Traction Company was incorporated in 1908 under the name of the Michigan & Southwestern Railroad Securities Company and the present name was taken in 1914. It has a capital of $500,000 common stock with par value of $5 per share and $2,500,000 7 per cent cumulative preferred stock with $100 par value per share. According to a recent circular of the company holders of common stock "shall be entitled to the privilege of having issued to them an equal amount, par value of 7 per cent cumulative preferred stock, when as and if issued, without the payment of any additional consideration."

Attleboro Votes to Take Part of Railway.—The Municipal Council of Attleboro, Mass., voted on Aug. 6 to seize the Briggs Corner end of the Taunton & Pawtucket Street Railway by eminent domain, and arrangements will be made at once for operating the road. The Swift-McNutt Company, Boston, Mass., owners of the line, offered to sell the section in question for $20,000, but the Council voted only $18,000, and as no agreement could be reached, it was decided to seize the section by eminent domain. It is reported that Mayor Sweet of Attleboro has received advices from the Interstate Consolidated Street Railway that it will operate the road on a service-at-cost plan, beginning on Sept. 1. It is probable that the Briggs Corner section will be included in this arrangement.

Pittsburgh Receivership Aftermath.—The city of Pittsburgh will not be permitted to intervene directly as a party to the receivership proceedings against the Pittsburgh Railways. This was indicated by Judge C. P. Orr, after brief argument in the United States District Court. During the hearing it was brought out that the revenue of the company under the new 5-7-cent fare will fall more than $500,000 a year below the original estimates and that already car riding has fallen off between 13 and 14 per cent, instead of the 10 per cent estimated. After arguments on the city's petition to intervene, the Consolidated Traction Company's petition asking that the receivers for the Pittsburgh Railways be directed to pay the July rentals or turn the Consolidated Company back to its owners was taken up.

Compelled to Operate a Nuisance.—J. S. Lewis, president of the Southern Traction Company, Bowling Green, Ky., charged with maintaining a nuisance, waived examining trial before County Judge Drake and was held for the Grand Jury. Mr. Lewis was arrested, charged with operating old and dilapidated cars, making it dangerous for the public to travel, permitting boys too young and inexperienced to operate cars, and allowing trolley wires to fall on and across the streets while charged with electricity. Mr. Lewis stated that he would have to discontinue the service until the necessary repairs were made and this may be in conflict with the order of Judge Moss, issued some months ago, when he refused to permit the railway to be sold for junk and ordered it to be operated. Some of the developments in connection with this case were reviewed in the ELECTRIC RAILWAY JOURNAL for Aug. 10, page 256.

Opposed to Municipal Ownership Finance Plan.—The plan of financing the purchase of the line of the United Railway from Portland to Linnton, Ore., through the sale of public utility certificates, as suggested by City Commissioner Kellaher, is fraught with many difficulties and uncertainties and is possibly invalid, according to an opinion recently rendered by City Attorney La Roche. The opinion states that the construction of such a line could be financed by the sale of bonds of the city, but that such a bond sale would have to be authorized by a vote of the people. City Attorney La Roche recommended that the safest and best way for the city to proceed, if it desired to acquire and operate a railway to Linnton, is to submit to a vote of the people a charter amendment outlining in consistent form the procedure therefor and authorizing a bond issue by the city which shall not be a general liability against the city, but to be paid solely out of the earnings of the line, or from the sale thereof.

South Bend Bondholders Asked to Co-operate.—A considerable amount of the first mortgage 5 per cent thirty-year gold bonds of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., has already been deposited with the committee of which J. F. McNamara, 60 Wall street, New York, is secretary. The committee calls attention to the misleading statement in those bonds that they are under a first mortgage. The property covered by the mortgage has prior liens affecting the same approximately $1,727,500. The mortgage securing these bonds contemplated the payment and retirement of the underlying prior bonds aggregating this amount, but it has not been done. Default has occurred in the payment of interest upon underlying bonds. This, the committee points out, seriously jeopardizes the security of the 5 per cent bonds. The fact that a large amount of these bonds are held by holders connected with or affiliated with the company's management, and that the obligation to pay off underlying bonds, which the committee is informed are also largely held by the same interests, shows the necessity of the co-operation of the holders of these bonds who are not connected with or affiliated with the management. The management has announced that a reorganization is necessary, and the committee believes in order that the 5 per cent bonds may be properly protected in a reorganization, co-operation is absolutely essential by the non-affiliated bonds.

Traffic and Transportation

Toledo Increase Sustained

Court Refuses Permanent Injunction to City Against Five-Cent Fare and Transfer Charge

Judge J. M. Killits of the Federal District Court at Toledo, Ohio, on Aug. 2 refused the petition of the city of Toledo for a permanent injunction to prevent the Toledo Railways & Light Company from increasing its rate of fare. A temporary order to that effect had been in force for about three months. The company had made an increase in the rate of fare to 5 cents, with a charge of 1 cent for transfers, following an advance in the wages of trainmen about three months ago.

LIVING WAGES NECESSARY

The court said that the men must have a living wage and he requested Mayor Cornell Schreiber not to interfere with the company's present unembarrassed operation. The Mayor, however, has declared that he will carry the case to the higher court on appeal.

The court cannot fix a rate of fare and it is only when the city acts unreasonably or fails to act at all that the court has any function. Then it may determine a reasonable rate of fare. If the city does not act, or until it does act, the company has a right to fix a rate of fare to which its patrons shall conform, he said.

The company, the court said, is lawfully entitled to a rate of fare which will meet its current expenses and provide an annual return of at least $480,000 above operating expenses. He believes that the present fare of 5 cents, with 1 cent for transfers, will not yield sufficient funds for this purpose. The city did not combat this claim, he said, but argued that some lower rate of fare should be tried as an experiment.

COMPANY NOT A TRESPASSER

The company is not a trespasser and may use the streets until the Council directs that it shall stop its cars permanently. Since the company has no franchise, the only power the city possesses is of a regulatory nature in respect to the use of the streets. Such regulations will not be lawful under the constitution of the United States unless the company is permitted to charge a rate of fare that will bring in enough revenue to pay operating expenses and 6 per cent on the actual value of the railway investment.

No attempt is made to determine whether the actual investment is represented by the amount of stocks and bonds outstanding, but it is asserted that it is fair to the patrons of the road that the net return be figured upon the actual investment, as ascertained in the usual way.

The conclusions of the court follow:

"As long as wages, material and supplies are as high as now, the charge of 5 cent fares, with 1 cent for transfer, is absolutely necessary to give the company the revenue it is entitled to have; the evidence indicates that even that rate is not sufficient.

"There is nothing that can legally prevent a further raise in fares if the expenses of operation continue to increase. Fares are increasing in other cities.

"The Mayor's proposition of eleven tickets for 50 cents would not bring in revenue to pay the company's increasing operating expenses and leave anything for the investment. The city has no power under present conditions to impose and enforce such a rate. In view of the facts before the court, such a rate would be unlawful and unenforceable under the law."

The city of Toledo on Aug. 7 filed bond and took an appeal to the Circuit Court of Appeals from the decision. The court set Sept. 6 for the hearing, but granted an extension beyond that time, so that the city can prepare its case.

Six Cents for San Jose

The Railroad Commission of California has authorized the San Jose Railroads, which operates in San Jose and suburbs, between San Jose and Santa Clara, Santa Clara County, to increase fares to 6 cents where the fare was formerly 5 cents. The one-way fare between San Jose and Alum Rock has been increased from 10 cents to 15 cents, and where the rate has been 10 cents or higher, the company is allowed to sell 125 5-cent coupons for $5. The company showed a deficit of $131,602 for the twelve months ending April 30 last. The commission found that the facts presented at the hearing revealed an actual emergency in the affairs of the company. Since 1913 revenues have been insufficient even to pay operating expenses and interest on bonds, to say nothing of interest due on unsecured debts or a return to stockholders.

The Railroad Commission has also authorized the Peninsular Railway, operating in San Jose and Palo Alto, and between San Jose and Los Gatos, Alum Rock Park and Congress Springs, to increase its fares from 5 to 6 cents in Palo Alto and San Jose. Round-trip tickets and monthly commutation fares have been increased about 20 per cent. The evidence clearly showed that the company's operating revenue was insufficient, and immediate relief must be granted if an adequate service was to be continued.

Buffalo Vote Prospects

Active Campaign Under Way Urging Upon Voters the Need of Additional Fare for International Railway

Organized labor as represented by the Central Labor Council, and manufacturing and mercantile interests of the city as represented in the Chamber of Commerce have rallied to the support of the International Railway, Buffalo, N. Y., in its campaign for higher fares. The referendum vote on the question of whether or not the City Council's action shall be repealed in reference to the adoption of a resolution which waives certain franchise restrictions between the company and the city and allows the Public Service Commission of the Second District to fix an equitable rate of fare, will be held on Aug. 20.

There is practically no organized movement against the company's campaign to have the voters ratify the action of the City Council. Several newspapers are opposed to higher fares and a citizens' committee has been organized, but the movement in opposition has secured very little support. The action of organized labor, the Chamber of Commerce and other civic and commercial organizations which have come out boldly for higher fares appears to have crushed all opposition at the outset of the campaign.

REFERENDUM FEARED AT FIRST

When it was first suggested that a referendum be held on the question, Henry W. Killeen, of Penney, Killeen & Nye, of counsel for the International Railway, said that if the matter was put before the people for a vote, the 6-cent fare would be overwhelmingly defeated. Such does not now seem to be the prospect. From appearances on the surface, it is generally believed that the voters will affirm the action of the Council. The Public Service Commission will then make an investigation of the financial condition of the company and a rate of fare fixed which will be put into effect on the company's city lines.

Edward G. Connette, president of the International Railway, in a letter to members of the City Council, called attention to the fact that the gross receipts of the company inside the city in 1917 were $8,250,000. He says that the gross receipts so far this year are below those for the corresponding period of last year, but even assuming they are the same, the actual operating expenses will be more than the company's income if the 5-cent fare is allowed to remain in force.

Small printed slips are being placed in the pay envelopes of the workers in munitions plants asking them to vote for the ratification of the Council's action. The slips point out that the additional cent will be used largely for giving the railway employees a wage increase and call upon the patriotism of workers to support the government by not allowing a strike.

Oregon Commission Had Jurisdiction

In Portland Six-Cent Case, State Supreme Court Upholds Commission Rate Change

The authority of the Public Service Commission of Oregon to adjust the fares of the Portland Railway, Light & Power Company was upheld by the State Supreme Court on July 23 when it affirmed the lower court for Multnomah County in the case of the city of Portland against the Public Service Commission, known as the 6-cent fare case. The opinion, written by Justice Burnett, was in part as follows:

REVIEW OF CASE

"The city of Portland, a municipal corporation, instituted this suit against the Portland Railway, Light & Power Company, and thereby seeks to nullify an order made by the defendant, the Public Service Commission of Oregon, allowing the company to charge 6 cents for the transportation of each person over its lines in the same general direction, instead of 5 cents, as prescribed by an ordinance enacted by the Council of the plaintiff and conferring upon the company the franchise under which it operates. A general demurrer to the complaint was sustained by the circuit judges in Multnomah County, sitting *en banc*. The city appealed.

"The essence of the dispute presented in this litigation is, whether upon the application of a public service corporation like the company, the Public Service Commission of the State had the authority to change the rate of fare prescribed by the city ordinances giving the company the right to operate street railways in the city of Portland. The proper disposition of this suit depends upon the solution of that question of jurisdiction. We are not concerned with the wisdom of the commission's decision. Whether or not it acted wisely in increasing the rate of fare is not for our decision in this case on demurrer to the bill. If we find that it had jurisdiction to make the change, our quest is ended.

"Section 51 of the act creating the Public Service Commission empowers the commission, after investigation, to order the substitution of reasonable rates and charges instead of those which it shall find to be unjust and unreasonable, and, by the following section, it may afterward revise its own decision.

NO VIOLATION COMMITTED

"The city says the action of the commission is void because it violated the constitutional provisions forbidding any state to impair the obligation of a contract, and that it deprived the city of Portland and its inhabitants of their property and rights without due process of law. This presents the principal question for consideration. It is urged that the ordinance under which the railway and its predecessors in interest have acted were offers to them which they were required to, and did, accept before proceeding to operate their plant, and that this constituted a contract between the city of Portland and the company which cannot be violated by any subsequent legislation.

"In support of its contention in this respect, the city cites Cleveland *vs.* Cleveland Railway, 194 U. S. 597; Detroit *vs.* Citizens' Street Railway, 184 U. S. 368, and Detroit United Railway *vs.* Michigan, 242 U. S. 238. In all those cases the State had expressly and literally authorized the municipality in so many words to adjust the matter by contract.

"The Portland charter under consideration says nothing about a contract, but speaks of a grant and requires legislative action. True it is that the franchise does not become operative until the grantee has accepted. The term 'grant' implies offer of the city and acceptance by the company, for the municipality cannot fashion a grant and compel anyone to accept it. The distinction is too finely drawn whereby government control of rates according to reasonableness is applicable to the so-called 'grant' cases and withheld from those which may be called 'contract' cases. But all of such conventions, whether of pure contract or by public grant, are made subject to the ever-present principles that the charges shall be fair and reasonable and that the right to adjust them is primarily the prerogative of the State.

"Finally, the complaint urges that the order of the commission is void because the public utilities act is not retroactive. This contention may be dismissed with the statement that the law does and is designed to deal with conditions as they arise and to adjust matters relative to concerns serving the public from time to time as may be required. The Circuit Court was right in dismissing the bill and its decision is affirmed."

The argument before the six judges of Multnomah County in this case was reviewed in the ELECTRIC RAILWAY JOURNAL for March 16, page 543, while the decision of that court in the case was abstracted in this paper for March 30, page 617.

Interurbans Have Fare Rights

The Public Service Commission of Pennsylvania in an opinion dated July 31 ruled that an interurban electric railway may increase its fares beyond the 5-cent limit specified in a franchise ordinance when it is necessary to do so to provide enough revenue for operation and maintenance and to permit a fair return to investors.

The decision was given in dismissing complaints made against the Buffalo & Lake Erie Traction Company, which has a line in Erie County. The ruling, which has a State-wide application, was given on the complaints made by North East Borough, Harbor Creek and North East Townships, Erie County, and as a part of the proceeding a physical valuation of the company's properties in Pennsylvania was made by the commission's engineers.

It is similar to a ruling in another case that the commission could take jurisdiction in a complaint that a fare specified in a franchise ordinance had been exceeded and it is possible an appeal will be taken to the Superior Court.

The commission decided the case after an exhaustive study of values and declares that rates on other lines radiating out of Erie are higher; that not enough has been set aside out of earnings for depreciation and that there was no evidence offered that the increase was discriminatory.

John S. Rilling, a member of the commission, adds to the decision a concurring opinion in which he says in part:

"The municipal consent provided by the constitutional provision is merely the acquiescence by the municipality to the doing of that which the company through its charter has a legal right to do. The consent does not add one iota of additional power to the company to construct its lines. * * * Municipalities in Pennsylvania do not now have nor have they ever had the power or authority to regulate the rate of a public utility."

He continues to the effect that the Public Service Commission "is armed with the unabridged police power of the State" and that "no rate regulations passed by municipalities in franchise ordinances, whether prior to or after the enactment of the public service law, can interfere with the proper exercise by the commission of the rate-regulating authority delegated to it by that law."

Six Cents for East St. Louis

Officials of the East St. Louis (Ill.) Railway were notified on Aug. 9 by the Illinois Public Utilities Commission that a 6-cent fare had been granted as an emergency relief, and that a second hearing of the company's petition asking a 7-cent cash fare will be held later.

The Alton, Granite City & St. Louis Traction Company, a subsidiary of the East St. Louis & Surburban Railway, which also controls the East St. Louis Railway, on Aug. 9 began collecting a 7-cent fare on city lines in Alton and on a connecting line between Venice and Brooklyn.

L. C. Haynes, president of the company, said that the company hoped to get a 7-cent fare in East St. Louis at the next hearing. The 6-cent fare will add approximately $150,000 to the yearly income of the East St. Louis company, officials estimated.

The Alton, Granite City & St. Louis Traction Company was also recently granted authority by the commission to collect a 3-cent-a-mile cash fare and 2-cent ticket fare on its interurban lines. The new rates went into effect several weeks ago.

Higher Fares Granted in 238 Cities

Nearly 10,000,000 Out of 41,000,000 of Urban Population in the United States Are Now Paying More Than Five Cents

Supplementing the list of fare increases printed in last week's issue of the ELECTRIC RAILWAY JOURNAL the Information Bureau of the American Electric Railway Association has analyzed the data on fare increases and arranged them for convenient reference in the accompanying tabular forms.

Out of a total urban population in the United States of 41,000,000, about 9,950,000, or more than 24 per cent, are paying fares higher than 5 cents.

The number of cities involved in the higher rates of fare is 238, and they are located in thirty-two of the forty-eight states of the Union and four of the eleven provinces of Canada.

The method of increase ranges from a raise to a straight 10-cent fare to the abolition of workmen's reduced rates. A summary of methods used follows:

Ten-cent fare	3 cities.
Eight-cent fare	1 city.
Ten-cent owl service; 7-cent regular	1 city.
Ten-cent owl service; 6-cent regular	1 city.
Ten-cent owl service; 5-cent regular	5 cities.
Seven-cent fare	39 cities.
Six-cent central zone with additional charge for ride outside	16 cities.
Six-cent fare	83 cities.
Five-cent central zone with additional charge for ride outside	11 cities.
Five-cent fare; 1-cent charge for transfer	17 cities.
Reduced rates eliminated	42 cities.
Four-cent fare; 1-cent charge for transfer	1 city.
Workmen's reduced rates abolished	18 cities.

FARE INCREASES IN THE UNITED STATES AND CANADA

Cities in Which a 10-Cent Fare Is Being Charged

Name	Population
Tacoma, Wash. (on municipal lines)	112,770
Manistee, Mich.	12,381
Spencer, Mass.	6,740

Cities in Which an 8-Cent Fare Is Being Charged

Name	Population
Reading, Pa. (suburban lines)	109,381

Cities in Which an 8-Cent Fare Is Being Charged for Owl Service and a 6-Cent Fare at Other Times

Name	Population
Edmonton, Canada (municipal lines)	70,000

Cities in Which a 10-Cent Fare Is Being Charged for Owl Service and a 6-Cent Fare at Other Times

Name	Population
Montreal, Canada	600,000

Cities in Which a 10-Cent Fare Is Being Charged for Owl Service and a 5-Cent Fare at Other Times

Name	Population
Ottawa, Canada	110,000
Des Moines, Iowa	86,368
Little Rock, Ark.	61,627
Lincoln, Neb.	52,500
Fort William, Canada (municipal lines)	16,499

Cities in Which a 7-Cent Fare Is Being Charged

Name	Population
Boston, Mass.	756,476
Cambridge, Mass.	112,981
Tacoma, Wash. (by privately-owned company)	112,770
Somerville, Mass.	87,039
Manchester, N. H.	78,283
Malden, Mass.	51,155
Chelsea, Mass.	46,192
Newton, Mass.	43,715
Everett, Mass.	39,233
Joliet, Ill.	38,010
Brookline, Mass.	32,730
Waltham, Mass.	30,570
Wilmington, N. C.	29,892
Shenandoah, Pa.	29,201
Lewiston, Me.	27,809
Medford, Mass.	26,234
Meridian, Miss.	23,285
Ocean City, N. J.	20,000
Bartlesville, Okla.	20,000
Mahanoy City, Pa.	17,463
Ogdensburgh, N. Y.	16,718
Woburn, Mass.	15,969
Augusta, Me.	14,170
Watertown, Mass.	14,867
S. Framingham, Mass.	13,982
Arlington, Mass.	12,811
Waterville, Me.	12,702
Winthrop, Mass.	12,692
Chambersburg, Pa.	11,800
Carlisle, Pa.	10,726
Keene, N. H.	10,633
Natick, Mass.	10,102
Middleborough, Mass.	9,048
Lexington, Mass.	4,918
Canton, Mass.	4,797
Girardville, Pa.	4,396
Mauch Chunk, Pa.	3,952
Sharon, Mass.	2,810
Brookfield, Mass.	2,204

Cities Which Have a 6-Cent Central Zone, With an Additional Charge for Rides Outside Thereof

Name	Population
Fall River, Mass.	128,366
Lowell, Mass.	113,245
Lynn, Mass.	102,425
Lawrence, Mass.	100,560
Brockton, Mass.	67,449
Malden, Mass.	51,155
Salem, Mass.	48,562
Haverhill, Mass.	48,477
Chelsea, Mass.	46,192
Quincy, Mass.	38,136
Taunton, Mass.	36,283
Gloucester, Mass.	24,395
Beverly, Mass.	21,645
Peabody, Mass.	18,360
Melrose, Mass.	17,445
Hyde Park, Mass. (Bay State lines)	16,000

Cities in Which a 6-Cent Fare is Being Charged

Name	Population
St. Louis, Mo.	757,309
Montreal, Canada	600,000
Kansas City, Mo.	297,847
Portland, Ore.	295,463
Vancouver, Canada	230,000
Pittsburgh (suburbs, West Penn Railways)	....
New Haven, Conn.	149,685
Bridgeport, Conn.	121,579
New Bedford, Mass.	118,158
Hartford, Conn.	110,000
Reading, Pa.	109,381
Kansas City, Kan.	99,437
Wilmington, Del.	94,265
Waterbury, Conn.	86,973
Wilkes-Barre, Pa.	76,776
Erie, Pa.	75,195
Atlantic City, N. J.	57,660
Saginaw, Mich.	55,642
New Britain, Conn.	53,794
McKeesport, Pa.	47,521
Chester, Pa.	41,396
Lexington, Ky.	41,097
Jackson, Mich.	35,363
Aurora, Ill.	34,204
Stamford, Conn.	30,884
Easton, Pa.	30,530
Poughkeepsie, N. Y.	30,390
Mt. Carmel, Pa.	30,268
Battle Creek, Mich.	29,480
Meriden, Conn.	29,130
Elgin, Ill.	28,203
Nashua, N. H.	27,237
Norwalk, Conn.	26,899
Hagerstown, Md.	25,679
Paducah, Ky.	24,842
Middletown, Conn.	22,799
Danbury, Conn.	22,556
White Plains, N. Y.	22,465
Pottsville, Pa.	22,372
Duquesne, Pa.	19,964
Northampton, Mass.	19,926
Oil City, Pa.	19,297
Peekskill, N. Y.	18,530
Torrington, Conn.	18,018
Sioux Falls, S. D.	16,499
Woburn, Mass.	15,969
Ithaca, N. Y.	15,848
Cairo, Ill.	15,794
Fairmont, W. Va.	15,566
Jacksonville, Ill.	15,481
Connellsville, Pa.	15,455
Chickasha, Okla.	15,447
Newburyport, Mass.	15,273
Ansonia, Conn.	15,152
Rutland, Vt.	14,831
Hornell, N. Y.	14,685
Milford, Mass.	14,110
Naugatuck, Conn.	14,093
Albuquerque, N. M.	14,025
Meadville, Pa.	13,802
Plymouth, Mass.	13,743
Geneva, N. Y.	13,711
Ossining, N. Y.	13,705
Dover, N. H.	13,272
Wakefield, Mass.	12,733
Greenfield, Mass.	11,998
Laurell, Miss.	11,779
Beacon, N. Y.	11,555
Latrobe, Pa.	11,393
Frederick, Md.	11,112
Danvers, Mass.	9,949
Rochester, N. H.	9,719
Derby, Conn.	9,655
Athol, Mass.	9,461
Braintree, Mass.	9,376
Claremont, N. H.	7,529
Maynard, Mass.	6,890
Stoughton, Mass.	6,316
Branford, Conn.	6,047
Amherst, Mass.	5,112
Bellows Falls, Vt.	4,883
Waverly, N. Y.	4,856
Randolph, Mass.	4,301

Cities Which Have a Central 5-Cent Zone With an Additional Charge for Rides Outside Thereof

Name	Population
Pittsburgh, Pa.	579,090
Milwaukee, Wis.	436,535
Providence, R. I.	254,906
Springfield, Mass.	105,942
Holyoke, Mass.	62,286
Pawtucket, R. I.	59,411
Woonsocket, R. I.	44,360
Norwich, Conn.	29,419
Chicopee, Mass.	29,319
New London, Conn.	20.985
Westfield, Mass.	18,391

Cities Having a 5-Cent Fare With an Additional Charge of 1 Cent for a Transfer

Name	Population
Newark, N. J.	408,894
Jersey City, N. J.	306,345
Toledo, Ohio	191,554
Paterson, N. J.	138,443
Trenton, N. J. (Public Service Railway)	111,598
Camden, N. J.	106,233
Elizabeth, N. J.	86,690
Hoboken, N. J.	77,214
Passaic, N. J.	71,744
Bayonne, N. J.	69,893
Perth Amboy, N. J.	41,185
Orange, N. J.	33,080
Plainfield, N. J.	25,805
New Brunswick, N. J.	25,512
Meridan, Miss.	21,818
Hackensack, N. J.	16,945
Rahway, N. J.	10,219

Cities in Which Reduced Rate Tickets Have Been Abolished and a Straight 5-Cent Fare is Charged

Name	Population
Seattle, Wash.	348,639
Salt Lake City, Utah	117,399
Des Moines, Ia.	101,598
Duluth, Minn.	94,495
St. Joseph, Mo.	85,236
Evansville, Ind.	76,078
Altoona, Pa.	58,659
Roanoke, Va.	43,284
Decatur, Ill.	39,631
Joliet, Ill.	38,010
Quincy, Ill.	36,798
Everett, Wash.	35,486
Columbia, S. C.	34,611
Lynchburg, Va.	32,940
Danville, Ill.	32,261
Sheboygan, Wis.	28,559
Bloomington, Ill.	27,258
Muncie, Ind.	25,424
Galesburg, Ill.	24,276
Anderson, Ind.	23,996
New Albany, Ind.	23,629
Shamokin, Pa.	21,129
Fond du Lac, Wis.	21,113
Asheville, N. C.	20,823
Marion, Ind.	19,834
Greensboro, N. C.	19,577
Kingston, Canada	18,874
Owensboro, Ky.	17,784
Vincennes, Ind.	17,645
Muscatine, Ia.	17,500
Hot Springs, Ark.	17,238
Fort William, Canada (except children)	16,499
Bluefield, W. Va.	15,442
Champaign, Ill.	14,508
Bridgeton, N. J.	14,395
Cortland, N. Y.	13,069
Highpoint, N. C.	12,896
Elwood, Ind.	11,028
Jeffersonville, Ind.	10,412
Urbana, Ill.	9,889
Waynesboro, Pa.	7,189
Tyrone, Pa.	7,176

Cities Having a 4-Cent Fare With an Additional Charge of 1 Cent for a Transfer

Name	Population
Cleveland, Ohio	674,073

Cities in Which Workmen's Reduced Rate Tickets Have Been Abolished

Name	Population
Toledo, Ohio	191,554
Shamokin, Pa.	19,588
Biddeford, Me.	17,665
Gary, Ind.	16,802
Greensboro, N. C.	15,895
Greenfield, Mass.	11,998
Bluefield, W. Va.	11,188
High Point, N. C.	9,525
Sanford, Me.	9,049
Concord, N. C.	8,715
Claremont, N. H.	7,529
Salisbury, N. C.	7,153
Valparaiso, Ind.	6,987
Stoughton, Mass.	6,316
Randolph, Mass.	4,301
Spencer, N. C.	3,000
Hadley, Mass.	2,000
Graham, Va.	2,000

Against Fare Increase

Pennsylvania Commission Orders Reduction From Eight Cents to Six Cents—Company Explains

The Public Service Commission of Pennsylvania has sustained a complaint of the Borough of Ashland against the action of the Schuylkill Railway in advancing fares from 6 cents to 7 cents on May 28, 1917, and has ordered the old 6-cent rate restored.

The commission has ordered a reduction of fares on the entire system. As the company has been charging an 8-cent fare since July 12 the decision of the commission will mean a 2-cent reduction in all zones.

The company first announced its intention of increasing fares from 5 cents to 6 cents in 1913. The Ashland Borough filed a protest against the increase but the commission ruled at that time that the burden of proof was on the complainant and the increase was sustained.

Later the company filed a new tariff, effective on May 28, 1917, increasing the rate of fare from 6 cents to 7 cents. Ashland Borough again filed a protest and in this case the commission decided that the burden of proof was on the railway. While a decision was still pending the company filed another tariff, effective on July 12, making a further increase in fares from 7 cents to 8 cents. Ashland Borough complained against the increase because a decision was pending in the case of the raise from 6 cents to 7 cents.

COMMISSION UNDER MISAPPREHENSION

The failure of the Schuylkill Railway to rescind its 8-cent fare and put into operation again the 6-cent fare as ordered by the commission in its opinion recently handed down, is explained in a statement issued by the management. Meanwhile the company has appealed for a rehearing and the operation of the order is held in abeyance. The company says in part:

"The company has filed its notice of an application for rehearing of the case, because a compliance with the commission's order to return to the 6-cent fare would result in the forced shutting down of its entire operations. The company simply could not live on a 6-cent fare.

"The reasons assigned by the commission in support of its 6-cent fare order are based upon a complete misapprehension of the facts in the case. The company will endeavor to make them clear on the rehearing. This evidence will not only show conclusively that the company cannot live on a 6-cent fare, but it will show that the revenue which it will earn even with an 8-cent fare will be insufficient to enable it to continue operation at full efficiency without practice of the most rigid economy.

"The officials of the company regret that this misapprehension of the facts on the part of the commission should have resulted in a situation where the company might seem to be unresponsive to the commission's order, but they feel confident that the facts in the case justify them in the position which they have taken and that upon rehearing they will be able completely to vindicate this position before the commission and in the public mind and maintain the 8-cent fare."

Basis of Portland Rates

Statement Showing Conditions Under Which Recent Maine Settlement Was Reached

A reference to the recent fare agreement at Portland, Me., was made in the ELECTRIC RAILWAY JOURNAL of Aug. 3, 1918, page 213. The agreement terminates a rate case of long standing, and was made between Attorney-General Sturgis of Maine and W. S. Linnell, representing the Cumberland County Power & Light Company, upon the recommendation of R. M. Feustel, of Sloan, Huddle, Feustel & Freeman, consulting engineers for the Public Utilities Commission of Maine.

The system of rates recommended by the State's engineers and that submitted by the company were identical in that both contemplated the creation of a central zone with a fare of 6 cents, and outside zones, about 1 mile long, with a fare of 2 cents per zone, on the interurban lines. The two plans differed in the limits of the central zone, the State's plans permitting a longer ride than the company's. As stated in this paper, the 5-cent fare has also been retained on three lines operating entirely within the central zone and in the short-haul territory, a charge of 1 cent, however, being made for each transfer issued from the 5-cent lines. There is no charge for transfers from 6-cent cars.

Sloan, Huddle, Feustel & Freeman found that the company required $123,000 additional revenue a year to meet the increasing costs of labor and material, and they estimated that the increased revenue yielded by their suggested schedule would be a minimum of $110,000 a year. They reported that certain rerouting suggestions made by the company were feasible and that approximately $20,000 a year could be saved if these were put into effect. The valuations of the State and of the company showed the value of physical property (on the Portland Railroad) to be in excess of the outstanding stocks and bonds. The cost of reproduction now as found by the State's engineers was about $6,263,000, exclusive of promotion and the cost of securing capital. The company's figure, $7,524,000, included these items. The Public Utilities Commission did not determine the fair value of the property, but allows the company, on twenty-four hours' notice, to put into effect the fare schedules proposed by the State's engineers. The company's valuation was prepared by George E. Haggas, assistant to the general manager of the Cumberland County Power & Light Company.

Vancouver Fares

British Columbia Electric Railway Increases Fares with Little or No Opposition or Trouble

Brief mention was made in the ELECTRIC RAILWAY JOURNAL for July 20, page 135, of the fare situation on the British Columbia Electric Railway, Vancouver, B. C. On finding it necessary to pay the full wage demands of its employees the company informed the City Councils of Vancouver, New Westminster, North Vancouver, South Vancouver, Point Grey and Burnaby that it was impossible to operate on the fares then in force. The Vancouver City Council passed a by-law authorizing higher fares. The Point Grey Council did the same. The South Vancouver commissioners some days later also authorized the company to increase fares. Subsequently the New Westminster City Council passed a resolution and will pass a by-law authorizing increased fares.

Accounts recently to hand indicate that North Vancouver is still debating the matter, while Burnaby has refused permission to the company to advance rates. On Vancouver Island the City Council of Victoria also refused permission to the company to increase fares.

ONLY ONE OBJECTOR

On July 16 the company was operating cars in Vancouver and New Westminster on a 6-cent fare. These systems, of course, are separate. The Victoria City system is operating on a 5-cent fare to all passengers. The North Vancouver city system was shut down at that time pending permission to charge a 6-cent fare. The fares on the Vancouver System now are: 6-cent cash fare or six tickets for 35 cents instead of 5 cents cash and six tickets for 25 cents. On those portions of the city lines extending into South Vancouver and Point Grey a 6-cent fare is charged within each of the municipalities. The fare from Vancouver City to South Vancouver and Point Grey is 7 cents, and settlers' tickets are sold ten for 70 cents. The cash fare is, of course, 12 cents, 6 cents in each district. The Burnaby municipality having refused permission to the company to charge higher rates, the railway is not operating the 2-mile strip of city line there and indications point to the possible necessity of the company forfeiting its franchise in that place.

Where city passengers are carried on interurban lines the fares within the city have, of course, been advanced to 6 cents. The fare from Vancouver to Beaconsfield on the Central Park line, formerly 5 cents, is now 7 cents.

The fares on all the interurban lines will probably be revised shortly and put on a mileage basis.

The 6-cent fare has taken very well with the public. There was practically no opposition, and little or no difficulty was encountered in handling the odd cent. There is a very large demand for strip tickets.

Tumult and Shouting

Detroit Railway Abandons Six-Cent Fare Following Protest That Vents Itself in Violence

Disgraceful scenes were enacted in Detroit, Mich., on Aug. 10, 11 and 12, when political candidates incited the lawless element of the population to violence, destruction and bloodshed, following the action of the Detroit United Railway in raising fares from 5 cents to 6 cents. A number of people were injured and thousands of dollars worth of damage was done to property of the railway. Cars were overturned and wrecked; car doors and windows were smashed and mob rule generally prevailed. The police appeared to be helpless.

The disorder occurred when political candidates advised the people to pay only 5 cents and the Common Council adopted an ordinance fixing the rates of fare on non-franchise lines at 5 cents for a single ride, six tickets for a quarter and workingmen's tickets at eight tickets for a quarter.

At midnight Monday when the ordinance went into effect the city secured an injunction in the Wayne Circuit Court restraining the railway officials from violating the ordinance. The following morning company officials appealed to the local federal court for an injunction to restrain the city from enforcing the ordinance. This injunction was refused by Judge Tuttle. The court declared that the city should settle the railway question by giving the company a franchise or by buying and operating the lines. The company at once prepared to appeal direct to the United States Supreme Court at Washington.

In the meantime the company is accepting 5-cent fares and will in a few days sell six-for-a-quarter tickets and workingmen's tickets.

Immediately following the refusal of the federal judge to interfere, F. W. Brooks, president of the company, telegraphed to W. H. Taft and Frank P. Walsh of the National War Labor Board, calling attention to the situation in Detroit. Mr. Brooks declared that the recent wage increase awarded Detroit United Railway motormen and conductors by the War Labor Board would increase the company's expenses by at least $2,000,000 a year. He pointed out that the Common Council not only refused to permit a higher fare so that additional revenue to meet increases might be had, but enacted an ordinance reducing the fares, which the Labor Board had emphatically declared too low. Mr. Brooks said that the company was endeavoring to maintain service so that the munition factories would not be crippled, but warned that unless immediate relief were given the company would have to abandon service.

During the riots the company was forced to abandon service on four or five lines to save the employees from violence and to protect property from destruction. In dozens of cases when passengers refused to pay more than 5 cents the car crews refused to move the cars or ran cars onto side tracks and left them there. Saturday and Sunday riots were of frequent occurrence in the downtown streets, while in the factory districts cars were overturned and wrecked.

In a statement to the public on Aug. 13 President Brooks of the company placed the responsibility for the rioting, robbery and destruction of property on the politicians, the Common Council and the newspapers.

Transportation News Notes

Interstate Line Wants Increase.—The Cleveland & Erie Railway, which operates between Erie, Girard and East Springfield, Pa., and Conneaut, Ohio, on Aug 13 asked the Interstate Commerce Commission for increases to 3 cents a mile in cash train fares, 25 per cent increase in freight rates, and an advance to 7 cents in rates in Erie, Pa.

Withdrawal of Tickets Recommended.—A. L. Murphine, superintendent of public utilities of Seattle, Wash., in a recent communication to the Council, recommended a straight 5-cent car fare on all municipal lines. Mr. Murphine states that the expense of handling paper tickets should be eliminated. At present twenty-five tickets are sold for $1.

Springfield Seeks Higher Fares.—The Springfield (Mass.) Street Railway has filed a request with the Public Service Commission for authority to charge double fares on its city lines between midnight and 4.59 a. m. The company also seeks permission to increase the unit fare from 5 cents to 6 cents at all hours on the city lines within the central zone of rates.

Reduces Minimum Fare.—The Public Service Commission of Massachusetts has approved a reduction of the minimum fare on the Grafton & Upton Railroad, Milford, Mass., from 10 cents to 6 cents. The road was under federal control and was obliged to charge a minimum rate of 10 cents, but being one of the so-called short lines soon found its business falling off.

Seven Cents Asked in Minneapolis.—The Minneapolis (Minn.) Street Railway, controlled by the Twin City Rapid Transit Company, has filed with the City Council its application for increased fares. Horace Lowry, president of the company, stated in the application that a 7-cent fare was necessary in view of recent developments heavily increasing the cost of operation.

New Buffalo-Lockport Tariff.—According to a tariff schedule of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., one-way cash fares on its line are increased from approximately 2½ cents a mile to 3 cents a mile, one-way ticket fares are increased from 2¼ cents a mile to 2½ cents a mile, and round-trip fares are increased to double the one-way fares.

Ticket Boxes on St. Louis Cars.—Separate boxes for tickets have been placed on all cars of the United Railways, St. Louis, Mo. Bruce Cameron, superintendent of transportation, says that the boxes have been installed to relieve the conductors of the extra duty of handling and punching the tickets, thus giving the men more time to make cash change, handle transfers and run the cars.

Youngstown May Adopt Principles of Tayler Grant.—A committee of the City Council of Youngstown, Ohio, spent some time during the week ending Aug. 10 in Cleveland studying the operation of the Cleveland railway and the amendment to the Taylor service-at-cost franchise granting an increased fare temporarily. It is said that the fare in Youngstown may have to go higher than 5 cents.

Six Cents for Worcester.—Mayor P. G. Holmes of Worcester, Mass., is said to have secured assurances from Francis H. Dewey, president of the Worcester Consolidated Street Railway, that the proposed 6-cent fare for that city is only for the period of the war. Six-cent fares already are in force on the suburban lines of the company. The 6-cent fare went into effect in Worcester on Aug. 1.

Use of One-Man Cars Put Off.—The use of one-man cars on the lines of the Galesburg Railway, Lighting & Power Company, Galesburg, Ill., has been postponed for the present. The company will pay the wage scale proposed by the War Labor Board, the scale to run from 38 to 41 cents an hour. Reference to the probable use of one-man cars by the company was made in the ELECTRIC RAILWAY JOURNAL for July 27, page 176.

Asbury Park Road Wants Increase.—The Atlantic Coast Electric Railway, Asbury Park, N. J., has applied to the Board of Public Utility Commissioners of New Jersey, for permission to increase its fare from 5 cents to 7 cents. This would make the fare from Asbury Park to Long Branch 21 cents instead cf 15 cents and the fare to Spring Lake 15 cents instead of 10 cents. The hearing has been set by the commission for some time in September.

Gorge Road Will Charge More.—The Niagara Gorge Railway, Buffalo, N. Y., has filed with the Public Service Commission for the Second District a new tariff schedule. relative to commutation fares which will become effective on Sept. 1. Ten-trip individual, twenty-trip family or firm, forty-six-trip monthly school and sixty-trip monthly individual between Niagara Falls, Lewiston and Youngstown and local points will be advanced approximately 10 per cent.

Washington to Ask More.—Application for authority to charge an increased rate of fare on all its lines will be made to the Public Utilities Commission by the Washington Railway & Electric Company, Washington, D. C. The exact measure of relief to be sought has not been determined. It may take the form of a request for a straight 5-cent fare or a 6-cent fare with the privilege of buying five tickets for a quarter. In addition, a 1-cent transfer charge may be proposed.

Want Franchise Revised.—Charles S. Thrasher and Charles M. Leslie, receivers of the Interurban Railway & Terminal Company, Cincinnati, Ohio, have filed with the Commissioners of Hamilton County an application for a revision of the franchise of the company in such a way as to eliminate all restrictions as to the rates of fare and the manner of operation. Should this be granted, the company will then ask the Public Utilities Commission to fix the rates of fare to be charged.

One-Man Car a Fixture.—The one-man car has come to Dallas, Tex., to stay, according to Richard Meriwether, general manager of the Dallas Railway. Mr. Meriwether explained that the one-man cars now in service on the Akard-San Jacinto line have proved satisfactory to patrons and to the company. Additional one-man cars have been ordered and will be installed on other lines as soon as they are received. The skip-stop plan of operation will be put into effect on all lines in Dallas at once.

New Jersey Rehearing on Aug. 29.—The Board of Public Utility Commissioners of New Jersey announced at the close of a conference on Aug. 7, that it would sit at Newark on Aug. 29 to hear arguments upon the petition filed by the Public Service Railway asking a reopening of the fare case in which it petitioned for a 7-cent fare, 2 cents for a first transfer and 1 cent for a transfer on a transfer. The company was recently allowed to charge 1 cent for transfers, but was refused an increase in the cash fare.

Gary Wants Six Cents.—The Gary (Ind.) Street Railway has filed a petition with the Public Service Commission of Indiana asking for a 6-cent fare in and between the cities of Gary, East Chicago and Hammond and for an 8-cent fare for certain other towns. The recent order of the War Labor Board, increasing the wages of motormen and conductors, will cost the Gary Street Railway approximately $55,000 a year. The company seeks additional revenue in order to compensate it for this increase in expenses.

Receiver Would Increase Fares.—C. J. Minton, receiver for the Winona Interurban Railway, Warsaw, Ind., has filed a petition with the Public Service Commission of Indiana, for authority to increase fares on the Winona & Warsaw Railway, operated by it under lease. Tickets always have sold for 5 cents, or six for 25 cents between any two points on the Winona & Warsaw Railway. It is asked that the rate be increased to 6 cents per ticket and the right to issue commutation books of twenty tickets each for $1.

New York Inquiry Adjourned.—The hearing before the Public Service Commission of New York, in regard to the general condition of all the surface electric railways in New York City, was continued on Aug. 14 and then adjourned for a week. Some data were presented to the commission in answer to the various queries noted in the issue of Aug. 10, but as a rule the companies had found themselves unable to have the information ready, because of its amount and the shortage of accounting help.

Spokane Interurban Rates Increased.—The State Public Service Commission of Washington, in an order which it issued on July 30, upholds the advance in rates of the Washington Water Power Company, Spokane, on its interurban electric lines from Spokane to Medical Lake and Cheney, placing the passenger and freight rates on a parity with the government rates on steam roads. The new tariff calls for 3 cents a mile for passenger rates and a 25 per cent advance in freight rates. The changes just noted went into effect on Aug. 1.

Resort Line Allowed Increase.—An order permitting the Five-Mile Beach Electric Railway, Wildwood, N. J., to increase its fares from 5 cents to 6 cents has been filed by the Board of Public Utility Commissioners of New Jersey. This increase is in the nature of a war surcharge, to be abolished when conditions warrant a return to the original 5-cent fare. One of the main considerations of the commission in granting this increase was that this company serves coast resorts and does 75 per cent of its annual business in July, August and September. In the remaining months of the year the business is very light.

Preparing for the Unregulated Jitneys.—Paving the way for unregulated jitneys in Portland, Ore., Dan Kellaher, City Commissioner, recently introduced an ordinance repealing an ordinance passed by the Council requiring franchises for all automobile buses operated over definite routes. No vote was taken on the measure, although it is understood all members of the Council favor the repeal of the existing regulatory measure. Members of the United Motor Bus Company are still endeavoring to complete the organization of a company to operate 100 jitney buses, but no recent reports of progress have reached the members of the Council.

Mileage Rate Increase Allowed.—The Public Service Railroad, Newark, N. J., on Aug. 10, was permitted by the State Board of Public Utility Commissioners to charge 2½ cents per mile, and 10 cents minimum to apply to districts where the company operates on its private right-of-way. Between Chrome Junction and Chrome, however, the fare will be 5 cents each way. The old rate was 2 cents a mile. The Public Service Railroad is included in the system of the Public Service Corporation of New Jersey, which also controls the Public Service Railway. The filing of the new schedule for the Public Service Railroad was referred to in the ELECTRIC RAILWAY JOURNAL of Aug. 10, page 263.

New Atlantic City Fares Suspended.—The Board of Public Utility Commissioners of New Jersey has announced that a hearing will be held on Sept. 24 in the matter of the increase of fare between Atlantic City and Longport by the Atlantic City & Shore Railroad. The commission has ordered the suspension of the increases in the existing fares until Oct. 13 next unless the board prior to this date determines that the increases are just and reasonable. The increase is from 5 cents to 6 cents. The same ruling prohibits the advance in the 100-trip books to Longport from Atlantic City from $5.25 to $7. The company planned to put the new fares into effect on Aug. 6.

Seven Cents in Hattiesburg.—The Hattiesburg (Miss.) Traction Company on Aug. 1 put a new schedule of increased fares into effect and, if the new standard of fares is maintained, motormen will continue to receive the increase of 2 cents an hour in their pay, which took effect on the same date. The cash fare rate is 7 cents, while books of twenty tickets are sold for $1.25, or 6¼ cents a trip. The franchise of the Hattiesburg Traction Company does not provide any rate of fare, and to meet the rapidly mounting cost of labor and maintenance and construction material, the officials desired to put the increased rate of fare into effect without awaiting approval of the Commission of Mississippi.

Company Appeals Montreal Fare.—The Montreal (Que.) Tramways has appealed to the Public Utilities Commission of Quebec from the finding of the Montreal Tramways Commission fixing for the uniform tariff territory a cash fare of 6 cents plus 1 cent for transfers or five tickets for 25 cents with an extra cent for a transfer. There are also eight appeals by municipalities from the decision of the commission. According to T. L. Perron, representing the company, it will cost the company 6.3 cents for each passenger carried. The company wants a 7-cent cash fare with four tickets for 25 cents. The decision of the City Commission fixing the fares under the terms of the recently-enacted franchise was reviewed in the ELECTRIC RAILWAY JOURNAL for July 13, page 78.

New Buffalo-Niagara Falls Rates.—The International Railway, Buffalo, N. Y., has increased its rate of fare on the new fast service electric line between Buffalo and Niagara Falls. The round-trip fare of 60 cents has been discontinued and a one-way fare of 54 cents has been established. Passengers holding tickets valid on the old

Niagara Falls line will be charged an additional one-way fare of 19 cents on the new line. The new rates became effective on July 30. Fifty cents will be the fare charged by the International Railway on the old line between Buffalo and Niagara Falls and Buffalo and Lockport and Lockport and Niagara Falls after Aug. 22, according to a new tariff filed with the Public Service Commission. The one-way cash fare on these lines has been 35 cents.

Changes in Norfolk Southern Fares.—Under a new rate scale on the electric division of the Norfolk Southern Railway, Norfolk, Va., which went into effect on July 28, the minimum fare is 10 cents instead of 5 cents. The fare to Virginia Beach, however, under the new rate, has been reduced to 42 cents each way, plus the war tax, making the round trip cost about 90 cents. The following statement was issued in connection with the new rate schedule: "The reduced fares on the electric division will become effective on July 28 as follows: Standard one-way fares, 2 cents per mile; minimum charge, 10 cents. Between Norfolk and Virginia Beach and Cape Henry and stations between Virginia Beach and Cape Henry—one-way fares—40 cents, via either route. Round-trip fares between Norfolk and Virginia Beach and Cape Henry via either route, 64 cents. Tickets on sale Saturday and Sunday, with final limit returning the following Monday."

Says Franchise Provisions Control.—The Hamilton (Ont.) Radial Railway, controlled by the Dominion Power & Transmission Company, Ltd., in a judgment handed down by the Railway Board on July 17, is allowed to increase its passenger rates to those enjoyed by the London & Port Stanley Railway (recently increased by an order of the board), subject, however, to the limitations created by the municipal franchise by-laws. The judgment states that this restriction is likely to prevent any relief whatever being granted the company. The company's application for an increase in rates was opposed by the city of Hamilton, the towns of Burlington and Oakville and other municipalities, because of agreements with the radial company as to rates. The Railway Board rules that it is bound by the municipal by-laws, and ought not authorize any tariff which would create charges higher than those stipulated in the different municipal by-laws.

Los Angeles Fare Brief Filed.—City Attorney Stephens of Los Angeles, Cal., on July 27 on behalf of the municipality, filed with the State Railroad Commission his brief in the matter of the application of the Pacific Electric Railway for authority to increase fares. Evidence on this application was taken before members of the commission a short time ago. In his brief Mr. Stephens says: "It would seem to me that this whole proceeding should be considered one of apparent emergency, and if increases are granted, and, to be very frank with the commission, we must admit that the testimony as it now stands would justify certain raises, that they be considered as temporary, and subject to change when the valuation is completed, operation more carefully checked, and economies put into operation." Mr. Stephens urges that the shipyard situation should be considered separate and apart from any other condition of the system, as this abnormal business has not required large expenditure of capital and is for a specific purpose, resulting from the existence of the war.

Hearing on Proposed Fare Increase.—The Chautauqua Traction Company and the Jamestown, Westfield & Northwestern Railroad have filed with the Public Service Commission for the Second District of New York, a tariff showing changes in their passenger and commutation fares which they propose as effective on Aug. 23. Proposed new rates are substantially the same as those put into effect on June 10, 1918, when the companies claimed that control and operation were taken over by the Director General of Railroads in Washington. The Jamestown, Westfield & Northwestern Railroad proposes to discontinue the sale of 250-mile tickets, and 1000-mile tickets are to be advanced from $17.50 to $25. Tickets sold prior to Aug. 22 will not be honored except on payment of ½ cent per mile on 250-mile tickets and ¾ cent a mile on 1000-mile tickets. Unused portions will be redeemed at the per-mile rate of the price paid. A complaint against the proposed increases has been filed by about 200 patrons. The commission will order a hearing on the proposed increases.

No Change in School Fares.—There will be no increase in the price of school tickets and special calendar monthly commutation book tickets by the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., according to notice received by the Public Service Commission for the Second District. When the railway was granted permission to increase its rate of fare from 5 cents to 6 cents, it filed a tariff, which it proposed to put into effect on July 16, making increases in the price of school tickets and special commutation book tickets. The commission's order permitting the increase to 6 cents stated that the order did not relate to the school tickets or the special ticket books and the commission on its own motion suspended the increased rates, pending an investigation by Chairman Hill. There was one hearing at Poughkeepsie and an adjourned hearing was scheduled for July 24. It was not necessary to hold the July 24 hearing as the company notified the commission that it would accept existing rates for this class of passenger traffic and that it would amend the tariff on file with the commission.

Change in Peekskill Tariff.—The Putnam & Westchester Traction Company Peekskill, N. Y., filed with the Public Service Commission for the Second District of New York changes in its tariff rates, effective on July 23, as follows: Local fares between any two stops within a specified zone reduced from 7 cents to 6 cents. Transfers established in connection with any fare paid from points within zone 1, all stops within Peekskill and to and including Williams Mills, at 2 cents each, good over the lines of the Peekskill Lighting & Railroad Company from the South Street switch to the New York Central depot, Locust Avenue and Montrose and points between. The Peekskill Lighting & Railroad Company proposed to put into effect on July 23 a change in its tariff regulations by which transfers were established at 2 cents each in connection with any fare paid within zone 1, all stops within Peekskill and on main line division to and including Locust Avenue, and on Verplanks division to and including Montrose, good over the lines of the Putnam & Westchester Traction Company to Williams Mills.

Fare Increase in Levis.—The Levis (Que.) County Railway applied recently to the four municipalities in which it operates for permission to increase its passenger fares, which were fixed by franchise and ratified by the Quebec Legislature. The fares which have been in force are: Cash fare, 5 cents; unlimited tickets, six for 25 cents; scholars' tickets, fifty for $1.25. The company applied for the following new rates: Cash fare, 10 cents; unlimited tickets, twelve for $1; workmen's tickets, sixteen for $1; children not in arms and scholars under sixteen years of age, fifty tickets for $1.50. An agreement has now been reached under which the cash fare is advanced from 5 cents to 10 cents. Unlimited tickets will be sold, eight for 50 cents, or fifty for $3, instead of six for 25 cents as heretofore. Children, not in arms and under twelve years of age will be charged a cash fare of 5 cents or ten tickets for 25 cents; scholars will be sold fifty tickets for $1.50.

New Haven Ordered to Remove Discrimination.—In the case of Herman W. Gersch vs. the New York, New Haven & Hartford Railroad, the Interstate Commerce Commission has found that the maintenance of commutation fares and special fares for school children between Providence, R. I., and points on the company's Bristol, R. I., branch lower than between Providence and Touisset, South Swansea and Fall River, Mass., for like distances, results in undue prejudice to Touisset, South Swansea and Fall River. It has therefore ordered the company to remove, on or before Sept. 2, and thereafter to abstain from practicing, the undue prejudice found to exist. This order is to continue in force for a period of not less than two years from the date it is to take effect. The stations in question are on defendant's Providence, Warren & Bristol branch line, a standard gage railroad operated by electricity and extending from Providence to Warren, R. I., where it forks into two branches, one to Bristol, and the other through East Warren.

Personal Mention

M. J. Fox has been appointed purchasing agent of the Columbus (Ga.) Railroad to succeed D. A. Turner.

R. S. Walker has been appointed treasurer of the Pacific Coast Railway, Seattle, Wash., to succeed J. W. Smith.

William Bennetts has been appointed electrical superintendent of the Western Light & Power Company, Boulder, Col., vice Harley Hard, resigned.

Fred W. Murphy has resigned from the position of master mechanic and electrical engineer of the Chicago, Ottawa & Peoria Railway, Ottawa, Ill., to accept the position of master mechanic of the Rockford & Interurban Railway, Rockford, Ill.

Edward L. Moreland, a member of the firm of D. C. & Wm. B. Jackson, Boston, Mass., has recently been called for by General Pershing and has been commissioned a captain in the engineer officers' reserve corps. Mr. Moreland expects to go abroad shortly.

Frank W. Laas has been appointed superintendent of the Western Light & Power Company with headquarters at Boulder, Col. Mr. Laas was formerly superintendent of power of the Iowa Railway & Light Company, Iowa Falls Electric Company, and Iowa Electric Company, Cedar Rapids, Ia.

Clifton Reeves, representative of the United States Department of Labor, who has been in Buffalo and other cities investigating electric railway problems for the government, has resigned, to accept a position to look after the labor interests of the Curtiss Aeroplane & Motor Corporation in Buffalo.

H. U. Wallace for the last six years vice-president and general manager of the Western Light & Power Company with headquarters at Boulder, Col., has resigned and accepted appointment as major in charge of engineering and construction, Quartermaster's Department, with headquarters at Washington, D. C.

James Lukey, for the last five years inspector and chief inspector for the Wichita Railroad & Light Company, Wichita, Kan., has been appointed master mechanic for that company to take the place of J. A. Lawhorn, who has resigned to enter other work. Prior to 1913 Mr. Lukey served as night carhouse foreman for the Kansas City (Mo.) Railway.

I. N. Randall has resigned as assistant general manager of the Ocean Shore Railroad, San Francisco, Cal., to accept appointment as assistant in transportation, bureau of markets, United States Department of Agriculture, and has been assigned to the Pacific Coast with headquarters in San Francisco, having charge of all transportation matters for the Department of Agriculture in the States of California, Oregon, Washington, Idaho, Utah, Nevada and Arizona.

C. T. Jones, a civil engineer, has been appointed inspector in the office of the Supervisor of Public Utilities of the city of Dallas, Tex., and has been assigned to the duty of supervising the checking of the number of cars in operation, number of passengers carried, number of passengers provided with seats, etc. These data are desired by the office of the Supervisor of Public Utilities to be used as a basis for intelligent action on complaints regarding service on the part of patrons.

H. A. Bennett, superintendent of employment of the Bay State Street Railway, Boston, Mass., since September, 1917, has been appointed general claim agent of that company to succeed W. A. Driscoll, who has resigned and entered the employ of the Hugh Nawn Construction Company as purchasing agent with headquarters at Philadelphia. Mr. Bennett is very well known in electric railway circles. He was long connected with the Fitchburg & Leominster Street Railway at Fitchburg, Mass., the service of which he entered in 1898 as carhouse foreman and dispatcher. He has always taken an active interest in the work of the American Electric Railway Claim Agents' Association and in 1911 was elected president of that association.

D. A. Hegarty has been elected vice-president of the Western Light & Power Company with headquarters at Boulder, Col., succeeding H. U. Wallace, resigned. Mr. Hegarty was formerly vice-president and general manager of the Little Rock Railway & Electric Company, Little Rock, Ark.; general manager of the New Orleans Railway & Lighting Company, New Orleans, La., when that company was operated by Ford, Bacon & Davis; general manager of the Houston Lighting & Power Company, and since last year has again been in the service of Ford, Bacon & Davis, working on appraisals, reports, increased fare and rate cases. Mr. Hegarty has taken an active part in the work of the American Electric Railway Transportation & Traffic Association, of which he was formerly president, and has served as a member of a number of committees of the National Electric Light Association and also of the Association for Municipal Improvements.

Dan G. Fisher, editor of *O. K.'d Copy*, first vice-president of the Dallas Advertising Club, and district vice-president of the Associated Advertising Clubs of the World, on Aug. 6 was presented with a gold emblem of the Associated Advertising Clubs of the World by Mayor Lawther of Dallas, Tex., on behalf of the members of the club following a speech in which the Mayor told of Mr. Fisher's worth as a citizen and club member. Mr. Fisher was recently elected district vice-president of the Associated Advertising Clubs of the World at its San Francisco convention, and his election to that office was a distinct honor conferred upon the Dallas Advertising League. Dan Fisher is an all-around good fellow. He is well known to electric railway men throughout the entire United States but more particularly to electric railway and electric light and power men in the Southwest. In 1914 he was president of the Southwestern Electrical & Gas Association. Mr. Fisher was long connected with the electric railways controlled by the J. F. Strickland Company, which include the Dallas - Sherman, Dallas -Waxahachie and the Dallas-Waco Lines. He entered business in Dallas in the circulation department of the Dallas *Times-Herald*. While connected with the Strickland lines he was in charge of the publicity of the Dallas Power & Light Company, the Dallas Railway, the Texas Electric Railway and the Texas Power & Light Company. In 1914 he was made assistant general manager of the Strickland lines. In addition to being a former president of the Southwestern Electrical & Gas Association Mr. Fisher also served for several years as secretary of that association. *O. K.'d Copy*, the publication of the Dallas Advertising League, for Aug. 6 was a "Danfisher Number," printed "just to show you, Dan, that we issue *O. K.'d Copy* without a real editor occasionally." Of Dan Fisher it is said by those who know him best that "with ambitions that are lofty and attainments far beyond those of the average man, he is as plain as an old shoe."

Obituary

Edgar R. Giaque, assistant superintendent of the Jefferson and allied lines of the Detroit (Mich.) United Railway, is dead. Mr. Giaque began his service with the company on Nov. 24, 1911, being assigned to the Clark Avenue carhouse.

Ray Tompkins, for seventeen years president of the Elmira Water, Light & Railroad Company, Elmira, N. Y., is dead. Mr. Tompkins was one of the leading bankers of Elmira, the head of a large wholesale business, a director in many local enterprises and the moving spirit in civic and charitable work. He died after an illness of many months.

George G. Caldwell, for a number of years construction engineer for H. M. Byllesby & Company, Chicago, Ill., died of heart trouble on July 27 at Ottumwa, Iowa, where he was engaged on special construction work for the Ottumwa Railway & Light Company.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Track and Roadway

Connecticut Company, New Haven, Conn.—The engineering staff of the Connecticut Company is busily at work on plans for the extension of the company's tracks on Boston Avenue, Bridgeport, which will give a direct route from the North End and from Stratford to the plant of the Remington Arms Company.

Jacksonville (Fla.) Traction Company.—The Jacksonville Traction Company is extending its line from the borders of Camp Johnston into the reservation to a point still to be decided upon.

Gary (Ind.) Street Railway.—Work will soon be begun by the Gary Street Railway on the construction of its Buchanan Avenue extension.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—The Board of Public Works has decided to issue an order to the Indianapolis Traction & Terminal Company to lay a single-track extension on North Illinois Street between Thirty-ninth and Forty-sixth Streets and grant the company a year to build it if the company will fill and curb an excavation made for double tracks.

Louisville (Ky.) Railway.—T. J. Minary, president of the Louisville Railway and the Louisville & Interurban Railroad, in a recent statement said that military activities at West Point and Stithton, Ky., would probably occasion no extension of the lines of the companies from Orell, Ky., to Hardin County.

St. Louis, Mo.—Preparations are being made to operate trolley cars over the new Free Bridge. The Chamber of Commerce of East St. Louis is interested. The franchise has been offered to the East St. Louis Interurban Electric Railway by the Municipal Bridge Commission but has not been formally accepted by the company. Overhead wires are being installed. It is understood that the plan has been suggested of using two one-man cars to furnish service at first.

New Jersey & Pennsylvania Traction Company, Trenton, N. J.—The City Commission of Trenton, N. J., has granted permission to the New Jersey & Pennsylvania Traction Company to run a spur into the terminal yards at Warren and West Hanover Streets, Trenton, so as to keep the large Princeton cars off the streets in discharging and admitting passengers. Under the present arrangement it is impossible to comply with the so-called four-minute law prohibiting the halting of trolley cars on public thoroughfares.

New York (N. Y.) Municipal Railway Corporation.—The Public Service Commission for the first district of New York, has received bids for the construction of station finish for two stations on the Broadway subway, Manhattan, at Forty-ninth and Fifty-seventh Streets and Seventh Avenue, and also for a supply of untreated ties and timber for use on the rapid transit railroads. The unofficial totals presented show that A. W. King, at $153,262, was the low bidder on station finish work, while J. H. Burton & Company, New York, with a total of about $236,000, were the only bidders on orders for untreated ties and timber.

Levis (Que.) County Railway.—The Levis County Railway has awarded a contract for rebuilding its electric railway system to C. H. Jackson & Company, Quebec, and the National Cartage & Supply Company, Limoilou.

Texas Electric Railway, Waco, Tex.—Announcement is made by the Texas Electric Railway, that extensions of the lines will be made in Waco immediately that will give a line to Camp McArthur, the army cantonment near that city. The first line to be built will enter the government property in that section of the camp known as the replacement camp. The initial improvement calls for the laying of 7000 ft. of track and will cost approximately $25,000. Later other lines will be built inside the camp boundaries.

Municipal Railway, Tacoma, Wash.—The Council of Tacoma recently accepted a proposition by C. C. Miller, president of the Commercial Lumber Company, to complete the Lincoln Avenue extension of the municipal car line with $500 to be advanced by the company. The $500 will be credited on freight to be hauled by the city for the company. The line will be completed to extend to the new mill of the lumber company on the Commercial Waterway.

Shops and Buildings

Sheffield (Ala.) Company.—This company reports that an addition will be built to its workshop.

Sand Springs Railway, Tulsa, Okla.—A report from the Sand Springs Railway states that the company expects to place contracts within the next ten weeks for the construction of a new station at Tulsa.

Schuylkill Railway, Girardville, Pa.—A report from the Schuylkill Railway states that the company will construct an addition to its carhouse.

Texas Electric Railway, Dallas, Tex.—The Texas Electric Railway has completed a new passenger station at Waxahachie. The station is modernly equipped to care for passenger, express and baggage business.

Petersburg, Hopewell & City Point Railway, Petersburg, Va.—This company reports that a contract has been placed for the construction of an extension to its carhouse.

Power Houses and Substations

Sheffield (Ala.) Company.—This company reports that it expects to purchase a new ash-handling outfit. A new 500-kw. rotary and one 300-kw. motor-generator set have been purchased by the company.

Arkansas Valley Railway, Light & Power Company, Pueblo, Col.—A new transmission line will be built by the Arkansas Valley Railway, Light & Power Company to two new alfalfa mills being erected in the Arkansas Valley district, between Ordway and Crowley. Energy will also be supplied to several ranches on the line.

Dallas Power & Light Company, Dallas, Tex.—A new brick and concrete addition to its power house, to cost about $15,000, will be built by the Dallas Power & Light Company, which supplies energy to the Dallas Railway.

Washington Water Power Company, Spokane, Wash.—That the Washington Water Power Company is to be called upon to expend $750,000 on its Long Lake plant to meet the demands of the Chicago, Milwaukee & St. Paul Railway for power was information given the State Public Service Commission recently at the valuation hearing. D. L. Huntington, the president, said: "Verbal notice has been given to the company that the International Power Company, which buys power for the Milwaukee electrification system, will exercise its option for an additional 5000 hp., making a total of 15,000 hp. in all. The power company will have to meet this demand when it is made formally, although the company, while paying for the first 5000-hp. power unit, is not using any now."

Charleston-Dunbar Traction Company, Charleston, W. Va.—Work is under way on the excavations for the foundations of the new power house of the Charleston-Dunbar Traction Company at Dunbar, to replace the one destroyed by fire last December. The new building will have a floor space of 50 ft. x 92 ft., being considerably larger than the former power house. The new power house will be located on the site of the old one, immediately adjoining the carhouse, from which it will be separated by a fire wall.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

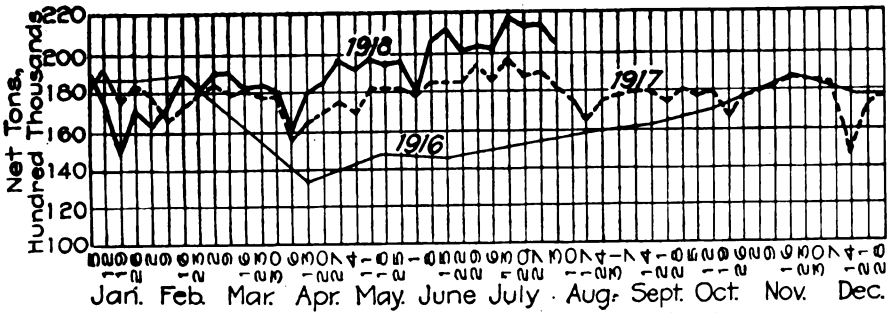
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Coal Production Still on the Decrease

Bituminous However, for Week Ended Aug. 3 Shows 14.3 per Cent Increase Over 1917

During the week ended Aug. 3 the output of bituminous coal not only decreased more than 3 per cent, but recorded the third successive week of decreased production, according to the regular weekly report of the U. S. Geological Survey. Production of bituminous coal (including lignite and coal coked) during the current week is estimated at 12,422,000 net tons, a decrease compared with the week preceding of 398,000 net tons, but an increase over the same week of 1917 of 1,563,000 net tons or 14.3 per cent.

The average production per working day during the week of Aug. 3 is estimated at 2,070,000 net tons as compared with 2,137,000 net tons during the week of July 27 and 1,810,000 net tons during the week of Aug. 3, 1917.



ESTIMATED AVERAGE TOTAL PRODUCTION PER WORKING DAY OF BITUMINOUS COAL, INCLUDING COAL COKED

Shipments during the past week decreased from all districts with the exception of Cumberland-Piedmont and Somerset, Tennessee and Kentucky and Iowa, Texas and the Southwest States. The increase from the Cumberland-Piedmont district was 7 per cent, from the Tennessee and Kentucky district 5 per cent and from the district including Iowa, Texas and the Southest States 4.8 per cent. Material decreases in shipments for the week were as follows:

Western Pennsylvania 6 per cent, Ohio 3.6 per cent, the district including northeastern Kentucky, high volatile of southwest Virginia and Virginia anthracite fields 7.8 per cent, southwest Virginia 16.8 per cent, Alabama 17 per cent and the district including Illinois, Indiana and western Kentucky 6.1 per cent.

Anthracite shipments during the week ended Aug. 3 decreased 1310 carloads or 3.2 per cent, the total movement amounting to 39,632 carloads.

Expeditionary Force to Get Rails and Cars

Orders for This Equipment Distributed Among Five Rail Mills and Eight Car Builders

The Director of Steel Supplies, through the steel products committee of the Iron and Steel Institute, it is learned, has distributed an order for 200,000 tons of 80-lb. type "B" rails among the manufacturers for shipment to the United States Expeditionary Force in France. The specifications call for shipment of 40,000 tons per month to begin immediately. Bessemer or open-hearth rails may be shipped at the option of the mill. The price has not been fixed, but will be adjusted after the government and rail mills have come to an agreement.

The order has been placed with five of the leading mills. The United States Steel Corporation is to furnish 126,800 tons; the Bethlehem Steel Corporation 25,200 tons; and the Colorado Fuel & Iron Company, the Lackawanna Steel Company and the Cambria Steel Company will each furnish 16,000 tons.

The 10,000 small cars for shipment to France have been distributed among eight builders and will require the allocation of 50,000 tons of steel. The American Car & Foundry Company will build 2400 cars; the Standard Steel Car Company will build 1900 cars; the Haskel & Barker Car Company will furnish 1800 cars; the Pressed Steel Car Company and the Pullman Car Company will each build 1500 cars. The Standard Car Construction Company will build 400 tank cars; the St. Louis Car Company and the Liberty Car Company will each build 250 cars.

Conditions in Iron and Steel Scrap Market

Reasons Why Some Sellers May Not Receive Maximum Prices Set by Government

The supply of scrap iron and steel has not materially increased. Sellers such as traction companies, however, may not be able to obtain the maximum prices set by the government owing to the conditions obtaining in the yards of the scrap dealers. Labor is scarce and consequently it is very difficult to grade the material in the yards. Because of the different classifications of scrap and the accompanying prices it is more necessary than ever.

Supplies in the yards have accumulated and consequently dealers in scrap are not so anxious to increase their holdings at the maximum prices. If a sufficient and satisfactory supply of labor could be had at the scrap yards it seems probable that there would be greater competition for the miscellaneous scrap, such as accumulates around carhouses and shops.

At any rate close market observers are firmly of the opinion that the supply of scrap will diminish as time goes on. In that event the dealer demand for scrap iron and steel should pick up and naturally prices with it.

Steel Trolley Poles in No Great Demand

Market Quiet and Price Revisions Infrequent—Five per Cent Advance in a Month

Just now, in common with other equipment, steel trolley poles are not being bought by the traction lines in any surprisingly large quantities. In other words, the market is very quiet. It appears inquiries for this material are also below normal as there is very little new construction work under way or contemplated. Deliveries are very good; that is to say, shipments out of stock can be made in thirty days. Prices have changed little within a year. From 1915 to 1917 there was an advance of about 37 per cent. Six months ago steel trolley poles were increased 1 cent a pound. Within a month 5 per cent was added.

Leading manufacturers report they are not having any trouble getting steel material. It comes through from the mills in fairly good time and in adequate amounts to fill orders. Of course, each producer and also his selling agents must sign the War Industries Board's raw materials pledge.

Time to Lay In Stock of Gear Cases

Conditions in Iron and Steel Market May Make It Difficult to Get Delivery Later

To what extent electric cars may have to be operated for shorter or longer periods of time without gear cases is as yet merely a matter of speculation. Certain it is, however, that unless road operators face conditions squarely and anticipate their requirements in a way designed to take care of the persisting shortage of raw material and other delivery delaying factors they may find the stock exhausted and the demands from the repair shops insistent.

The condition of the raw material market to-day is worse when demand is considered than it ever has been in the history of the industry. Even with the tremendous volume of iron and steel that the mills are now turning out the country faces a shortage of this material. All industries not essentially of a war nature are being made to curtail through inability to get iron and steel, in some cases to the extent of 100 per cent. In order to get iron and steel now a manufacturer must show what the material is to be used for ultimately.

Some manufacturers have a supply of steel on which they can draw for ordinary commercial requirements, but after this stock is gone it will not be easy to convince the government that a further stock is necessary.

While gear cases have been made the theme of these remarks the same statements will apply equally well to other products made of iron and steel. The wise manager therefore will endeavor to anticipate his requirements as well as prepare to repair such parts as are capable of being repaired. With the winter season coming on when the wear and tear on the system is greater the necessity for quick action looms up larger to-day than it has in previous months.

Hoist Manufacturers Discuss War Service

Plants Heavily Booked for Government Orders, and Problem of Securing Raw Material Becomes Critical

The Electric Hoist Manufacturers' Association held its June meeting at Montour Falls, N. Y., where the members of the association were the guests of the Shepard Electric Crane & Hoist Company. The general topic of the meeting was war service, and the general discussion was directed along lines for co-ordinating the experience and facilities of the electric hoist manufacturers to be of the most direct and efficient service to the government for war requirements. The electric hoist manufacturers are heavily booked up on government orders for war purposes, and the problem of securing raw material sufficiently in advance to meet government requirements promptly has become a critical one. The consensus of opinion of the electric hoist manufacturers is that government orders for war purposes should take precedence over all other orders, and if war requirements call for the complete output of all of the manufacturers of electric hoists, it will be desirable to refuse all other business.

Official Copper Price Continued at 26 Cents

Buyers May Make Contracts for Delivery After Nov. 1 on Basis of Delivery Price

At the conference of copper producers with the price fixing committee of the War Industries Board on Aug. 7 the official price of 26 cents for copper was continued in effect until Nov. 1. The producers, it is understood, had made representation for a higher price, while the consumers showed the dissatisfaction that would result from such frequent changes in the official price.

It was stated at the meeting by Mr. Brookings that the government had sufficient copper in sight for its needs. In such a case it was recognized as being useless to urge a higher price on the basis of greater production.

Also producers may accept orders for delivery after Nov. 1 at the price ruling on delivery. This is expected to stop the slowing up in buying a few weeks before to a price-fixing meeting.

It would not be unreasonable to suppose that this order will be passed on to the consumer of copper products to a much larger extent than is now the case. In the past two years a number of manufacturers have taken the position that the contract price is that ruling at the time of delivery. This has not been done by the majority of manufacturers, however.

A number of manufacturers in the first few days in August withdrew their prices owing to an expected change in the price of copper. Whether these concerns will continue to give only day-by-day prices or will quote as of delivery or will issue new prices is not known.

As soon as the government announced its decision copper buyers came into the market and orders for a considerable quantity of the metal were placed.

The conditions imposed by the government are: First, that the producers of copper will not reduce the wages now being paid; second, that they will sell to the United States government, to the public in the United States, and to the Allied governments at not above the maximum price; third, that they will take the necessary measures, under the direction of the War Industries Board, in the distribution of copper to prevent it from falling into the hands of speculators, who might increase the price to the public; and, fourth, that they will pledge themselves to keep up the production of copper to meet war needs.

Rolling Stock

Radford (Va.) Water Power Company reports that it expects to purchase one single-truck pay-as-you-enter one-man car.

Columbus (Ga.) Railroad advises the ELECTRIC RAILWAY JOURNAL that the order recently placed for six Birney cars and stipulating shipment some time in November, has been canceled.

Seattle (Wash.) Municipal Street Railway reports that it has ordered twenty-five double-truck four-motor passenger cars. In addition the railway furnishes the following specifications on six one-man Birney cars ordered on July 19. These are the specifications required of the car builders. However, stock cars conforming substantially to these specifications will be acceptable by the railway, because immediate delivery is desired.

Number of cars ordered	6
Name of road	Seattle Municipal Railway
Date order was placed	July 19, 1918
Date of delivery	2 cars Sept. 1, 4 cars Nov. 1, 1918
Builder of car body	American Car Co.
Type of car	One-man, standard Birney
Seating capacity	30
Weight	13,000 lb.
Length over all	27 ft. 9½ in.
Truck wheelbase	8 ft. 0 in.
Width over all	8 ft. 0 in.
Height, rail to trolley base	9 ft. 9 in.
Body	Semi-steel
Interior trim doors-sash, moldings, etc.	Light mahogany
Roof	Arched
Air brakes	Westinghouse
Armature bearings	Sleeve
Axles	Hammered steel Brill
Bumpers	3-in. 4-16 channel iron buffer-shield of No. 16 sheeted. Full width, round corners
Car signal system	Faraday or equal, one 9-in. foot gong each end
Car trimmings	Light mahogany and bronze
Control	Westinghouse, 506-A, 2 motors, K-10 double-end control
Curtain fixtures	Curtain Supply Co.'s or equal
Curtain material	Pantasote
Designation signs	Hunter's illuminated cut sign, gas or equal
Door operating mechanism:	Deadman-control, Westinghouse, pneumatic control, motorman's valve
Fare boxes	Furnished by purchaser
Fenders on wheelguards	Made in municipal carhouses
Gears and pinions	Barnes' process, or equal
Hand brakes	Pittsburgh drop-handle--steel tubing, or equal
Heater equipment	Consolidated Car Heating Co. or Peter Smith
Headlights	Golden Glow No. 95m
Journal bearings	Gurney ball bearing
Motors, type and number	Westinghouse, 506-A-2, inside hung
Paint, varnish or enamel	Best according to standard
Sanders	Controlled through air-brake equipment
Sash fixtures	O. M. Edwards, 13½ M. D.-1 sash lock or equal
Seats	Hale & Kilburn, Walkover No. 300, 37-in. long, or equal
Seating material	Hardwood slat seat, match interior
Slack adjuster	Type E, automatic
Step treads	Feralun 3 in. wide
Trolley catchers or retrievers	Earl catcher
Trolley wheels or shoes	Wheels No. 6177 type, 6-in. wheel
Trucks	Brill spec. 78-M-1
Ventilators	Utility Ventilator Co.'s
Wheels	Cast chilled, 24-in. dia., 3-in. tread
Special devices, etc.	Two No. 4 semaphore lenses on both ends; G. E. Co. Keyless sockets, No. 60019; cars built in accordance with latest Nat. Code

Connecticut Company, of New Haven, Conn., will purchase through the United States government seventy new pay-as-you-enter type electric cars to cost $10,000 apiece. The government will pay for the cars and the traction company will rebuy them from the government in five years.

Trade Notes

Weiss Switch Lock Company, Springfield, Ill., has moved its offices from 312 South Fifth Street to 600 East Capitol Avenue.

American General Electric Edison Corporation of China, Schenectady, N. Y., has filed notice of an increase in its capital from $500,000 to $1,000,000, to provide for business extension.

Electric Process Company of Wilmington, Del., has been incorporated by M. L. Rogers, L. A. Irwin and W. G. Singer of Wilmington, Del. The company proposes to deal in steel, iron, etc.

E. P. Dillon, manager of the power division, New York office of the Westinghouse Electric & Manufacturing Company, has resigned to become general manager of the Research Corporation of New York.

American Gear Manufacturers' Association will hold its semi-annual meeting at the Onondaga Hotel, Syracuse, N. Y., on Sept. 19, 20 and 21. Announcement of the program will be given in a later issue.

Root Spring Scraper Company, Kalamazoo, Mich., has just shipped to the St. Louis Car Company a complete equipment of No. 2 snow scrapers and Root spring fenders for the thirty cars which that company is building for the Saginaw Bay City Railway. This company and others allied with the Michigan United Railway have replaced all their snow sweeper equipments with Root scrapers and have had gratifying success.

Drew Electric & Manufacturing Company, Indianapolis, Ind., has received through its Chicago representative, Holden & White, Inc., what is probably the largest order for overhead frogs ever recorded. This is an order from the Chicago Surface Lines for 2500 overhead malleable-iron frogs for immediate delivery. The Drew Company is shipping a large amount of this from Indianapolis stock. During July, the Chicago Surface Lines also ordered 1000 malleable-iron overhead crossings.

Trumbull Electric Manufacturing Company, Plainville, Conn., has this week advised the trade that it has permanently discontinued the manufacture of armored cable, armored cord and flexible steel conduit, its schedules "X" and "Y." This step, the company states, was taken in order that it might devote its entire energy to other lines, including a large amount of government business, both direct and indirect, as well as its "safety service" externally operated line of knife switches. In taking this step the company has canceled all orders for the above materials now in its works, and no further orders, of course, will be taken.

New Advertising Literature

Trolley Supply Company, Canton, Ohio: A folder descriptive of its Simplex trolley base.

Beardslee Chandelier Manufacturing Company, Chicago, Ill.: Circular entitled "Better Lighting for Better Results" that describes the Denzar lighting unit for lighting factories, stores, shops, halls, hotel lobbies, hospitals, churches, public buildings, office buildings, apartment houses and schools.

Westinghouse Electric & Manufacturing Company: Catalog on wiring devices and carbon circuit breakers. In this 224-page, 8½-in. x 11-in. catalog are listed fuses, knife switches, service switches and boxes, solderless connectors, disconnecting switches, instrument switches, safety switches, safety panelboards, safety floor boxes and carbon circuit breakers, part of which have previously been listed in the company's old sectional catalog No. 3001.

E. I. du Pont de Nemours & Company, Wilmington, Del.: "Blaster's Handbook," in pocket form, with information regarding the proper explosive to use, the quantity, the method of loading and firing. It is profusely illustrated and contains charts and diagrams with references to other handbooks on special topics issued by the same company, among them "Hole and Post Holes," "Shale and Clay Blasting," "Roadbuilding and Maintenance."

NEW YORK METAL MARKET PRICES

	Aug. 7	Aug. 14
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.45 to 8.53	8.90 to 9.00
Tin, Chinese*, cents per lb	92	90 to 90.5
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Aug. 7	Aug. 14
Heavy copper, cents per lb	23½ to 24½	23.50 to 24.50
Light copper, cents per lb	20 to 20½	20 to 21.50
Red brass, cents per lb	21 to 22	21 to 22
Yellow brass, cents per lb	14½ to 15	15 to 15.50
Lead, heavy, cents per lb	7⅛ to 7½	7.12½ to 7.50
Zinc, cents per lb	5½ to 5¾	5½ to 5¾
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	Aug. 7	Aug. 14
Rubber-covered wire base, New York, cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40	32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	37.50 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4¼	4¼
Rails, rdger (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste cotton (100 lb. bale), cents per lb	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.86	$1.86
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.88	$1.88
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	63	63

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, August 24, 1918 *Number 8*

Tell People What the Fare Is When You Change

COMPANIES which realize the necessity of publicity as an aid for increasing their rates should not neglect its help to instruct people in regard to the proper car fare after increased rates are granted. Of course, the greater number of the people who live in the city know about any change in fare when one is made. But it must be remembered that the cars carry many strangers who cannot be expected to know that the fare has been increased from 5 to 6 cents or that a zone system has been installed, and it is surprising how many among the regular residents of a community will be ignorant of an event of this kind or forget about it when they have to pay their fare. In the interest of speed on the platform, we suggest that a placard giving the fares charged, placed in a position in the car where the passenger can read it when he pays his fare, would be of public help. It is particularly necessary for a year or so after the change has been made, but it would be appropriate at all times.

N. & W. Electrification Patriotic as Well as Profitable

MEN may build better than they know. The Norfolk & Western Railway was electrified so that the road would be able to handle more coal at less cost than would have been possible with more steam trackage. The company could not anticipate that its progressiveness would be so soon rewarded in other than a monetary way. Now the whole country may moralize on how much better our fuel situation would have been last winter—and to-day—if there had been a wider application of electrification. The Norfolk & Western Railway, at least, has nothing to regret as it moves thousands upon thousands of additional cars of coal toward the great ports and manufacturing centers buzzing with war activities. To this road the worst winter of a generation proved only a spur to higher tonnage.

The article in this issue tells the story from the operating standpoint. What a bold undertaking it was for both the customer and the manufacturer to install an absolutely new type of engine! How pleasant it is to record that practice has borne out carefully applied theory so successfully that any defects developed have been rather of materials than of design, and therefore easily remedied!

The fallacy of comparing steam and electric locomotives on a locomotive-mile basis is self-evident in the light of what these electric engines are doing in handling heavier tonnage at greater speeds and with smaller personnel. Nor have the full possibilities of this electrification been reached. We venture to prophesy that when the need arises the company will find means to increase the capacity of its heaviest grade and tunnel section to a still greater degree either by using more of the present electric locomotives per train or by securing super-electric split-phase locomotives!

Company Sections Are Partly Missing a Splendid Opportunity for Securing Information

A QUESTION which we have not been able to answer satisfactorily is why American Association company sections and other electric railway organizations do not make greater use of the talent which is available for instructing and inspiring them. The records of company section meetings which appear from week to week in the "Association News" column of this paper contain topics and names of speakers in sufficient variety to furnish suggestions for very profitable programs. The ELECTRIC RAILWAY JOURNAL prints records of the meetings incidentally for their news value, but mainly in the hope that what one section has done will prove suggestive to others, and not only to sections of the American Association but to other company organizations as well.

When a competent speaker is secured by one section it is a fair presumption that he would be available elsewhere. His experience in addressing one section should enable him to speak better before another. Now is the time to plan for the activities of next fall. A suggestion along this line is that the files of this paper be carefully studied in order to bring to light the names of men who have demonstrated their ability to say something worth while and to say it in an interesting way.

The Motor Truck as a Freight Jitney

INTERURBAN roads in many parts of the country are reporting serious competition in freight haulage from motor trucks doing an inter-city business. This competition comes mostly in connection with the package or less-than-carload freight of the railways and where the main highways have been well improved. The great advantage of the motor truck, of course, is its ability to take on its load at the shipper's premises and to deliver it directly at the consignee's door. But this same independence of fixed conditions which is so desirable in one way is undesirable in another since it leads, under present conditions at least, to independence in all other matters as well. Like the freebooting jitney in the passenger field, the freight truck swears allegiance to no authority save to its owner. Given the requirements that a trucking company maintain the same facilities for the convenience of its patrons and assume the same responsibility as to safe delivery of its goods as a railway, it does not take a man of very much ability along the lines of either economics or mathematics to figure out from the standpoints of both cost and labor that the balance sheet is all in favor of the railway for haulage over any considerable distance.

Transportation of freight by truck at the present time is not only uneconomical but is highly unpatriotic since it takes both man and money power from more essential enterprises. The particular job of the railways in this connection must be first properly to equip and prepare themselves for the handling of this business, and second, both by deed and by suitable publicity, to show that of the two methods of handling the freight business, theirs is the more essential.

Proposed Chicago Ordinance Is Modeled Along Progressive Lines

ALTHOUGH several important steps are yet to be taken before the proposed Chicago traction ordinance, noted elsewhere in this issue, becomes effective, the fact that the aldermen of that city have approved the measure by a decisive vote indicates that service-at-cost agreements appeal strongly to the public mind.

The Chicago situation is of special interest in view of the fact that a settlement with the existing companies was worked out through a public trustee corporation when approval of combined operation under private management seemed remote. Just as the Boston trustees, however, urged the former management to remain in office, the Chicago aldermen sanctioned the appointment of Messrs. Busby, Blair and Budd on the board of trustees. Both instances are a fitting illustration of the confidence of the authorities in the ability of those who have been responsible for service in the past. Such cases augur well for efficiency under trustee control.

The Chicago franchise has been wisely drawn for an indefinite period. The existing companies have agreed to turn over to a trustee corporation, without a dollar in payment, the local properties. In return for this they are to receive a guarantee of interest on the capital investment practically equal to the present average return of the combined companies. The traction fund of about $25,000,000, accumulated during the last eleven years from the city's share in the net receipts of the surface lines, is to be put to a good use—for the construction of subways to be rented to the new corporation.

Like the most far-sighted settlements of recent time, the Chicago ordinance provides for an unlimited sliding scale of fares to meet actual costs. An emergency fund protects the investor against loss while the fares or transfer charges are in process of adjustment. Thus the people, other than those who use the cars, are not to be burdened with transportation charges of any kind. On the other hand, the car riders are not to pay the cost of street sprinkling or cleaning if these public benefits become a drain on the service.

The managements of the surface and elevated lines are to be congratulated on having gone thus far to bring about a solution of the Chicago transportation problem. The city authorities also are to be commended for their spirit of fair play in making necessary compromises. It is to be hoped that the 800,000 voters, as well as the members of the State Legislature, will take the remaining steps necessary to bring about the unification of facilities. The end of the war should see Chicago started on its way toward possessing one of the most extensive local transportation systems in the world.

Let's Tell Others What We Can Do

AS MOST of the industries of this country go, that of electric railways is an old one. Perhaps it is for that reason that electric railway managers tend to be diffident about telling folks what they are able to do. We were moved to this reflection by reading the advertisement of one of the large motor truck manufacturers published in one of the greatest advertising mediums of the country, a popular periodical which counts its readers by the million. The pith of this advertising story was that motor truck freight haulage is a vital war measure because such transport saves steel. On the basis of a 2-ton truck hauling its load 100 miles per day, it was figured that the motor truck equivalent of 50,000 freight cars with their locomotives effected a saving of 1,100,000 tons of steel. It is not our thought to argue the matter, right or wrong as the figures may be. Our thought is, How do the electric roads stand in the way of comparison?

Certainly it is not hard to find interurban railways in this country where a crew of three men operating a two-car train have the capacity and do actually haul 60 tons of freight 100 miles in a working day. Using the truck manufacturer's own estimate of 1½ tons of steel per 2-ton truck, electric cars will not have more steel in their make-up than the trucks required to haul the same ton mileage. To carry the comparison a little farther is most interesting. Electric cars will require only one-tenth the labor and one-third of the equivalent fuel, and besides there are other little matters such as life of equipment and general maintenance very much in our favor. The ability of the truck freighter to collect his load at the shipper's door and deliver it direct to the consignee is offset by the greater mileage which electric cars can make when handling local freight and the greater security offered the owner of the freight, not to count such other things as highway wear and tear which the trucker leaves to the public purse through taxes of which he ordinarily pays a minimum.

How the Railways Can Help in Increasing Our Man-Power Supply

AS OUR military campaign in France becomes more active and our army increases in size, we must still further increase our efforts to utilize our man power in this country to better advantage than ever before. It has been estimated that for every soldier put in the field from four to ten workers are required in the war industries at home to keep the flow of munitions and other supplies to the front unimpaired. This means that with an army of 3,000,000 men in the field the workers at home would number at a minimum 12,000,000, or a total of 15,000,000, or if the army is increased to 5,000,000 men, as is now being advocated, a total of 25,000,000 working units would have to be withdrawn from peaceful pursuits for the industry of war. As there are approximately only 36,000,000 working people in the United States, or that was the number before the war, the size and nature of the task before this country is obvious, even with an army of from 2,000,000 to 3,000,000. Its only solution is to employ women in a large number of those positions for which men heretofore have been considered necessary and also to dispense with services which men have been performing when this can be done without seriously interfering with the national efficiency.

Fortunately, both of these ways are available in electric railway operation to a very large extent. The woman conductor supplies one of these ways and the one-man car the other. Whatever might have been the situation if there had been no war, there can be no question of the urgency of action now in all ways in which man-power can be saved. Labor should not play the part of the obstructionist, both for patriotic reasons and because there is no danger in these strenuous times of the men displaced in this way going without employment. Both the country and the men will gain by any change which transfers the latter from non-essential to essential work.

Is It Difficult to Sell a New Idea to a Railway Manager?

A QUESTION put to us not long ago by a manufacturer whose business brings him into contact with a wide line of industries was this: "Are railways 'businesslike?" Yankee style, we asked him: "Businesslike in what sense?" His reply was: "Businesslike in the sense of studying new money-saving processes on merit." Drawing then upon his experience with other industries he continued somewhat along these lines. "Compared with manufacturing industries, railway managers do not seem to have the same acute business sense. For example, several years ago we spent many thousands of dollars to develop a certain process before we tried to commercialize it. When we brought it to the attention of people in several competitive lines of business, they 'perked up' at once. No sooner had the process been explained to them than *they* began telling *us* how many thousands of dollars they would be able to save. Their only concern was that their competitors might 'beat them to it'! When we put the same proposition before the steam and electric railroads, it was a different and sadder story. A few here and there asked to be shown and then bought, but the majority were skeptical. It's hard for me to understand the difference in viewpoint. What's the answer?"

Our interlocutor had struck bottom, and we had to answer with declarative instead of interrogative sentences. We were embarrassed to make the admission, but we did say that it seemed to us that the difference was largely due to the fact that the manufacturers always had before them the costs of their operations compared with those of others who were selling to the same trade, whereas the railway company seldom had real production costs and still more seldom compared them to advantage with other properties. Furthermore, such comparison was difficult because of varying factors in different towns. Another difficulty was that the frequent change in control compared with privately-owned concerns put a premium on the use of goods of lowest first cost instead of lowest continuing cost.

"That's too bad," said our friend dryly, "but don't you think that the railway men would have been a bit keener, too, if they had to hustle everlastingly for customers?" And then we thought it was time to leave!

How Can We Run Cars Without Crews?

NOT having arrived as yet at that stage of progress in the transportation field where we may load passengers into an accident-proof, crewless car, and by simply pressing a button shoot them quickly, safely and comfortably to their respective destinations, the above question is at present the cause of no little worry to transportation department officials. Of course, labor scarcity pinches all along the line as far as electric railways are concerned, but the pinch is certainly most conspicuous in the transportation department.

With a few emergency repairs from time to time, cars, overhead and way can be made to give service for a considerable period without much labor being expended on upkeep. Such operating practices, however, only defer the inevitable day of reckoning, but the point is that a laborer in these departments may take a day off without causing a direct reduction in service. Besides, in these departments, old men and boys who are not physically able to stand the drive of work in the manufacturing industries can still be secured to do some of the most necessary tasks.

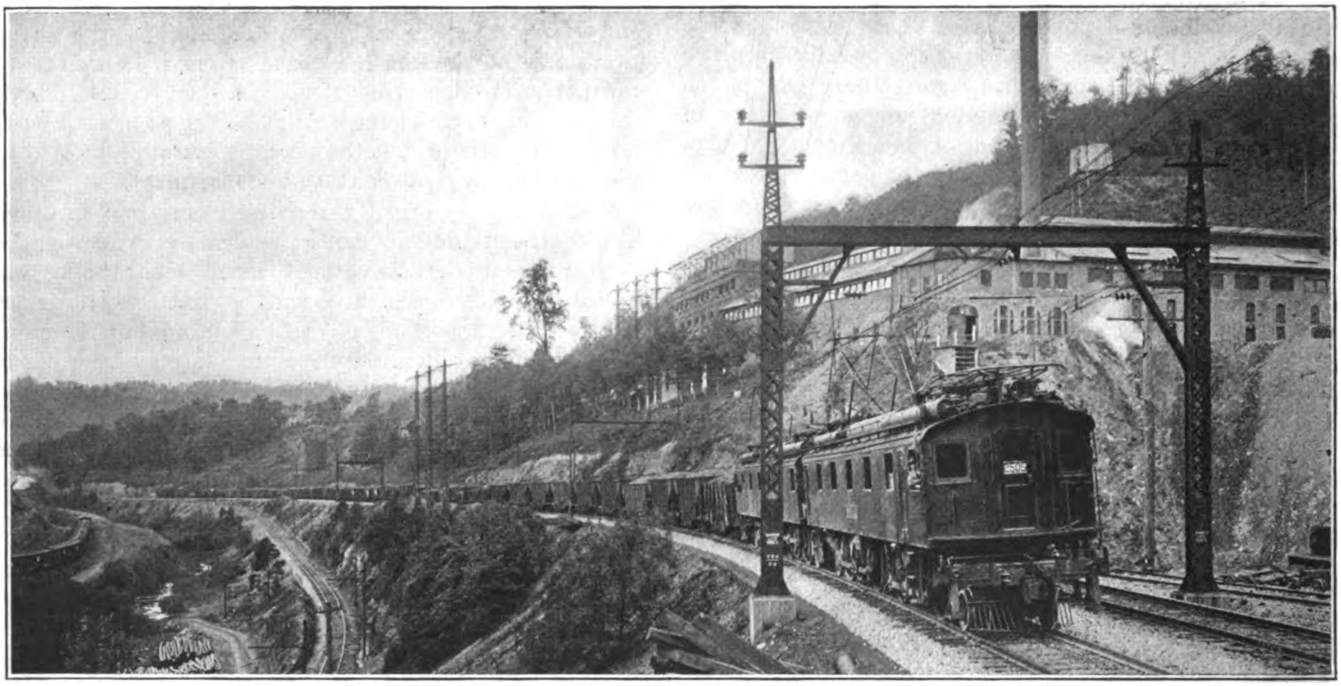
Not so in the transportation department, however. Crew men must be active and must be trained. The failure of a crew to report nowadays usually means that their car stays in the carhouse. Extra lists are either things of the past or are much abbreviated. Even in districts remote from the scene of active war preparations, suitable crew material is simply not available. Interurban lines that in the old days attracted a high class of employees are now in some cases forced to operate reduced services.

What is the solution to this problem? There is no universal answer, and in some communities no answer at all except an actual reduction in service. The injuries thus resulting to both public and railway are simply the fortunes of war, and both parties will have "to grin and bear it" the best they may. As has been noted many times before in these columns, woman conductors or one-man cars may afford the best solutions in other communities. But as in munition manufacturing districts female labor is almost as scarce as male labor and all services cannot be operated by one-man cars, neither of these proposals is a universal answer.

In some instances, notably in the shipbuilding districts, old railway men now in the shipyards assist in handling the rush-hour services. On the whole, however, to quote in substance a recent expression on the subject by a well-known operating man, the possibilities within a company are usually quite as great as any outside. In other words, the rerouting of cars to cut out dead car mileage, the changing from swing runs to straight runs where such changes will permit the regular crews to operate trippers on overtime, the use of proper cars for the service, and similar schemes are quite as productive of results from the labor standpoint as anything else.

Norfolk & Western Electrification Helping Directly to Win the War

The Fifty Per Cent Increase in the Mountain Grade Capacity of the Norfolk & Western Through Electrification Has Permitted Millions of Tons of America's Best Coal, Otherwise Locked Up, to Go to Our Ships and Shops—An Electrification in the Very Heart of a Great Coal Region Which Has Also Proved Successful in Technical and Financial Respects



THE ELECTRIC LOCOMOTIVE COAL TRAIN SERVICE THAT IS PLAYING A REAL PART IN FURNISHING THE FUEL FOR UNCLE SAM'S SHIPS

ON page 22 of the last annual report of the Norfolk & Western Railway was the significant statement that during the month of October, 1917, when conditions were normal, the cost of freight movement with electricity was 26 per cent less that if steam had been used. For amplification of the company's operating statement it is permissible to state that the electric costs included allowance for fixed charges, depreciation, maintenance of track, line, power and shops, etc.; while the steam figures covering similar charges were calculated in accordance with the rules of the Interstate Commerce Commission.

But it must be far more gratifying to the directors of the company to know that their decision to electrify has also proved of the greatest possible value in the winning of the war. For it is the famous Pocahontas coal that is used by our Navy in millions of tons, and only through electrification has it been possible to ship 50 per cent more of this efficient fuel than would have been the case under steam operation, especially during the harsh winter of 1917-1918. Thus foresight and boldness have been doubly rewarded.

As the value of electrification from an economic basis is largely that of handling a tonnage beyond a value critical for steam, it may be pointed out that if the Norfolk & Western had been electrified in 1905, the change might not have paid; if it had been electrified in 1910, there would have been no particular saving, while on the basis of business done since 1915, electrification was absolutely the right thing.

In the case of this company, the limitations on steam were imposed by a gauntlet tunnel through which the greatest number of trains could be handled eastbound in twenty-four hours. This permitted, with trains of 3300 tons, a maximum of about 40,000 tons a day. Compare this with the nineteen electric trains hauling 61,200 tons of coal eastbound from Elkhorn Grade, as shown in the summary of train movements made on May 4, 1918, and given in Table I.

In the old days the signal operators, knowing how liable steam trains were to stall in the tunnel, would not risk blocking the tunnel when preference freight or passenger trains were due to arrive. This deliberate holding of trains at the portals increased the congestion already due to low speeds. To-day the now-so-vital coal trains are handled electrically through the tunnel directly ahead of preference freight or passenger trains.

The importance of the Norfolk & Western Railway as a coal carrier may be gaged by the fact that in October, 1917, it carried in the electric zone 45,390,554 ton-miles of freight (mostly coal) and only 495,860 ton-

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NOTE: Earlier articles in this paper to the Norfolk & Western Railroad electrification will be found as follows: Vol. 42, pages 189, 298, 650; vol. 43, page 705; vol. 45, pages 581, 1058; vol. 47, pages 311, 332, 419, 453, 644; vol. 49, page 538.

TABLE I—SUMMARY OF TRAIN MOVEMENTS FOR MAY 4, 1918

Electric Locomotive Situation

In hill crew service	7
In pusher service	3
Extra locomotives available	0
Locomotives in shop	2

Summary for 24 Hours Ending 11:59 p.m., Date May 3, 1918

E. B. from Elkhorn Grade	19 trains,	789 loads,	61,200 tons
E. B. time freights	2 trains,	83 loads,	3,526 tons
From Pocahontas	2 trains,	89 loads,	6,300 tons
E. B. from Clift yard	3 trains,	145 loads,	11,200 tons
W. B. time freights	0 trains,	0 loads,	0 tons

W. B. extras 12, crews light 12, trains 767, "empties" 18 west loads.
Hill crew trips from Elkhorn Grade, 21.
Hill crew trips Flat Top to Bluefield only 0.
Pusher trips, 34.
Hill crews reporting, 10.
Pusher crews reporting, 7.
Loads delivered to Radford Division, 1035.
E. B. loads on Pocahontas division 1916, { At Bluefield, 725. At Elkhorn, 285.
Full tonnage engine hours, 181 hrs., 58 mins.
Reduced tonnage engine hours, 26 hrs., 05 mins.
Trains with reduced tonnage, 2.

miles of passenger trains. This is a ratio of more than 100 to 1 when addition is made of the empty cars which are not included in the foregoing figure.

Table II shows the number of cars and engine hours during April, 1918.

ELECTRIFICATION EXTENSIONS

At present the company is electrifying the main-line section from Vivian to Farm, westbound, covering approximately 12 miles of route, and also a 5-mile branch from Welch to Wilcoe reaching the assembling yards at Wilcoe where traffic originates from the United States Coal & Coke Company, a subsidiary of the United States Steel Corporation. This extension will make the electrified division cover 41 miles of route.

The next step in electrification logically would be to convert a complete division from terminal to terminal. If westbound, the distance between Farm and Williamson would be 70 miles; if eastbound, from Bluefield to Roanoke, 106 miles.

ELECTRIC LOCOMOTIVES DO THREE TIMES THE MILEAGE OF STEAM AND WITH BIGGER LOADS AT HIGHER SPEEDS

Since the day in June, 1915, when the Westinghouse split-phase electric locomotives went into service, they have been going at top load because of the rapid increase in business. There has been no opportunity for long shoppings, defects being repaired or weak spots strengthened with the least possible sacrifice of working time. On grades of 1½ to 2 per cent, two locomotives develop 6000 hp. at 14 m.p.h. constant speed. The locomotives weigh 274 tons each.

TABLE II—SHOWING SOME TRAFFIC STATISTICS OF POCAHONTAS DIVISION, NORFOLK & WESTERN RAILWAY, MONTH OF APRIL, 1918

	No. of Trains		No. of Cars				Engine-Hours			
			Loaded		Empty		Full Tonnage		Reduced Tonnage	
Date	East	West	East	West	East	West	Hours	Min.	Hours	Min.
1	14	14	535	49	..	879	139	35	0	0
2	18	14	782	48	..	907	194	4	0	0
3	24	13	1,056	126	..	728	228	34	0	0
4	20	13	771	46	..	747	220	35	0	0
5	22	15	885	40	..	898	222	18	0	0
6	21	9	853	0	..	550	232	35	0	0
7	17	13	704	146	..	760	168	29	3	34
8	17	10	744	62	..	609	205	29	7	5
9	21	13	894	75	..	798	224	45	0	0
10	10	14	364	106	..	797	187	42	0	0
11	20	16	956	124	..	1,054	185	20	0	0
12	24	18	972	141	..	1,029	213	46	0	0
13	18	15	837	125	..	800	225	14	0	0
14	21	15	862	71	..	1,105	221	27	0	0
15	22	12	896	135	..	705	209	17	5	35
16	22	14	905	67	..	865	217	28	0	0
17	23	13	1,053	72	..	782	210	46	0	0
18	22	12	971	72	..	670	247	12	0	0
19	19	31	845	70	..	820	213	38	0	0
20	22	13	1,004	66	..	899	240	44	10	20
21	22	18	924	22	..	1,257	213	17	0	0
22	23	37	936	254	..	869	250	55	0	0
23	24	16	1,001	101	..	914	208	49	3	0
24	22	14	939	135	..	704	222	47	0	0
25	24	15	1,035	71	..	908	237	1	7	25
26	22	13	921	100	..	840	203	33	21	50
27	20	16	927	127	..	1,032	217	0	0	0
28	23	21	937	164	..	1,255	201	0	0	0
29	15	13	522	83	..	766	164	42	0	0
30	20	17	834	113	..	1,210	184	15	0	0

Here are some performances of the twelve electric locomotives, of which ten are normally in service:

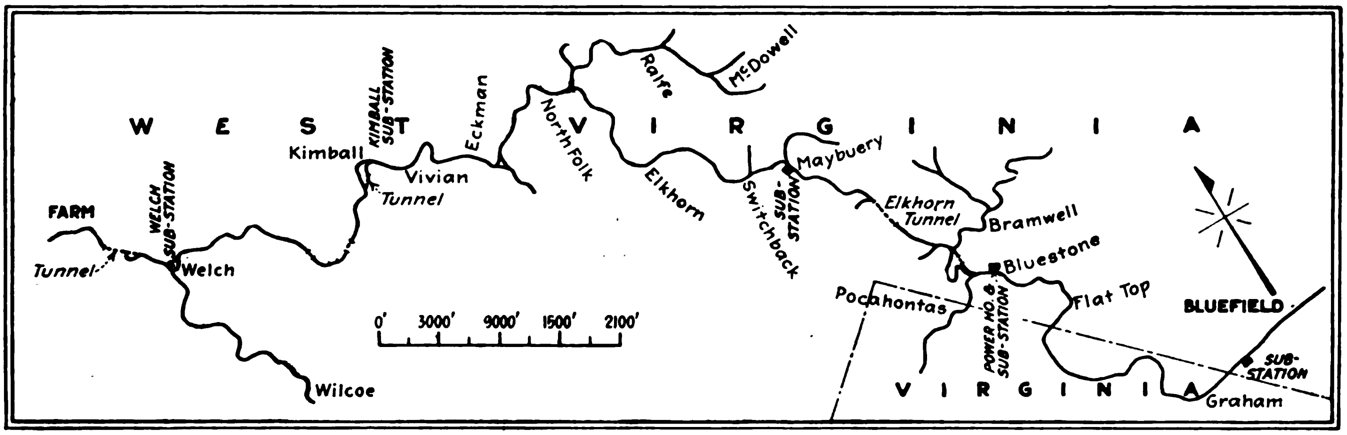
November, 1915, 31,900,000 ton-miles freight and 425,716 ton-miles passenger.

December, 1917, 41,787,000 ton-miles freight, 470,574 ton-miles passenger.

February, 1918, 48,922,000 ton-miles freight, 400,441 ton-miles passenger. The rapid increase in two months, and during a twenty-eight day month at that, will be noted.

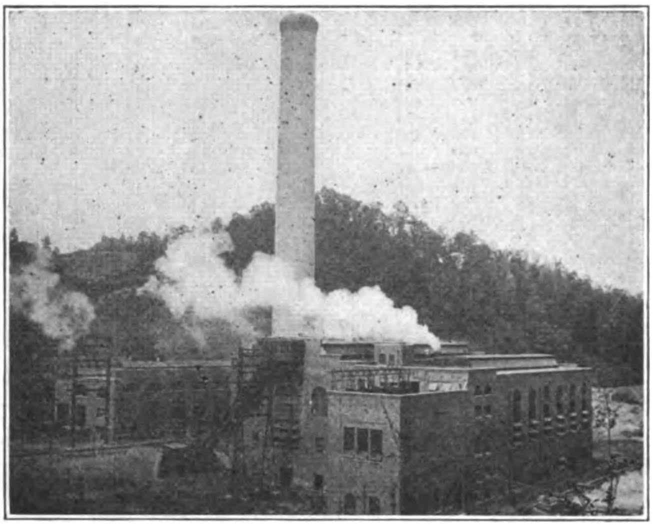
Since electrification, the tonnage handled without additional locomotives has increased by 50 per cent. The increased burden placed upon locomotives may also be gaged by the fact that in January, 1916, the total engine, freight and passenger-miles were 35,055; in March, 1918, 47,845. On a per diem basis, the daily average during January, 1916, was 123 miles and during March, 1918, 151 miles.

A comparision with steam locomotives in the same service just before electrification shows that the former were capable of making about one-third the mileage in a given period. They might make 1500 to 1600 miles a month, whereas the electric engines do 4000 miles easily. For March, 1918, in fact, the daily average was 151 miles or 4530 miles for the month.



MAP OF NORFOLK & WESTERN ELECTRIFICATION, GREATEST COAL ROAD OF AMERICA

So far as actual running is concerned, the steam locomotives were at a tremendous disadvantage on the heavy grades, where they averaged about 7 m.p.h., and in the tunnel the speed was as low as 4 to 3 m.p.h. The consequence was a piling up of trains outside the tunnel, many drawbar and knuckle failures due to low speeds, and a host of worries for the dispatching department.



NORFOLK & WESTERN POWER STATION

With electric operation the locomotives go up the grade and through the tunnel at the constant speed of 14 m.p.h. This has absolutely eliminated congestion and simplified dispatching wonderfully. In fact, in the words of the chief dispatcher: "Electric locomotives are as superior to steam as telephone dispatching (also used by this railway) is superior to telegraphic dispatching. Electrification plus telephone dispatching now enables six men to handle one-third more business with more ease than twelve dispatchers handled the old combination of steam and telegraph." Evidently the best boosters for electrification are the electrified!

The steam crew used to go out of Bluefield with two Mallet engines and added a Mallet pusher for 3300-ton loads between Eckman and Ruth. The electric crew goes out with but one engine for the same number of empties and adds a pusher for a load of 3300 tons. In other words, for the empties the ratio was two steam to one electric; for heavy loads, two electric locomotives were used as compared with three steam.

ELECTRIC ENGINES HAVE AS LITTLE AS THIRTY MINUTES' TURNING TIME

Another important reason for the superiority of electric operation is the decrease in standing time. An electric engine is allowed but forty-five minutes terminal turning time, for change of brakeshoes, journal inspection, etc.; everything in excess of that period is charged as "delay"; if need be, they are turned in thirty minutes. On the other hand, Mallet locomotives in the same service averaged ten hours terminal turning time—a ratio of 13.33 and 20 to 1!

The maximum tonnage per train varies, of course, with the profile. Where the ruling grade is 2 per cent, a train of 3300 tons with two locomotives is the standard. On the eastern slope where the ruling grade is 0.3 per cent, maximum loads of 4800 tons are permissible, while on westbound trip with a ruling grade of 1 per cent, 3000 tons is the limit. The latter loading is rarely attained in operation, as the principal loads are trains of empties which would not exceed 2000 tons with 100 cars.

TABLE III—SHOWING DETAILS OF DELAYS TO ELECTRIC LOCOMOTIVES

Abstracts from Monthly and Semi-Monthly Reports

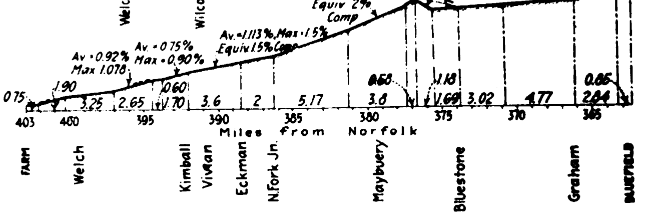
	1918 All Feb.	1918 J.15-31	1918 J.1-15	1917 D.15-31
Total delays	66	12	23	25
Total delays, minutes	1,994	115	434	530
Delays due to mechanical and electrical defects	62	12	22	21
Minutes delay for mechanical and electrical defects	1,677	115	434	486
Average minutes delay	30	9½	19	23¼
Minimum delay, minutes	3	2	2	2
Maximum delay, minutes	138	20	100	140
Eastbound, trains over Elkhorn Grade	341	175	127	155
Elkhorn crews reporting	307	149	170	143
Pusher trips	777	391	311	328
Pusher crews reporting	176	102	108	65
Average number of trips per crew	4½	4	3	5
Total engine-hours	6,009 h-50m	3,119 h-55m	2,720 h-17m	2,794 h-56m
Total engine delays due to electrical and mechanical defects, minutes	1,877	115	434	486
Per cent of total engine hours delay	0.5	0.06	0.26	0.28

ELECTRIC ENGINE-HOUR LOSS LESS THAN ONE-HALF OF 1 PER CENT

To speak generally, it may be said that the loss of engine-hours due to electrical and mechanical defects of locomotives is usually within the remarkably low figure of one-half of 1 per cent. As shown in Table III the performance for the period of Jan. 15-31, 1918, six-hundreths of 1 per cent, is simply astounding for winter service over mountain grades.

An examination of the detail records of defects and their character discloses the somewhat unexpected fact that the most novel part of the equipment—the phase converter—is also the most rugged. In fact, the mechanical parts have given more concern than the electrical parts, because of the extremely heavy service. To-day a large portion of the mechanical defects are due to plain wear. It is impracticable to go into the details of the experiences with these locomotives from the beginning, three and a half years ago. It may be observed here, however, that a general overhauling of these engines is carried out only once a year; and the pantograph shoes (sheet steel) are good for 10,000 to 12,000 miles or say quarterly replacements.

The power plant is located at Bluestone, 11 miles from Bluefield. This is not the center of the power load but had to be chosen because it was the only place that had enough water for condensing purposes.



PROFILE OF THE NORFOLK & WESTERN ELECTRIFICATION, INCLUDING THE TUG FORK BRANCH

To the original installation of three 11,250 kva. Westinghouse turbo-generators there has been added a fourth unit alike in all respects except that the condenser pump is electrically driven to improve steam balance on light loads. This addition, of course, is to take care of the extension. The boilers now comprise twelve instead of ten B & W Stirling units of 677 hp. each.

The transformer substation locations and equipments, varying according to grade and load conditions, are as follows:

No. 1—Bluefield station, between Bluefield and Graham for 1.22 per cent grade, two 3000-kva., 44,000/11,000-volt transformers.

No. 2—In the Bluestone power house, for 0.4 per cent grade, two 3000-kva. transformers.

No. 3—Maybeury, for 2 per cent grade, two 5000-kva. transformers.

No. 4—North Fork, for 1½ per cent grade, two 4000-kva. transformers.

No. 5—Vivian, the extreme western end of the present electrification, for 1 per cent grade. two 2000-kva. transformers.

No. 6—Substation to be built at Welch for the extension, two 3000-kva. transformers.

POWER LOAD DISPATCHING INAUGURATED

Until recently an electric locomotive picking up fifteen to twenty cars at a time on sidings for train make-up was out of touch with headquarters. To secure more effective operation and better load factors, a portable telephone system has been installed whereby the power director is informed by the conductor or the engineer of the leading locomotive that the train is full and ready to start. The train dispatchers are not advised by the power director unless the train is to be held say more than ten minutes.

These telephones are at the various stations, starting in order from Graham, Flat Top, Bluestone, Maybeury, North Fork, at various coal operating or outlet tracks, at Eckman and at Vivian. There are three power directors, each working an eight-hour trick.

The desirability of this load dispatching may be appreciated by stating the coal-loading conditions. There is a large yard at Vivian and a still larger one at Eckman, at which end is also the heaviest grade—the 2 per cent rise beginning at Ennis. An engine originating at Bluefield, the eastern end, will go westward either with trains of empties for delivery to the mines; or the engine may leave Bluefield light westbound, and pick up loaded cars at Flat Top yards and take them through to Eckman or Vivian. On the return trip, when the train has been filled out to capacity, the power director is advised that the train is ready to move.

TABLE IV.—SUMMARY OF LOG SHEET FOR TWENTY-FOUR HOURS ENDED 11:59 P.M., MAY 3, 1918

Eastbound extras from Elkhorn grade	19 trains, 789 loads, 61,200 tons
Eastbound time freights	2 trains, 83 loads, 3,526 tons
Eastbound from Pocahontas	2 trains, 89 loads, 6,300 tons
Eastbound from Clift yard	3 trains, 145 loads, 11,200 tons
Westbound time freights	0 trains, 0 loads, 0 tons
Westbound extras 12-C. L	12 trains, 767 cars, 18 West loads

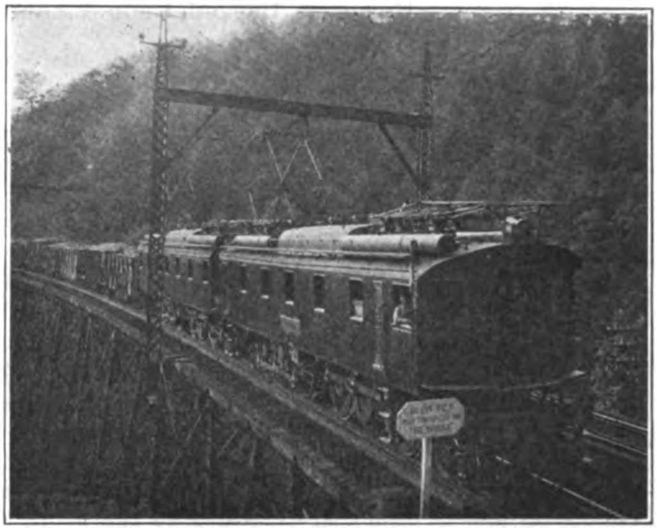
Hill crew trips from Elkhorn grade, 21.
Hill crew trips from Flat Top to Bluefield only, 0.
Pusher trips, 34.
Hill crew reported, 10.
Pusher crew reported, 7.
Loads delivered to Radford Division, 1035.
Eastbound loads on Pocahontas Division, 1916, including 725 at Bluefield and Elkhorn, 285.
Engine hours at full tonnage, 181 hours, 58 minutes.
Engine hours at reduced tonnage, 26 hours, 05 minutes.
Number of trains with reduced tonnage, 2.

Weather	Time	Power Directors
	7:00 a.m. to 3:00 p.m.	
	3:00 p.m. to 11:00 p.m.	
	11:00 p.m. to 7:00 a.m.	

All information is recorded on a log sheet, of which the summary for May 3, 1918, is reproduced in Table IV. This summary shows that on that day nineteen trains handled 789 loads, totaling 61,200 tons.

That the Norfolk & Western is as progressive in its steam activities as in electrification may be shown by citing a few of the things that it is doing, such as the following:

Construction of steel frame and wooden side coal cars.



CLOSE-UP OF THE NORFOLK & WESTERN LOCOMOTIVE

Completion of sixteen, home-designed and home-built, locomotives (incidentally the largest passenger locomotives in the world) during the first four months of 1918.

Development and construction of 1750 of the largest coal cars ever made. These cars carry 100 tons net.

Installation of electric furnace for steel castings.

Ordinarily the company designs and builds all of its freight cars and such engines as shop room will permit.

To-day, the company has in use approximately 180 Mallet engines and has recently bought another fifty because of the tremendous pressure of business.

Compressed Air Society Adopts Definitions to Eliminate Confusion

UPON recommendation of its technical committee the Compressed Air Society, 30 Church Street, New York City, has adopted the following definitions of certain compressed-air terms in order to eliminate confusion as to their exact meaning:

Displacement—The displacement of an air compressor is the volume displaced by the net area of the compressor piston.

Capacity—The capacity should be expressed in cubic feet per minute and is the actual amount of air compressed and delivered, expressed in free air at intake temperature and at the pressure of dry air at the suction.

Volumetric Efficiency—Volumetric efficiency is the ratio of the capacity to the displacement of the compressor, all as defined above.

Compression Efficiency — Compression efficiency is the ratio of the work required to compress isothermally all the air delivered by an air compressor to the work actually done within the compressor cylinder as shown by indicator cards, and may be expressed as the product of the volumetric efficiency (the intake pressure and the hyperbolic logarithm of the ratio of compression), all divided by the indicated mean effective pressure within the air cylinder or cylinders.

Mechanical Efficiency—Mechanical efficiency is the ratio of the air indicated horse-power to the steam indicated horse-power in the case of a steam driven, and to the brake horse-power in the case of a power driven machine.

Over-all Efficiency—Over-all efficiency is the product of the compression efficiency and the mechanical efficiency.

Some Pitfalls in Regulating Depreciation

In Determining Past Investment Commissions Should Adopt a Reasonable Depreciation-Deduction Rule Regardless of Subsequently Used Methods of Computing Depreciation—Future Deductions in Rate Cases, However, Depend Upon Financial and Accounting Policies Followed

BY JOHN BAUER
Princeton University

THE Colorado Public Utilities Commission recently laid down a rule on depreciation and valuation which should be subjected to very careful analysis, because it threatens to become a bad precedent in rate valuations.[1] The commission states that allowance should be made among operating expenses for depreciation or replacement of property, but that the deduction of past accrued depreciation from the appraisal for rate purposes depends upon whether the depreciation allowance in the operating account is based upon the sinking-fund or the straight-line method.

If the depreciation allowances are determined by the sinking-fund method, then the earnings of the fund (so the argument runs) are credited to the depreciation reserve and to that extent relieve the consumers from paying directly for replacement of property. No deduction, therefore, should be made from the appraisal for depreciation. But, if the allowance is computed on the straight-line theory, then larger charges are made to operating expenses for depreciation, and the earnings of the fund are not credited to the reserve. In order, therefore, not to place larger burdens upon consumers than by the sinking-fund method, the depreciation reserve should be deducted from the appraisal.

A careful analysis of this opinion is worth while because of the tremendous effort that is being made by public service corporations all over the country to secure the adoption of the principle that past accrued depreciation should not be deducted from cost new of property valued for rate purposes. The opinion goes a long way toward granting the companies' contention, and it is likely to be used as a leading precedent for their purpose. Much of what is said is excellent, but the issues are not so simple as they are represented. The principle involved is so important that no unwarranted conclusion should go unchallenged. A proper analysis has importance, therefore, far beyond the particular case at issue.

The proposition regarding the different handling of the depreciation item under the sinking-fund and straight-line methods might be satisfactory enough, if the uncertainty of past investment were cleared up and if the proper accounting and financial policies were enforced. If the investment entitled to a fair return were once determined, the commission's distinction might be properly followed for the future, but even that would depend on the precise accounting and financial methods followed. For the past, however, when the amount of the investment is uncertain, when the accounting methods have been unreliable, when no fixed financial policies were pursued and when rates to consumers were not based upon cost but were fixed according to what the traffic would bear—when, in short, there were no clear methods of regulation, the commission's view is palpably wrong. The following analysis makes a clear-cut distinction between cases involving past uncertainties and those based upon ascertained facts and involving definitely prescribed future methods of regulation.

HANDLING OF THE PAST MUST BE BASED ON REASONABLENESS

Let us consider, first, the commission's view from the standpoint of cases that require the clearing up of facts before definite regulation may be attempted. Apparently the particular case before the commission was of this sort—there was uncertainty as to the investment, there had been no definite method for providing for depreciation or renewals and the rates had not been based on any clear regulatory system. An appraisal was made of the property, with the usual difference between the company's figures and those of the commission, and the fair value was finally placed at approximately $140,000. In arriving at this amount, the commission considered that the "annual depreciation requirement will be determined and set aside on the sinking-fund basis, and has, therefore, in accordance with the principles hereinbefore announced, made no deduction on account of accrued depreciation."

The purpose of the appraisal was to determine the investment on which a return should be allowed. For the future no appraisal will be required for any subsequent rate determination, provided the commission sets up a definite depreciation and financial policy and institutes the proper accounting control for the purpose. But before such an automatic procedure may be established, past uncertainties must be cleared up, and, especially, a fair investment figure must first be determined. This is the sole object of a physical appraisal. The valuation merely furnishes the starting point for any future automatic control of rates and return on investment. Why, then, should the future particular method of providing for depreciation have any bearing on determining the valuation? Are the reasonable present claims of the investors against the public any different whatever future depreciation policy may be adopted? Why should investors get more or less, whether the sinking-fund or straight-line method be employed? Are they not entitled to a fair return on a fair valuation? Should that not be the same by whatever way depreciation may hereafter be computed?

The precise future treatment of depreciation in any comprehensive plan of regulation is principally a question of apportioning operating costs among consumers; it is not a factor in the valuation. The straight-line method places relatively larger renewal costs upon the consumers during the early years of the property, while the sinking-fund method provides ideally for an equal annual distribution; but the investors are not interested in this, provided they get a fair return on their investment. In other words, they are entitled to a return on an amount determined independently of the method by which renewal costs are borne by the company's consumers.

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[1] "The City of Lamar, Col., vs. The Intermountain Railway, Light & Power Company.

In determining past investment, then, the commission should adopt a reasonable rule independent of any future operating policy. Various rules may be adopted, each having its own special advantages and disadvantages. First, there is the choice as to whether reproduction cost or actual installation cost should be used; and, second, as to whether or not a deduction should be made for depreciation. But, once more, the deduction for depreciation has nothing to do with the policy of future provision for renewals. It is merely a question whether in clearing up past investment any allowance should be made for physical condition of the property due to wear and tear, obsolescence and inadequacy. It is a question of reasonableness, and nothing more. No matter how future depreciation be treated in the operating account, would it make sense to fix the same basis of return to the investors whether the property is new, up to date and in every way suitable for its purpose, or whether it is old and worn and is extensively obsolete and inadequate? The inventory, of course, would be identical, but should the valuation or investment be counted the same? Is not this the essence of the problem of whether depreciation should be deducted from cost new in an appraisal? If so, does it depend in the least on the method by which depreciation may be computed hereafter?

How the Future Deduction of Depreciation Is Determined

As for the future, when we start with a definite rate base on which a fair return should be allowed, then, it is true, in keeping the rate base up to date there is a question whether the depreciation reserve should be deducted from cost new of the property. Even so, however, the deduction does not depend altogether on whether depreciation is computed by the sinking-fund or the straight-line method. It depends rather on the precise accounting and financial policy that may be required by the commission and followed by the corporation. The fundamental consideration should be that investors get a fair return on their ascertained investment and no more.

Let us assume that for the future a company is entitled to a fair return on its fair known investment, and that the sinking fund method of providing for depreciation is used. This usually assumes that for all depreciable property an equal annual sum is paid into a fund, which together with interest at a given rate will furnish sufficient funds for all future renewals. Suppose that the investment (as in the particular Colorado case) is $140,000, that the equal annual sinking-fund allowable for depreciation is $5,000 and that the investment remains unchanged so that the company is regularly entitled to a return of 6 per cent on $140,000. The usual accounting procedure would be to charge $5,000 a year to operating expenses for depreciation, credit the amount to the depreciation reserve and then set aside $5,000 cash in a special depreciation fund; then also to credit the interest earnings to the depreciation reserve and add the cash to the depreciation fund. The depreciation reserve and the corresponding fund would then always be equal; the two must not be confused.

Now, should the depreciation reserve be deducted from the cost new of the property? The Colorado Public Service Commission says "No!" This view is correct if the depreciation funds themselves are not included in the property. But if they are included in the property, the reserve should be deducted, or the investors will get a return also on the depreciation funds contributed by consumers through the rates paid for service. The investors are entitled to a fair return on $140,000 and no more.

The foregoing is the usually assumed procedure when the sinking-fund method is used, *i. e.*, that the funds are accumulated with interest and are used only for renewals, and that the depreciation fund and the depreciation reserve are equal. But the sinking-fund method may be used without the accumulation of cash funds for renewals equal to the accrued depreciation reserve. The essence of the method is merely that property be written down through credits to the depreciation reserve at an increased annual amount (increasing at a fixed rate); the funds themselves may be used for any corporate purpose. The important thing is that money be kept in the business through charges to income; it may better be used for additions and improvements to the property than be kept exclusively for renewal purposes.

In such cases, where under the sinking-fund method the funds are put into improvements, obviously the property is built up out of the contributions by the consumers, and the full cost of the property will exceed the company's investment of $140,000 by the amount of the depreciation reserve. It will be necessary, therefore, to deduct the depreciation reserve from the cost of the property, even though the sinking-fund method of computing depreciation is used.

There are other variations in procedure that may be followed in connection with the sinking-fund method; and whether the depreciation reserve should be deducted from the cost of the property to show the investment, will depend upon the special circumstances. In any case, however, the investors should receive a return on their actual investment of $140,000, regardless of the precise accounting and financial plan by which the property is maintained.

Likewise, if depreciation is computed by the straight-line method, the commission's rule that the reserve should be deducted from cost new cannot be followed indiscriminately. The straight-line method assumes that the cost of property is charged off to operating expenses and credited to the depreciation reserve in equal annual amounts during the life of the property. But beyond this general statement, the exact procedure may be of a varied character. The money retained in the business may be put into new property, or it may be set aside into a special renewal fund. If it is put into property, the earnings are necessarily merged with the general operating revenues and clearly the depreciation reserve should be deducted from the cost of the property to show the company's investment of $140,000.

If, however, special renewal funds are kept, the deduction of the depreciation reserve depends upon the accounting of the interest earnings from the funds; in any event, the funds are contributed by consumers and should go to their benefit. If the earnings are included in the operating revenues to relieve the consumers through the rates for service, then the reserve should not be deducted—unless the funds too are included in the property. But if the earnings are not included among the operating revenues but go to the investors as non-operating income, then the depreciation reserve should be deducted from the cost of the property; otherwise, the company would get the full return on the investment of $140,000, and besides would get the interest from the funds contributed by the consumers. Finally, if the funds themselves are listed with the property, the interest should go to operating revenues and the reserve should still be deducted from the property.

ULTIMATE TEST IS FAIR RETURN AND NO MORE

The test should always be that the investors get from the consumers a fair return and no more. The investment in the particular case is placed at $140,000; this should be maintained by the public and should not be changed by any particular method of providing for renewals.

There are many pitfalls in the proper treatment of depreciation in a comprehensive plan of regulation. The Colorado Public Service Commission has evidently fallen into several at the same time. The serious one is the confusion between clearing up past investment and other financial uncertainties, and setting up a definite policy of control for the future. The view is almost absurd that any deduction for past depreciation in a rate case should depend on the future method of computing depreciation for operating purposes. Yet it is exactly this general view that is being vigorously urged by utility interests for the sake of establishing a larger rate base.

When the investment has once been determined, the method whereby depreciation is computed, how the funds are kept and how the revenues are treated in the future deduction of the depreciation reserve from the cost of the property does depend on the particular accounts. But the future method of treating depreciation in the operating account simply has no bearing on the reasonable determination of the investment entitled to a return when a company is first brought under a plan of regulation.

Women as Station Agents in Japan

The Mino (Japan) Electric Railway, reported recently in the ELECTRIC RAILWAY JOURNAL as experimenting with the employment of women conductors, has gone a step further in deciding to appoint women "stationmasters" in future at all stations of the line. Most of the women employees in the service of the railway are young girls about twenty years old, and complaints are already beginning to be heard from the male operatives who are annoyed to receive orders from girls of such tender age.

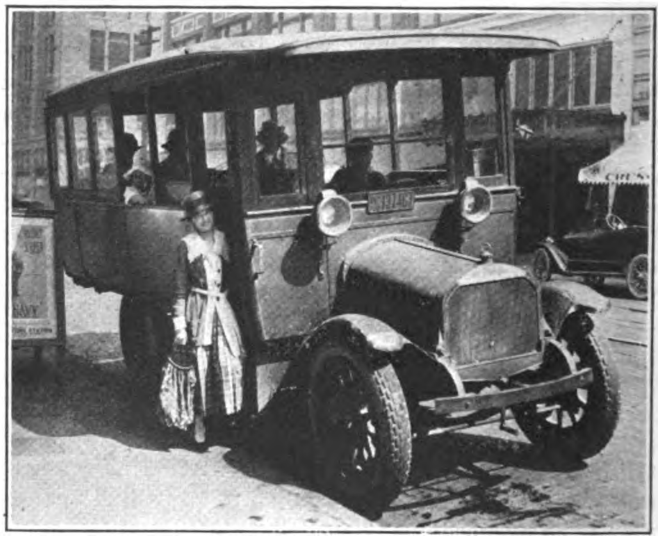
An Interurban Bus That Pays

Seattle-Bothell Bus Line Eliminates Competition After Three Years of Consistent Service—Three Other Lines Previously Abandoned

SOME years ago when Stone & Webster interests in Washington were confronted by the problem of giving transportation in certain territories too sparsely peopled for a railway, they undertook operation with auto buses. For this purpose a separate corporation—the Washington Auto Bus Company—was formed with no railway connections except a transfer arrangement at Seattle with the Puget Sound Traction, Light & Power Company. Even this was abolished as early as Aug. 1, 1917, because passengers preferred to stay on the buses instead of transferring to street cars at Cowen Park, 5 miles from the center of Seattle. As a matter of fact, this arrangement during the twenty-two months it lasted cost the bus company $2,731.55, which was 7.6 per cent of its gross receipts. The buses now come down to the upper business district at Fifth Avenue and Pine Street, which is also the terminus of the Seattle-Everett interurban railway.

The origin of the bus service was described in the Sept. 18, 1915, convention number of the ELECTRIC RAILWAY JOURNAL; a description of the several types and makes of buses bought appeared in the same article, followed by a detailed story on Jan. 22, 1916, on the three Brill buses with International Motor Company's 2-ton Mack chassis which are still in use. A second review of operating results appeared in the Aug. 4, 1917, issue.

The following tells the story of the sole bus survivor after December, 1917, out of the four routes tried. This is the Seattle-Bothell line, which began operation on Nov. 15, 1915. Through consistent, excellent service it has secured the field to itself. Rival buses disappeared in June, 1916, but a few jitneys held out until October, 1916. It was not before May, 1918, that the company had wiped out early losses and could show $300 on the right side of the ledger.



ONE OF THE 2-TON BUSES ON THE SEATTLE-BOTHELL LINE

The Seattle-Bothell line is 16 miles long. It is favored by excellent roadway conditions, the 16 miles being made up of 5 miles of brick or asphalt within Seattle, followed by 7 miles of Warrenite asphalt and 4 miles of brick. This accounts for the fact that the pneumatic front tires average 10,000 miles, equivalent to 0.83 cent per mile per wheel. The solid block tires for the rear wheels averaged 7000 miles, equivalent to 1.8 cents per mile per wheel. Thus the total tire cost per mile per bus was 2 × 1.8 + 2 × 0.83 or 5.2 cents.

THE BUS OPERATOR RECORDS FARES ON AN ORDINARY CASH REGISTER

As the solid tires did not give sufficiently smooth riding they have been replaced by pneumatics. The buses have a maximum speed of 25 m.p.h., and an average schedule speed of 20 m.p.h. The average gasoline consumption is 1 gal. for every 7.4 miles.

A pleasant surprise was the sturdiness of the buses in this service. This is indicated by the fact that depreciation is now on the basis of a four-year life instead of three. Consequently the allowance for four buses is now $338.55 instead of $470 a month.

The present equipment comprises the original three 2-ton Mack chassis machines, a 1-ton Mack added in July, 1916, and intended only for double-heading but actually used as a regular, and a fifth 2-ton bus of the same type. All buses seat twenty riders. The 1-ton bus displaced an inferior vehicle of other make. These twenty-seat buses were bought f.o.b. Seattle at $4,600 each or $230 per seat. One would cost now at least $5,500.

Judging from the weights of these machines, bus designers appear to take more pains to save gasoline than many car designers of the past (and some of the present) do to save electricity. Although these buses have to carry their own generating plant, their weight per seat ranges from 335 lb. to 395 lb. only.

One reason why the company is able to show satisfactory results is that it can get a reasonable rate of fare. To take care of increased costs it raised its rates 8 per cent (in addition to the 8 per cent war tax) on Feb. 1, 1918. This makes the cost per mile as follows: One-way, 2.75 cents; round trip, 2.30 cents; ten-ride commutation, 1.75 cents.

The increased rate has raised the average return per bus passenger from 20 to 22 cents. Fares are recorded on a special locked type of the National Cash Register Company whereby the total and number of fares of every class are printed on a tape.

The buses are run at any headway necessary to meet traffic, the range being from fifty minutes down to two and one-half hours. The seat-use factor since competition ceased is high—85.5 per cent. In winter 300 to 350 passengers are carried every day; in summer 400 to 500. Between October, 1917, and February, 1918, travel increased 21.4 per cent and receipts rose 27.8 per cent.

One other factor besides those named has had a big part in making the auto-bus a success—and that is the use of but one operator per bus. Up to April 1, 1918, such operators received 50 cents per trip. Now they get 60 cents. A trip covers fifty-five minutes exclusive of layover. Curiously enough, the Puget Sound Traction, Light & Power Company did not have its one-man safety car operation approved so readily although less skill is required to pilot a street car.

Detail bus figures follow:

STATISTICS OF MOTOR BUS OPERATION, SEATTLE-BOTHELL ROUTE, 16 MILES

	1917	1916
Bus-miles	134,352	113,040
Revenue from operation	$27,032.56	$19,213.29
Operation expenses	$21,045.11	$16,551.44
Depreciation	$4,142.24	$5,193.30
Taxes (covering 1916 operation)	$126.24	....
Total	$25,313.59	$21,744.74
Deficit	....	$2,531.45
Surplus	$1,718.97	....

On the basis of the bus-mile unit, receipts in 1916 averaged 17 cents and in 1917, 20.12 cents. Operating expenses including depreciation dropped from 19.23 cents in 1916 to 18.84 cents in 1917, but excluding the reduced allowance for depreciation the operating expenses for 1917 were 15.66 cents per bus-mile against 14.64 cents in 1916.

B. R. T. Employees Active in War Thrift Movement

In a little more than three months of organized War Savings activity the employees of the Brooklyn Rapid Transit Company have bought more than $50,000 in Thrift and War Savings Stamps. During the month from June 15 to July 15 alone a record of $17,416.21 was made, against $13,580.01 for the month previous. Strong war savings societies have been formed in the transportation departments and the mechanical department. In these approximately 85 per cent of the employees are regularly enrolled in societies. The management of the company has at present arranged to lend to the Brooklyn War Savings headquarters the services of Charles W. Roberts, of the legal department, in districts that have not been satisfactorily covered thus far.

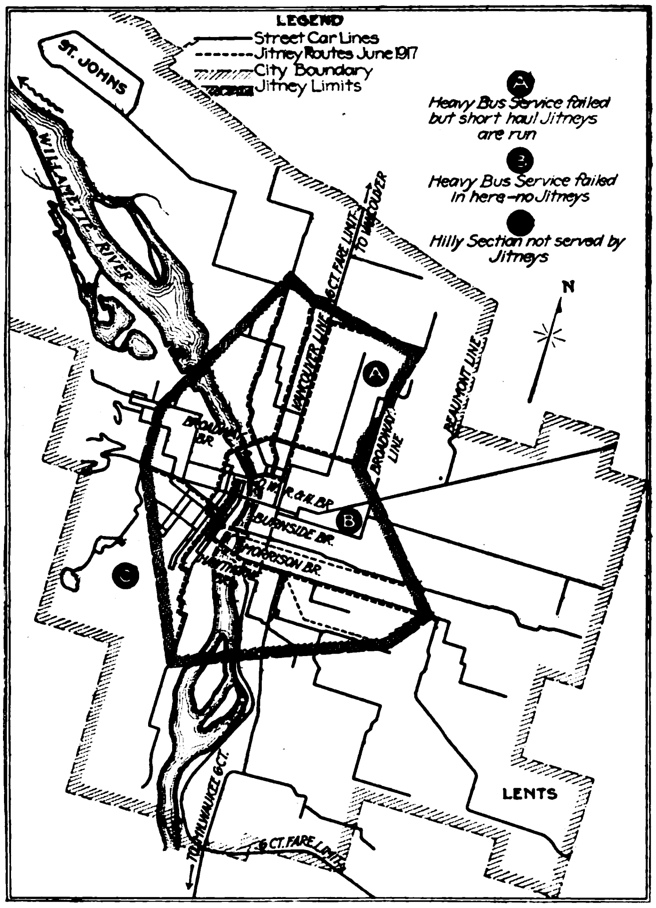
The *Pioneer Bulletin*, published by the commercial, industrial and professional divisions of the War Savings Committee of New York in the interest of the local campaign, contained recently an article complimenting the company upon the excellence of the results obtained.

Traffic Problems Confront the Rose City

Return of Jitneys Is Threatened in Portland, Ore., Because of 6-Cent Railway Fare in Jitney Zone—Platform Shortage Is Keeping Company Astir

ON MAY 17 the citizens of Portland, Ore., indicated their disapproval of the 6-cent fare, granted by their own State Public Service Commission and approved by their own courts, by voting for the return of the jitney. First, they reduced the bond per jitney from $2,500 to $1,000 and adopted the device of a blanket bond of $10,000 for 100 jitneys in the name of the Jitney Drivers' Union. Second, they failed to pass more definite restrictions as to service continuity and the like.

In spite of these acts, however, one driver on June 13 stopped operating the Linnton suburban bus line rather than have the expense of filing a bond on top of the losses suffered by his disgusted predecessor. Nor had the Jitney Drivers' Union come through with its $10,000 bond by June 14, nearly one month after the passage of the ordinance.



HOW RAILWAY AND JITNEY SERVICES IN PORTLAND COMPARED IN JUNE, 1917

Of course, with 36,436 men reported in Portland shipyard service on June 15, it is not likely that the jitney will reappear in large numbers during the war boom, for only the most short-sighted "ne'er-do-well" would run a jitney to earn a precarious living in eighteen hours when he could readily make twice as much money in one-half the time. Yet one should look beyond the period of the war when thousands of men may be glad to get anything to do. Herein lies the real danger of the jitney's returns at Portland or elsewhere.

Many a present restrictive ordinance may be wiped off the books in a great wave of unreasoning sympathy for the unemployed—unreasoning because the jitney man's gain is the platform man's loss, regardless of the economic waste of the jitney itself. Therefore the electric railway must be able to win out on the basis of giving a service that will keep out the jitney—ordinance or no ordinance. This means two things: (1) Shorter headways at higher speeds due to smaller one-man cars of fewer stops and higher acceleration and braking rates; (2) short-haul fares which do not exceed that of the jitney.

HOW THE JITNEYS LAPPED OFF THE CREAM

The recent capable, though unsuccessful, campaign against the return of the jitneys in Portland revealed interesting conditions. In a letter to the electorate on May 11, the Portland Railway, Light & Power Company pointed out that electric railways, on a single-fare basis, had to take the lean with the fat. This put them at a great disadvantage with the jitneys, which merely went after short hauls in the densest territory. This statement was backed up by a map.

For the convenience of ELECTRIC RAILWAY JOURNAL readers, this map in reproduction here has been amplified to show by surrounding lines how carefully the jitneys running in June, 1917, kept away from both outlying and hilly sections. In two districts a service with big buses was tried and voluntarily given up, except that a few jitneys ran into part of one district for short hauls. Where there were hills, even a short haul could not induce the jitney to come out. One would suppose that a map like this would convince anybody with eyes to see and a brain to judge. Nevertheless, the pro-jitneyites won by a big majority in every district except those where large numbers of platform men live.

The map shows clearly the relationship between the 5-cent jitney area and the 6-cent railway area, which really runs beyond the city boundaries. About 15 per cent of the railway riders actually pay only 5½ cents, using fifty-ticket books sold for $2.75, while 1½ per cent have 4-cent school tickets, sold twenty-five for $1. In general, the jitneys formerly drew travel from within a 2-mile to 3-mile well-populated zone, while the electric railway was graciously permitted to carry people three times that distance at 5 cents or less.

THE PUBLIC DOES NOT UNDERSTAND

It is evident from the foregoing facts that if the Portland company had retained the 5-cent fare for all or a greater part of the jitney zone, there would have been no desire to bring back the jitney, since the suburbanites knew perfectly well that they could expect no help from that irresponsible and non-philanthropic vehicle. In fairness it should be added the railway management simply put it up to the commission to grant relief, and it would have been satisfied with any course that produced such relief.

The Portland management is cognizant of the advantages of the safety car for beating the jitney. Twenty-five have been ordered.

While it is true that despite the 6-cent fare effective since Jan. 15, 1918, traffic has risen 20 per cent compared with a year ago and receipts 44 per cent (this discrepancy is due to the 6-cent fare and to increases in the 15-cent Vancouver line), one must not overlook the influence of the enormous activity and great influx of industrial population. This great increase in receipts is practically offset by increase in operating expenses due to the great advance in wages in all departments and the much higher cost of all material entering into maintenance. This prosperous condition also beclouds the issue, whereas the pro-jitney vote has the potentiality of great harm, for it shows the public misunderstands.

Probably the real increase in business is greater than the figures shew, for even with a wage scale ranging from 38 cents to 45 cents an hour, the company cannot hold its men. Because of the frequent necessity for overtime, some carmen are earning in excess of $200 a month. Still, what's that alongside the honorarium of a champion riveter?

The conditions in this great shipyard city are difficult to describe. About 50 per cent of the men have resigned within the year, so that to-day about 600 men are new hands. In the meantime, there has been the need of meeting a base schedule of 175 cars and a rush schedule of 450 cars. Under the circumstances the company considers itself fortunate that the schedule speed has dropped only from 9.52 m.p.h. to 9.35 m.p.h. Doubtless the sale of tickets, including the five-for-30-cent kind, has helped to avoid the great increase in car-hours which may follow the use of an odd-unit fare.

The case of Portland—5-cent short-haul jitney versus 6-cent long-haul trolley—certainly indicates how electric railways lay themselves open to loss through subsidizing the suburbanite. What makes the long-haul situation at 5½ to 6 cents even worse is that so many suburbanites use private automobiles, especially for the mid-day shopping.

It is safe to prophesy that if the short-haul rider gets a 5-cent fare in the faster automatic-type one-man car, while the suburbanite is made to pay for the long haul through thin territory, jitneys would neither be invited to return by a majority nor find it possible to live if they did return.

Real Rapid Transit for Ship Workers

Five-Car Train Operation Over the Lines of the Pacific Electric Railway Gives a High-Grade Service—First Train Out Two Minutes After Whistle

THE great superiority of train over single car service in handling shipbuilding traffic is demonstrated by the comparative ease with which the Pacific Electric Railway is taking care of the heavy increase in traffic to San Pedro, the harbor of Los Angeles, Cal. As San Pedro itself has little housing accommodation, most of the workers come from Los Angeles, 22½ miles distant, and from Long Beach, 8½ miles away, with a few from Redondo *via* the San Pedro-Torrance line.

There are four shipyards in the San Pedro section: The Los Angeles Shipbuilding & Drydock Company, which is building eighteen 8800-ton steel vessels; the Fulton Shipyards, which is building wooden boats at Wilmington; the Chandler Shipbuilding Company, which is also building wooden ships, and the latest comer, the Southwestern Shipbuilding Company, which has a contract for ten 8800-ton steel vessels. The last-named company is on an island reached by ferry from San Pedro.

VARIED WAR SERVICE GIVEN

Not all of the traffic is from shipbuilders, for besides these and the ordinary local riders there are many soldier and sailor passengers, on account of the presence of Fort MacArthur and a naval reserve station.

An idea of the character of travel may be gained from the following figures for June 3:

Out of Los Angeles between 5.20 a.m. and 6.51 a.m., 4066 passengers in seventy-one carloads.

Out of Long Beach between 5.50 a.m. and 7.10 a.m., 1724 passengers in thirty-two carloads.

Via San Pedro-Torrance line, 219 passengers.

Returning from San Pedro to Los Angeles between 3 p.m. and 9.45 p.m., 5485 passengers in 104 carloads.

Returning from San Pedro to Long Beach between 3 p.m. and 7.15 p.m., 2087 passengers in forty-two carloads.

The speed with which the cars are boarded and sent off is indicated by the fact that on June 3, fifty-one cars were observed to pass the Wilmington substation at San Pedro in fourteen minutes. From the blowing of the whistle at 5.45 p.m., it is just two minutes to the departure of the first train! The maximum train length is five cars, this limit being set by the type of air brakes.

Fares are paid in tickets, both commutation and excursion. A ticket office has been built at the plant of the Los Angeles Shipbuilding & Drydock Company.

Within a year, comparing April, 1917, with April, 1918, the number of passengers on the Los Angeles-San Pedro line has risen from 123,000 to 434,000 and on the Long Beach line from 46,000 to 155,000. These lines have regularly had a thirty-minute service, but this is now reinforced by longer trains and specials as required.

POWER AND TRACK FACILITIES ADDED

In order to handle this business properly, the company enlarged both its power and its track facilities. In the first place it concentrated three portable substations (two 600-kw. and one 1000-kw.) along the line, and it has ordered two 1000-kw. General Electric rotary converters and one 1000-kw. Westinghouse motor-generator set to be delivered early in 1919. These will be operated as automatic equipments. At the Wilmington substation there is now a 1000-kw. motor-generator set automatically operated.

The trackage at San Pedro was increased by building 1450 ft. of storage track with inspection pits, and also by installing 1650 ft. for freight-house use. Curves totaling 6500 ft. were double-tracked between Long Beach and Wilmington, and three-position all-electric block signals were taken from less busy lines to add to the protection of this one. The company also placed 3030 ft. of second track on the Gardena-San Pedro line in San Pedro, to be used not only for transporting the 4000 employees of the Los Angeles Shipbuilding & Drydock Company but also for carrying construction material.

Owing to the increased travel on these and other lines, the company has purchased a number of used cars of fast suburban type, nine from San Diego and two each from Visalia and Fresno.

Electric Railway Executives Confer in New York

Meet on Short Notice at Call of American Association to Consider Grave Problems Incident to War-Time Operation of Properties — Executive Committee Decides to Omit Atlantic City Convention

IN RESPONSE to the general call to electric railway executives issued last week by the executive committee of the American Electric Railway Association a large number of men occupying the highest positions in the industry and representing electric railways from all over the country held a conference on Aug. 22, at the United Engineering Societies Building, New York City. The object of this conference was to consider the recent decisions of the National War Labor Board and their probable effect on the electric railway industry as a whole. President Stanley presided at the conference.

Philip H. Gadsden, resident member of the Electric Railway War Board at Washington, discussed in considerable detail the work of the board in connection with the recent hearings of the National War Labor Board. He took up also the work now being carried on in Washington in an effort to set before the proper governmental officials the present serious condition of the electric railway industry.

Mr. Gadsden said that the work of the board had been hampered by lack of accurate data relative to the financial and operating conditions of the electric railways, both as an industry and as individuals. He advocated a stronger organization of the railways in order that the benefits of co-operation and the uniform presentation of cases before federal boards and regulative bodies be secured. He also pointed out that only by mutual assistance can anything be accomplished.

WAR BOARD WANTS ACCURATE DATA

Regarding the questionnaires sent out to a number of railways in the spring for the purpose of furnishing working data for the board, Mr. Gadsden stated that more than 150 were returned to the board. An analysis of these made by the research committee attached to the staff of the Director-General of Railroads shows that during the current year the net revenue applicable to the payment of dividends has, for the industry as a whole, practically reached the zero point. The data for this analysis were collected before the National War Labor Board decisions were made. If applied to the whole industry these would increase the annual operating expense by $100,000,000 more for labor alone.

A new questionnaire is now being sent out to all of the 1260 electric railway companies of the country and Mr. Gadsden urged emphatically that the forms be filled out and returned to the War Board with the utmost expedition.

With the regard to the present critical situation, an increase in fares is by no means a universal remedy, the available data indicating that in most cases an increase in fare is accompanied by a decrease in volume of traffic, so that a 20 per cent increase in fare may not result even in a 10 per cent increase in gross revenue. The situation calls urgently for federal aid of some kind or other if the electric railways are not to be doomed.

CONVINCING TESTIMONY THAT THE SITUATION IS CRITICAL

In the discussion that followed Mr. Gadsden's presentation of the work of the Electric Railways War Board it was pointed out that local referendum votes do not always give relief in the fare situation even when the request of the railway is backed by the labor unions. It also seemed to be a rather general impression that the public does not believe the statements about the serious condition of the electric railway industry and can be brought to do so only by some radical means.

C. M. Clark, of E. W. Clark & Company, explained the rather drastic plan applied by the Columbus Railway, Light & Power Company in practically doubling the fares to secure the revenue wherewith to meet the increased operating expense. When actually confronted with the situation the Columbus public proved to be reasonable.

Horace Lowry, president Twin City Rapid Transit Company, emphasized that the public does not believe the railways to be in as bad a condition as they claim. The problem is to convince the public of the actual situation.

Thomas N. McCarter, president Public Service Railway, described the fare situation on that property with particular reference to the rehearing of the higher fare case which is to take place before the Public Utilities Commission next Thursday. The company has asked to have the case heard again in the light of the wage awards made by the National War Labor Board. Higher fares are absolutely necessary on this property to preserve its financial integrity.

The basis of a statement made and illustrated by J. D. Mortimer, president North American Company, was that wage increases must be behind applications for fare increases if the latter are to be effective. The urgent thing is somehow to convince the public that it is dependent upon good railway service. Then co-operation will come.

WHAT IS THE RELATION BETWEEN HIGHER FARES AND RIDING?

H. G. Bradlee, vice-president Stone & Webster, outlined briefly the results of the increase in fares to 7 cents in Tacoma, Wash. There has been an apparent increase of about 20 per cent in income, with a 10 per cent falling off in riding. Part of the loss will probably be made up and with the natural increase the riding may soon reach its previous volume.

Richard McCulloch, president United Railways of St. Louis, said that prompt action on the fare increase was secured in that city on account of the close relation of wages for labor and rate of fare. He thought that it may be necessary to ask for further increase, although a reasonable increase in income resulted from the recent raise.

INTERURBANS MUST NOT BE OVERLOOKED

L. J. Wolf, Aurora, Elgin & Chicago Railway, compared the situation in the interurban field with that in the city field, showing that the two are different. There is a limit to which the interurban rates can be raised, which is determined by competing facilities. The interurban presents its own problems which will require solution in these times. Charles L. Henry, president Indianapolis & Cincinnati Traction Company, emphasized this point by showing that there are many factors which affect interurban revenue besides the matter of fares. The general development of the saving habit by the people in order to permit them to help finance the war is one such factor.

C. L. S. Tingley, vice-president American Railways, brought out the fact that whether or not a raise in fare will produce an increase in income depends in part upon the nature of the territory in which a road operates. For example, where war industries abound, an increase can be expected; otherwise it may not be realized.

P. F. Sullivan, president Bay State Street Railway, pointed out the importance of a general grasp of the present situation. We are dealing with millions now where thousands were dealt with before. Details are important, but most important of all are the fundamental principles involved. Like Mr. Tingley, Mr. Sullivan considers that income is determined now largely by factors other than rates of fare, notably by the losses in revenue due to absence of men from the territory and by the presence or absence of war industries.

THE INVESTORS' POINT OF VIEW

O. B. Willcox, representing the Investment Bankers' Association, said that bankers had hoped that the War Finance Corporation would realize that the electric railways face war problems. War burdens will be borne by our citizens cheerfully if equitably distributed, but at present invested capital is being asked to carry more than its share. The result will be bankruptcy, or a contribution by the public to care for deficits. The latter can be done nationally or locally. Before the war electric railways were about holding their own financially. They should have assistance now because they are essential and because unless relief is given their property will be confiscated. War conditions threaten the integrity of a vast property.

F. W. Frueauff, H. L. Doherty & Company, said that some kind of a subsidy is necessary if railways are to continue, and this idea was reiterated by other speakers, particularly by M. C. Brush, president Boston Elevated Railway. Mr. Brush gave details of the trustee plan under which the Boston Elevated Railway is now operating and showed how the public will pay for the service which it demands. By having representation of all interests on the board of trustees it is possible to get suitable action on any real need of the railway. In Mr. Brush's opinion it is possible to secure local subsidies in some form or other.

In addition to the speakers mentioned above brief remarks were made by the following: P. J. Kealy, president Kansas City Railways Company; T. W. Wilson, president Wilmington & Philadelphia Traction Company, and Rankin Johnson, president Trenton & Mercer County Traction Company. Numerous questions were put to Mr. Gadsden, who in reply gave many interesting sidelights on the ramifications of the work of the Electric Railway War Board.

ANOTHER CONFERENCE TO BE HELD

Before the meeting adjourned a resolution, moved by Mr. Wolf, was passed to the effect that the meeting, as far as it represented the industry, stand back of the American Electric Railway Association War Board. On Mr. McCarter's motion it was decided that the meeting, when adjourned, should be adjourned subject to further call by the War Board.

NO CONVENTION THIS YEAR

At a meeting of the executive committee of the American Association held in New York, immediately after the conference, it was decided to omit the convention scheduled to be held at Atlantic City early in October. In its place will be a brief meeting in New York on a date still to be determined.

Freight and Express Service Started in Kansas City

THE Kansas City Railways recently instituted express and freight service between the interurban freight station at Kansas City, Mo., and two terminals. One of these terminals is in Independence, Mo., the cars running over the company's tracks, while the other terminal is at Zarah, Kan., 18 miles out over tracks of the Kansas City, Lawrence & Topeka Railway Company.

A motor truck line has been operating between Independence and Kansas City for three years and has a large business. One of the largest department stores has considerable deliveries to Independence, which heretofore have been largely taken care of by its own trucks. The freight cars on the railway tracks now receive this merchandise from the retailer at the interurban station and carry it to the public square at Independence, Mo., where a railway waiting station has been transformed into a receiving station for freight. The bulk of the freight business on both lines from Kansas City outward is from wholesalers, and largely from grocery jobbers. The goods are delivered practically at the doors of the suburban merchant, since their stores are usually located along the electric railway line.

In order to accommodate the citizens along the line, the interurban company is carrying milk cans in its passenger cars until other arrangements can be made. The cars are loaded in the early morning, when there are comparatively few passengers, and thus do not interfere with the passenger traffic.

Despite the agitation for the use of trucks on highways, there has been comparatively little attempt to establish truck service around Kansas City. There are two or three truck lines operating now on rock roads, only one of which serves a community already served by interurbans. The other truck lines are being developed in competition with steam roads.

Study of Car Energy Saving at Dubuque

Tests Made on Level and Hill Lines Show that Savings as High as 26 per Cent Can Be Obtained by Use of Meters as Checking Devices

By L. E. GOULD
President Economy Electric Devices Company, Chicago, Ill.

A STUDY was conducted last winter on the lines of the Dubuque (Iowa) Electric Company to learn the probable saving in car energy consumption that could be expected from an installation of energy-checking devices on the cars. Referring to the map of the Dubuque lines, Fig. 1, the tests with which this article is concerned were made on the Main Street line and the West Dubuque-Eighth Street line. As the physical conditions of these lines are widely dissimilar, they afford an excellent example of the comparative results obtainable with the same car equipment on level lines and on hills. The tests were conducted by the Economy Electric Devices Company, Chicago, Ill.

The route of the Main Street line, Fig. 1, is parallel with the Mississippi River and its profile is practically level. There are twelve fixed stops and fourteen curves on each round trip, the distance of 5.6 miles being made at an average schedule speed of 8.4 m.p.h. The normal headway is ten minutes with a rush-hour headway of five minutes, but as all other lines in the city use part of the Main Street tracks the average car spacing is less than one minute. The car equipment used was that which is regularly operated on the line. These cars are steel, low-floor, pay-as-you-enter, double-end, with a seating capacity of forty and a weight of 34,500 lb. The cars are equipped with two GE-203-G, 50-hp. motors geared for a free running speed light of 28.25 m.p.h.; Brill 39-E maximum traction trucks, a GE CP-25 compressor, S. G. 2-valve air brakes, two G.E. K-36-J controllers, and hand-operated doors and steps.

The test cars were each equipped with a 100-amp. capacity Sangamo Economy meter to record the actual energy consumed by the car motors. The test included two periods, the first a blind period, and the second an instruction period. During the blind period the cars were operated with meter dials covered, the meters being read at the carhouse nightly. The data of car mileage and total passengers were obtained from the auditing department. The runs were operated by the regular crews without instructions of any kind. This period lasted three days and from the data obtained the average base figures of energy consumption per car-mile and passengers per car-mile were obtained. A basic figure of 2.093 kw.-hr. per car-mile was thus secured against which to make comparisons. It is quite probable that this figure is slightly lower than the average because of the presence of the meters on the cars, even though

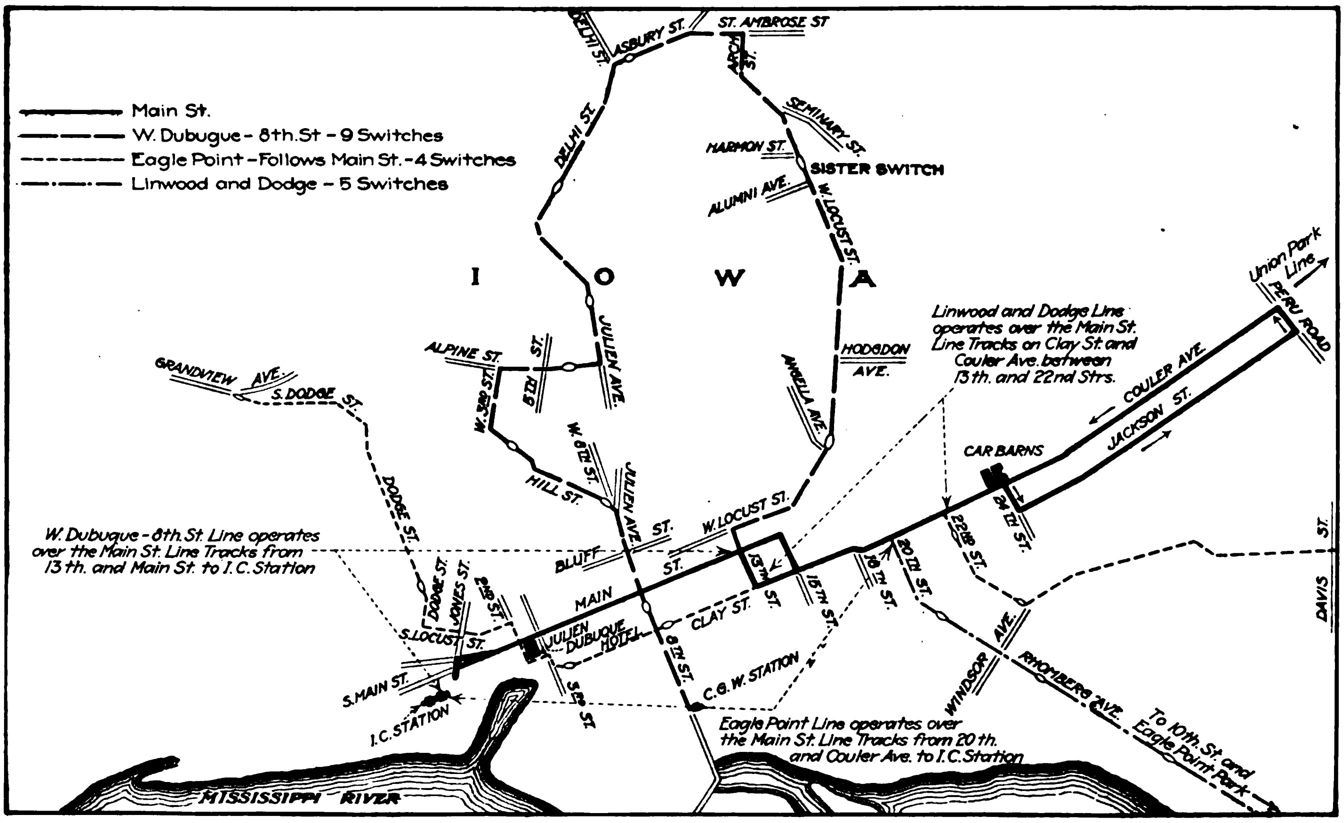

Main St.
W. Dubugue - 8th.St - 9 Switches
Eagle Point - Follows Main St. - 4 Switches
Linwood and Dodge - 5 Switches
DELHI ST.
ASBURY ST.
ST. AMBROSE ST
ARCH ST.
SEMINARY ST.
HARMON ST.
SISTER SWITCH
ALUMNI AVE.
W. LOCUST ST.
I O W A
HODGDON AVE.
ANGELLA AVE.
JULIEN AVE.
ALPINE ST.
5TH ST.
W. 3RD ST.
W. 8TH ST.
HILL ST.
GRANDVIEW AVE.
S. DODGE ST.
DODGE ST.
W. Dubuque - 8th. St. Line operates over the Main St. Line Tracks from 13th. and Main St. to I. C. Station
JONES ST.
2ND ST.
S. LOCUST ST.
S. MAIN ST.
I.C. STATION
3RD ST.
JULIEN DUBUQUE HOTEL
BLUFF ST.
MAIN ST.
8TH ST.
CLAY ST.
13TH ST.
15TH ST.
18TH ST.
20TH ST.
22ND ST.
24TH ST.
C.G.W. STATION
Linwood and Dodge Line operates over the Main St. Line Tracks on Clay St. and Couler Ave. between 13th. and 22nd Strs.
CAR BARNS
COULER AVE.
JACKSON ST.
Union Park Line
PERU ROAD
DAVIS ST.
WINDSOR AVE.
RHOMBERG AVE.
To 10th. St. and Eagle Point Park
Eagle Point Line operates over the Main St. Line Tracks from 20th. and Couler Ave. to I.C. Station
MISSISSIPPI RIVER

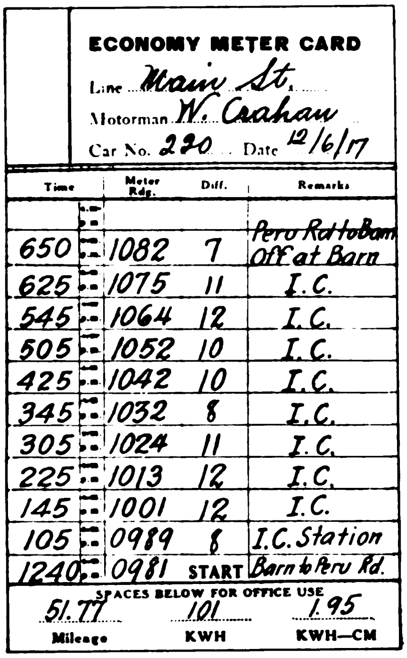
FIG. 1—MAP OF DUBUQUE (IOWA) ELECTRIC COMPANY'S RAILWAY LINES

the dials were masked so that the readings could not be observed by the men.

At the start of the second period the motormen as a group were given a talk on energy-saving methods by A. H. Smith, superintendent. Personal instruction also was given on the cars. Meter record cards of the form here shown were used by the motormen, to set down their energy readings by trips.

Results of Level Line Test

The following tabulation of the test results together with the graphic representation of Fig. 3, will show the comparison between the operating efficiency of the crews during the blind, uninstructed period and afterward when instruction had been given and the meters were being read so that the car energy consumption of each round trip could be reported by the motormen. Due to better handling of the controllers and brakes, the car energy consumption was reduced 0.253 kw.-hr. per car-mile (a saving of 12.1 per cent.) notwithstanding a traffic increase of 1.1 passengers per car-mile (16.7 per cent.). While this saving is not notably large, the type of car used is highly efficient from the energy standpoint, and the transportation department of this road has been consistent in thoroughly training its platform men to maintain efficient power operating methods. Also the basic figure of 2.093 kw.-hr. per car-mile was obtained during a period when the mean average temperature was +23 deg. Fahr. and the saving was made in a period when the average temperature was —1 deg. Fahr. Snow caused slipping of wheels and frozen brakes during both periods and a heavy increase in traffic due to the severely cold weather and the approach of the holiday season filled the cars to capacity. These conditions operated against a maximum saving.



ECONOMY METER CARD

Line Main St.

Motorman W. Crahan

Car No. 220 Date 12/6/17

Time	Meter Rdg.	Diff.	Remarks
650	1082	7	Peru Rd to Barn Off at Barn
625	1075	11	I.C.
545	1064	12	I.C.
505	1052	10	I.C.
425	1042	10	I.C.
345	1032	8	I.C.
305	1024	11	I.C.
225	1013	12	I.C.
145	1001	12	I.C.
105	0989	8	I.C. Station
1240	0981	START	Barn to Peru Rd.

SPACES BELOW FOR OFFICE USE

Mileage	KWH	KWH—CM
51.77	101	1.95

FIG. 2—METER RECORD CARD USED IN TEST

One of the units in the Main Street test was car No. 200. During the blind portion of this test while meter dials were hooded, there was nothing in the power readings obtained from this car to indicate an abnormal condition. However, on the first day of the second period, when meter readings were being taken by the crews, complaints were made relative to difficulty experienced in maintaining schedules without the continuous application of the power, which made saving impossible. The condition of the car continued to become worse, and instead of a decrease in power consumption as made by other cars, it showed an actual increase of 7.01 per cent during the second period over power requirements during the blind period. It was found that the excessive power required was due to a defect in a side bearing, which was subsequently corrected in the shops. After this the energy consumption of car No. 200 returned to normal.

A separate graph on Fig. 3 shows the erratic action of car No. 200. While interfering with the best test results, the action illustrates that in a meter installation: (a) The meter readings will indicate equipment defects; (b) that the car crews are on the alert to report any condition of their cars which prevents them from making satisfactory records. Before the use of meters with instruction, the other crews operating cars in good condition had power readings as high, and in some instances higher, than car No. 200 showing that when no incentive is given for economical use of power,

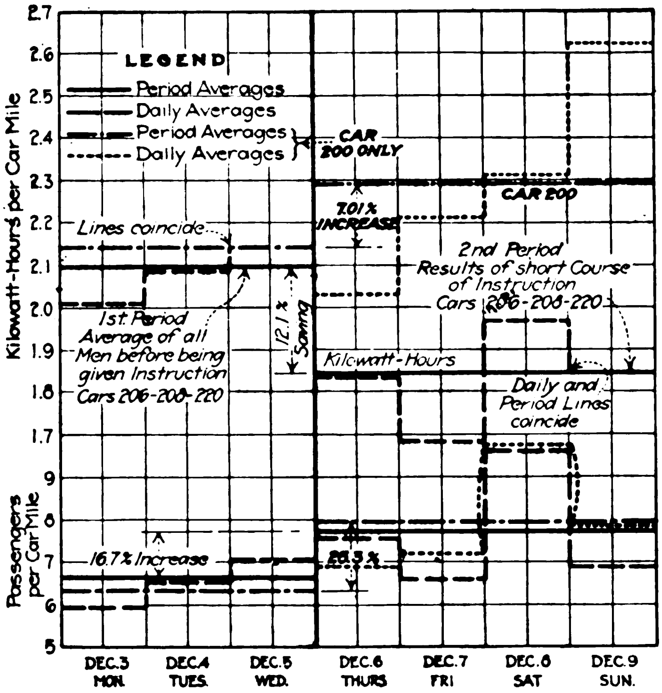


FIG. 3—GRAPH SHOWING RESULTS OF POWER SAVING TEST ON MAIN STREET LINE

SUMMARY OF MAIN STREET TEST

First Period

Date	Mileage	Kw.Hr.	Kw.-Hr. Per Car Mile	Passengers	Passengers per Car Mile
3	296.04	597	2.01	1760	5.95
4	446.81	935	2.09	2925	6.55
5	446.81	958	2.14	3163	7.08
Totals	1,189.66	2,490		7,848	

Average kilowatt-hours per car-mile for first period 2.093
Average passengers per car-mile for first period 6.6

Second Period

Date	Mileage	Kw.-Hr.	Kw.-Hr. per Car-Mile	Passengers	Passengers per Car Mile
6	446.81	821	1.835	3386	7.58
7	296.04	498	1.68	1951	6.59
8	391.81	771	1.965	3762	9.61
9	419.31	770	1.84	2870	6.84
Totals	1,553.97	2,860		11,969	

Average kilowatt-hour per car-mile for second period 1,840
Average passengers per car-mile for second period 7.7

Comparisons of Two Periods

	Kilowatt Hour per Car Mile	Passengers per Car Mile
First Period	2.093	6.6
Second Period	1.840	7.7
Difference	0.253	1.1

Decrease = 0.253 kilowatt-hours per car mile = 12.1%. Increase in passengers per car-mile = 1.1 = 16.7%.

a much greater amount than necessary will be used. When the crews received instruction which enabled them materially to reduce their power readings on other cars, the condition of car No. 200 prevented such a saving and this fact immediately became noticeable to the operating crew.

TEST ON HILL LINE

The route of the West Dubuque line is between the business district and West Dubuque, located on the river bluffs. This line is largely single track and its steepness is indicated by the fact that it is in competition with a cable-incline railway. There are many safety stops, curves and turnouts on this line, and heavy grades reaching a maximum of 10 per cent as shown in Fig. 4. The round trip mileage is 10.6, the scheduled speed is 7.95 m.p.h., and a normal headway of ten minutes and a rush-hour headway of five minutes are maintained. The same equipment was used for this test as on the Main Street line.

The West Dubuque test included two periods similar to the Main Street test but was conducted with different crews. Weather conditions were about the same until the test was terminated on Dec. 12 by a blizzard which interfered with the operation of most roads in the Central States. On the West Dubuque line the energy consumption before the meters were used by the motormen was found to be 3.41 kw.-hr. per car-mile. Improved operation reduced this to 2.52, a net saving for the test period of 0.89 kw.-hr. per car-mile, or 26.1 per cent. A portion of this substantial saving is credited to a reduction of passenger traffic, although most of it is clearly due to improved handling of the controllers and brake equipment.

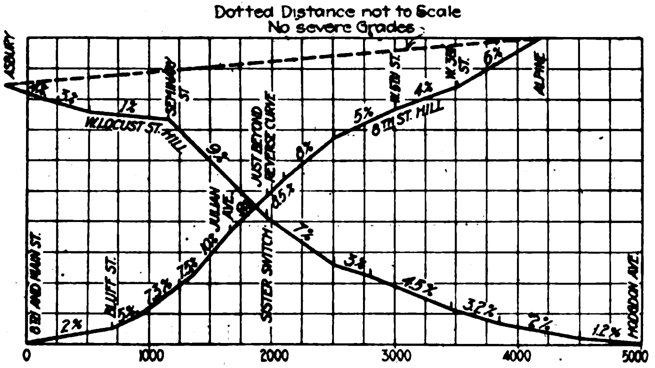


FIG. 4—PROFILES OF WEST DUBUQUE EIGHTH STREET HILL LINE

This line is so steep that power must be applied continuously during the up-grade part of the trip and brakes must be applied hard almost all the time when descending the hill. There is practically no opportunity to coast on the major part of the route. In the opinion of those conducting the test the saving is very largely due to the motormen taking particular care to accelerate better and not to run unduly on the resistance notches, and also to the fact that they avoided coasting up the severe grades, thus calling for reacceleration and greater resistance losses in operating over the remaining portions of the line.

As a result of these tests, the Dubuque Electric Company has purchased meters for all of its cars.

Cleveland Railway Way Department's New Consolidated Offices

SINCE the completion of the Harvard Avenue maintenance yard of the Cleveland (Ohio) Railway, described and illustrated in the issue of the ELECTRIC RAILWAY JOURNAL for Feb. 24, 1917, separate offices of the way department have been maintained at the yard and in the downtown section of the city. The yard office building, as it appears today, was shown on page 339 of the issue referred to.

A decision was reached recently to consolidate all of the engineering work of the department at the yard, and the office building is now being enlarged for the purpose. As a great deal of study has been given to the layout of this building by C. H. Clark, engineer of maintenance of way, and D. W. Morrow, the company's consulting engineer, the dimensions of the principal rooms may be of interest to way engineers of other companies who may be contemplating similar consolidations.

The original building is about 36½ ft. x 33 ft. in outside dimensions, with two floors. On the first floor is a 13½-ft. x 13-ft. entrance hall in one corner, a 16½-ft. x 13-ft. toilet and washroom, and a large room, 30½ ft. x 20 ft., originally intended for lockers and lunch tables but actually used as a general office. Upstairs are three roomy offices of about equal size. The room dimensions given above and below are inside measurement.

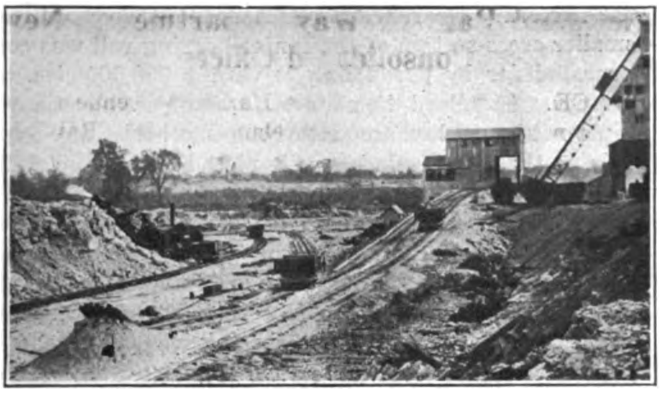
The two-story addition now under construction is 53 ft. x 23 ft. outside. The first floor will contain a general engineering office, occupying all of the area except that needed for a 7¾-ft. x 12-ft. instrument room and a 12-ft. x 18-ft. blueprint room. Upstairs will be a large drafting room, 37 ft. x 20 ft., with 50-in. Cooper-Hewitt mercury vapor lamps, and a smaller drafting office similarly illuminated.

The remodeled building will give Mr. Clark and his associates ideal headquarters close to the center of way construction and maintenance activities, and the drafting room will have much better lighting than was possible when the engineering work was done in the *Leader-News* Building.

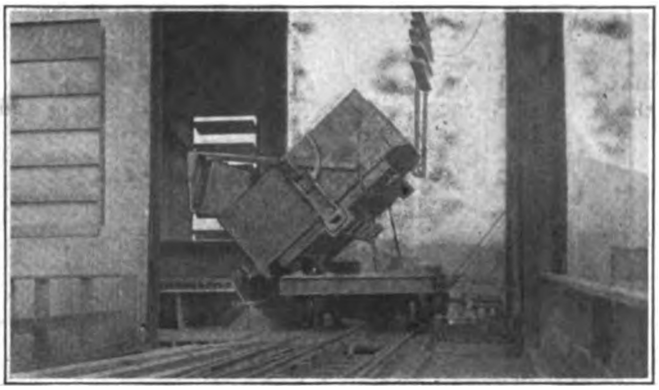
Women Employees in Great Britain

In April, 1917, the number of women directly replacing men in Great Britain was estimated at 1,256,000, of whom more than three-fourths were found in industrial and commercial occupations and in government employ. In January, 1918, according to the British *Labor Gazette* of June, 1918, this number had increased to 1,442,000. The degree to which women replace men varies widely in different industries. In government establishments, not including controlled establishments engaged in munitions work, they formed 36 per cent of the total employees; in banking and finance, 24.6 per cent; in commercial occupations, 16.9 per cent; in engineering firms, 7.14 per cent; and in all of the metal trades 6 per cent.

These figures refer only to the women directly replacing men. Many others are engaged in work where they replace only partially, or indirectly, men who have been withdrawn.



GENERAL VIEW OF REMOTE CONTROL, ONE-MAN-OPERATED QUARRY TRANSPORTATION SYSTEM



SHOWING THE METHOD OF DUMPING THE MANLESS CAR AT THE CRUSHER HOPPER

Manless Car Operation in a Stone Quarry

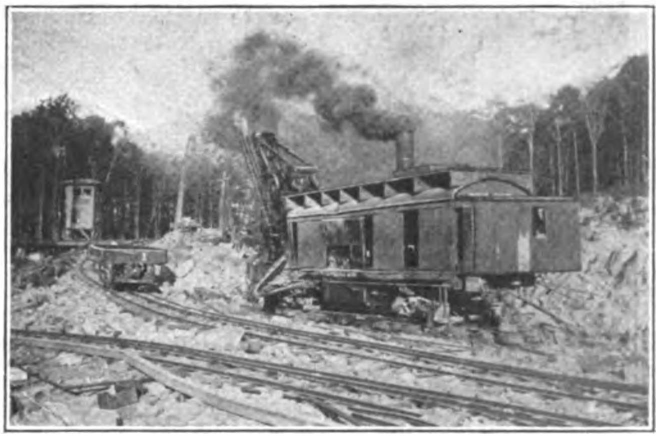
A Description of a Third-Rail Remote Control System Which Permits the Operation of All Cars from a Central Tower

THE feasibility of electric motive power for industrial transportation systems has long been recognized by electrical engineers, but owing to a variety of causes it has not received the attention given to other lines of the electrical industry. At present small steam locomotives constitute the bulk of the motive power used on such systems. The present dire necessity for effecting economies along the lines of labor and fuel saving, however, is bringing other methods of car haulage to the front. This article is a brief description of the interesting electrical system used on the quarry railway of the Casarbis Stone Company, Kenneth, Ind. The service requirements in this quarry demand that the transportation system deliver to the crusher from 5000 to 6000 tons of rock per ten-hour day. Also it must readily permit of track shifting and extensions and of accurate car spotting. To fulfill the latter requirement the dump cars must be capable of motion in either direction and the system as a whole must permit of their being stopped, started and operated upon any part of the track.

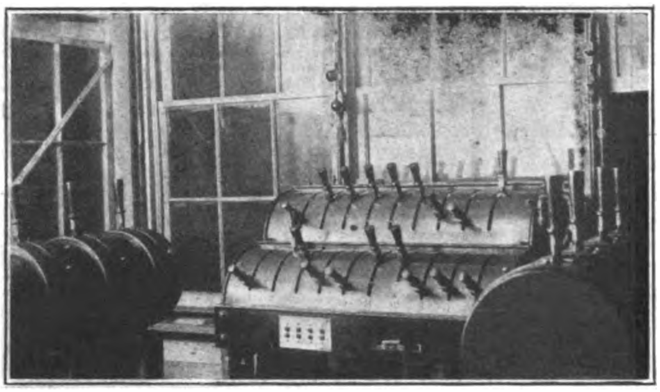
As installed the equipment consists of twenty motor-driven dump cars, which receive their motive and control energy from a third-rail system, at a central control tower. Except for their motor drive and the modifications in design required to permit the mounting of the motors, there is nothing of special interest in the construction of the dump cars themselves. The third-rail contact system was employed as being best able to meet the requirements relative to track shifting and extension. It is divided into sections, long or short, as the operating conditions may require. Independent feeders connect the sections with the central tower. In this tower are located the controller, illustrated in one of the accompanying photographs, by means of which one man can control the operation of all the cars in the system.

As will be seen from the illustration motor controllers are located in banks at the right and left, while in the center is a bank of distributing switches, one switch being provided for each feeder. This arrangement makes possible the control of the cars on all track sections with a minimum number of motor controllers. These controllers do not make the main circuits directly but, by means of an auxiliary circuit, actuate electromagnetic contactors as in some of the familiar types of electric railway controllers. The motor controllers have three main positions; forward, central or off, and backward. When a lever is pushed forward the rail section, which it is then controlling, is connected through its feeder and a resistor located at the tower to the 250-volt supply. As the lever is pushed farther forward the resistance is cut out. With the lever in the back position the same track section may be energized with from 30 to 100 volts for braking and control purposes.

MANLESS CAR ASCENDING A 6 PER CENT GRADE IN THE STONE QUARRY



SPOTTING A MANLESS CAR IN THE QUARRY READY FOR LOADING



CONTROL EQUIPMENT IN THE OPERATING TOWER

In the installation illustrated, one man operates twenty cars which are served by three steam shovels. Some idea of the saving in labor and cars can be secured from the statement that an equivalent steam locomotive equipment would require about 75 ten-cubic-yard cars, from twelve to sixteen 35-ton locomotives and thirty men.

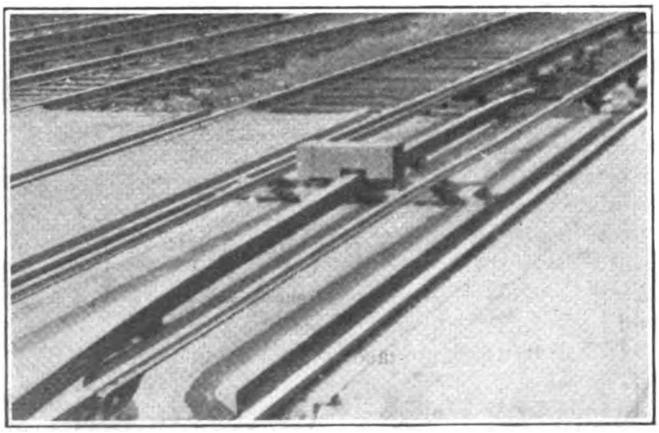
Special Light Third-Rail Installed Where Clearance for Standard Construction Was Unobtainable

By G. H. McKelway

Engineer of Distribution, Brooklyn Rapid Transit System

THE following construction was found necessary on a certain third-rail line in the East in order to carry the third-rail over a short bridge spanning a street. The deck of this bridge was on a level with the top of the running rails which were carried across in grooves in the deck. No provision had been made for the installation of the third-rail at the time the bridge was built and the engineer in charge of the construction would not consider cutting a groove into the deck, as this would seriously damage the water-proofing.

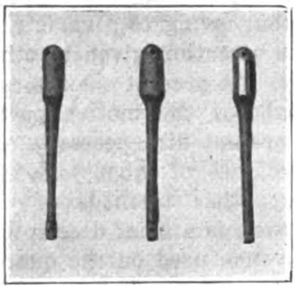
With the usual type of construction employed on this road, the bottom of the third-rail projects a little below the top of the running rail, so that it was impossible to use the standard section of third-rail. A light center-bearing rail, removed from an old surface line, was therefore substituted for the heavy T-rail. This gave the necessary clearance above the bridge floor, and the smaller cross-section of the center-bearing rail was compensated for by paralleling it with a 500,000-circ. mil jumper. Standard insulators for supporting the rail could not be used on account of the small clearance available, so that the insulators were placed on a "devil strip" between the two third-rails. The caps were placed at right angles to their normal direction so as to support the steel bar, which was so bent as to rest on the caps of both insulators and with the ends under the base of the light third-rail. This steel strap was, of course, alive whenever current was on the third-rail, and to prevent anyone from coming in contact with it a wooden box was made to fit over the insulators and straps, as shown in the accompanying illustration.



SPECIAL SUPPORT FOR LIGHT THIRD-RAIL WHERE IT CROSSES A STREET BRIDGE

Building Up Worn Spring Posts

SPRING posts in the side bearing trucks still in use on some of the cars of the Portland Railway, Light & Power Company wear both in head and shaft to such an extent that it is necessary to replace them from time to time. It has been found that these worn posts can be very satisfactorily repaired by the use of an electric welder. In fact, when so repaired they are found to be fully as good as new.



WORN SPRING POSTS REPAIRED BY ELECTRIC WELDER

The metal deposited by the spot-welding process is "spongy" so as to require hammering or rolling before it will satisfactorily withstand wear. In the case of the spring posts the metal is compacted by being cold rolled. The pins are trued up on the lathe to within $\frac{1}{32}$ in. The illustration shows three stages in the process; the worn pin, the pin after being spot-welded, and a completed pin welded, turned and rolled, ready for further service.

This work has been carried out under the direction of F. P. Maize, master mechanic of the Portland Railway, Light & Power Company.

Calculating Machines in Engineering Work

THE construction department of the Connecticut Company, New Haven, is using a Monroe calculating machine for a number of special engineering calculations in addition to routine work, such as adding, subtracting, multiplying, dividing and combining these operations. Among the special tasks to which the machine has been applied are: Preparation of monthly statements of mileage of track, based upon track sketches furnished by the engineer of maintenance of way; annual revision of mileage tables, records of track charges; calculation of route mileage by sections; tabulation of data of all kinds, including annual statements, tax bills, etc. The machine was purchased originally for use in valuation work in which some kind of a calculating machine is a virtual necessity.

Studies in the Wear of Armature Ball Bearings

Results Indicate that Motor Maintenance Is Simplified and Danger of Armature Rubbing on Pole Faces Is Avoided

By Walter Fink
Master Mechanic, Austin (Tex.) Street Railway

The Austin Street Railway operates seven safety cars, the armatures of the GE-258 motors of which are equipped with ball bearings, part Gurney and part S.K.F. These bearings have given no trouble, and require little more attention than squirt-gun lubrication with grease every three months. Service data on the Gurney bearings have not been obtained, the first three cars placed in service here two years ago being equipped with S.K.F. bearings.

So far as ball bearings for armatures are concerned it is obvious that one of their prime advantages is to maintain a constant gap between the armature and the pole pieces, thus preventing the disastrous and costly effect of fast-wearing babbitt bearings. Therefore, we thought it would be interesting to see how long a ball bearing would be sure to protect the user against this kind of service failure, and so made a record of the wear found on the balls and races. The following table shows the results obtained during a period of more than two years:

WEAR OF BALL BEARINGS ON GE-258 MOTORS AFTER APPROXIMATELY 100,000 MILES WEAR FROM APRIL, 1916, TO JUNE, 1918

Car No.	Armature No.	Commutator or Pinion-End	Raceway		Balls	
			A*	Wear, In.	B†	Wear, In.
25	402,856	C. E.	1.370	0.003	0.562	0
		P. E.	1.649	0.014	0.933	0.005
25	402,775	C. E.	1.369	0.001	0.562	0
		P. E.	1.657	0.012	0.936	0.005
26	402,773	C. E.	1.367	0.003	0.562	0
		P. E.	1.658	0.009	0.937	0.001
26	402,772	C. E.	1.368	0.003	0.562	0
		P. E.	1.658	0.008	0.937	0
27	402,766	C. E.	1.367	0.003	0.562	0
		P. E.	1.657	0.012	0.936	0.003
27	402,774	C. E.	1.367	0.003	0.562	0
		P. E.	1.657	0.012	0.936	0.003

* A is the distance in inches from inside of inner race to outside of outer race, bearing assembled.

† B is the diameter of the balls in inches.

In addition to the measurements taken the following conditions were noted: (1) Inner races were all in good condition. (2) Outer races at the commutator end were found to have the outside slightly pitted in some places and faint rings worn from turning in the housing. At the commutator end inside, two small grooves were worn where the balls run. The pinion end outside was slightly pitted in some places and faint rings were worn from turning in the housing and grooves were worn where the balls run. Two ragged holes of ¼-in. diameter in one of the grooves of armature No. 402,774 appeared to be due to a local defect in the steel. (3) All balls were in excellent condition except one ball of armature No. 402,773, commutator end, which had two pits of about 1/16-in. in diameter. (4) All separators were in good condition. (5) On armature No. 402,856, pinion end, the locking spring on the nut holding ball bearing in place was broken and the nut had unscrewed. Complete mileage data on armature ball bearings are not yet available, but the information given in the table above might be used as a basis to estimate the life.

The data presented in the table show that the balls of the commutator-end bearing on the six motors tested had not worn at all. The wear of the balls in the pinion end bearing varied from nothing to 0.005 in.

The thickness of the bearing measured from the inside of the inner race to the outside of the outer race, with the bearing assembled represents the amount the armature dropped toward the poles and is one-half the total wear of the bearing. As the table shows, this wear after nearly 100,000 miles of service was found to vary from 0.001 in. to 0.014 in. In the original design the retaining collar which holds the pinion end ball bearing was screwed on and held in place with a locking spring. Breakage of the locking pin spring allowed the collar to unscrew and thus caused the bearing to wear faster. The first remedy was to secure the collar nut with a 3/16-in. cotter key. The second and permanent remedy as applied also by the manufacturer is to discard the nut by shrinking the retaining collar on the shaft.

By referring to the notes under the table it will be seen that the outside of the outer races was found slightly pitted, the scars being rough spots ½ in. to 2 in. in diameter. Further study of one bearing on car No. 25 indicated that this was due to the passage of current through the bearings. To prevent this we now ground the motor frame to the truck. In any event, the roughening of the outer surfaces does no harm since the balls do not run on them.

From our experience, we feel justified in saying that the use of armature ball bearings greatly simplifies the upkeep of rolling stock, particularly on small properties where frequent, specialized inspection is out of the question.

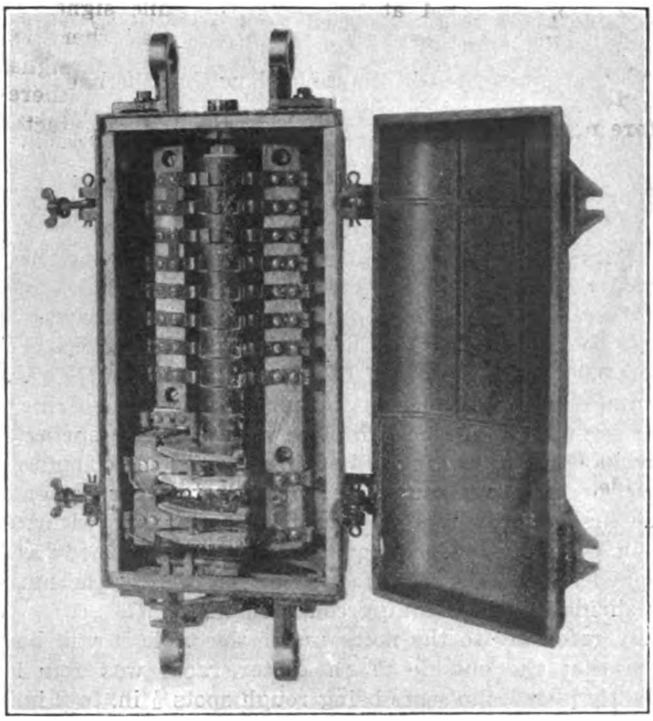
Train Service for War-Time Rush-Hour Traffic

People's Railway, Dayton, Ohio, Is Handling Large Numbers of Munition and Other War Workers —Details of Couplers Are Given in This Article

The People's Railway, Dayton, Ohio, is having excellent success in using train operation for handling rush-hour traffic. The company, has had the problem of transporting a steadily increasing host of munition workers in addition to the regular rush-hour traffic. The city of Dayton is unique in having its street railway service supplied by six independent operating companies. Of these the People's Railway is one of the oldest and largest, operating some 35 miles of important through routes.

Among the manufacturing establishments located upon its lines may be mentioned the Recording & Computing Machine Company, Ohmer Fare Register Company, Barney & Smith Car Company and the Maxwell Motor Company. All of these have made extensive additions to their plants and operating forces.

To handle this increased traffic the People's Railway has purchased considerable new equipment during the past year and there are now in service forty large double-truck motor cars, fifty-one single-truck motor cars, ten large double-truck trailers (see E. R. J., April 6, 1918, page 669) and fourteen single-truck trailers.



MULTI-POINT DISCONNECTING SWITCH IN ELECTRIC COUPLER CIRCUIT

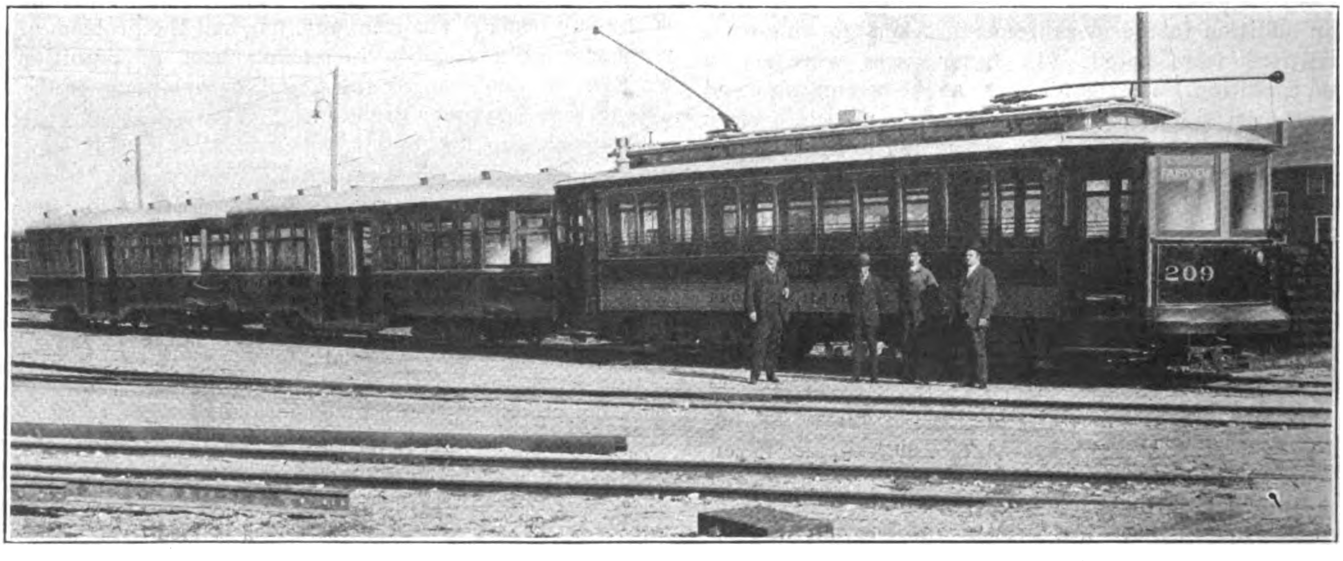
Special rush-hour service is provided by two and three-car trains consisting of pay-as-you-enter, double-truck, double-end, motor cars with a seating capacity of forty-four, coupled to one or two, double-truck, center-entrance trailers with a seating capacity of fifty-five each. The combined seating arrangement for 154 passengers is no true measure of the total capacity of a three-car train, as large standing room space is provided affording comfortable accommodations for more than 400 passengers. This train service was inaugurated in June, 1917, and has since demonstrated its merits not only in increased transportation efficiency but in the resultant economy as well as the winning of unqualified public approval.

The increased number of loading platforms together with the automatic motorman's signal controlled by the car-door position minimizes the length of stops and "cleans up" the heavy traffic points effectively. As an extra safety feature long coiled springs, extending between dashes of coupled cars, to provide barriers to prevent pedestrians from walking in between cars. Special vertical metal strips attached to the dashes are used to prevent unsightly chafing of these springs while rounding curves.

For the purpose of saving time in making up trains and insuring safety for trainmen the Tomlinson coupler manufactured by the Ohio Brass Company is used for making mechanical, air and electrical connections between cars. In addition to coupling the cars automatically, this coupler establishes at the same time a connection of the two air-brake pipe lines and the five electrical circuit connections between the cars of the train. The air-pipe couplings are integral parts of the coupler head proper while the electrical couplers are in the form of separable units bolted on the side of the coupler head. Each electric coupler provides contact points for the following purposes: One buzzer signal circuit, two single-stroke bell circuits, one door signal circuit, two spare contact points available for future use, and three circuits connected in parallel for the trolley circuit are used for furnishing heater and light current to the trailers.

An important safety feature of the electric coupler is the multi-point disconnecting switch mounted under the car platfrom and operated manually by extension handles running to each side of the car near the corner post. These switches are of the inclosed drum type with the air brake cut-out cocks mechanically coupled to the ends of the switch drum in such a manner that air for the brakes on the trailers can be obtained only while these switches are in the closed position. An uncoupled motor car, therefore, cannot be operated with its switches closed (exposed electric coupler contact points alive) due to the fact that the pipes of the air-brake system are open.

An ingenious modification of the standard H. B. lifeguard tripping gate permits its ready removal by a forward swing and lifting the engaging hooks from the suspension rod. This is necessary on the coupled end of the motor car to permit lateral swing of the couplers on curves.



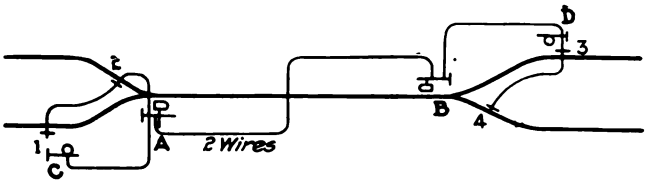
TRAIN WITH CENTER-ENTRANCE TRAILERS, PEOPLE'S RAILWAY, DAYTON, OHIO

Controlled Permissive Signaling for the Winnipeg Electric Railway

The Number of Cars That May Follow Through a Block in the Same Direction Is Limited by the Revolving Switch of the Signal Relay

IN THE operation of electric railways over single-track sections between successive passing sidings or between double track, it is convenient for several cars going in the same direction to follow through the same block and occupy it at the same time. Single-track permissive signaling is required for such movements. The two signals at the end of the block are interconnected in such a way that when a car has entered the block the signal at the other end of the block indicates "Stop and Stay," while the signal at the entering end indicates "Permissive." In accepting the permissive indication the motorman of a following car is informed thereby that he is entering an occupied block, but that the traffic therein is moving in the same direction. Trolley contactor signals operating in this manner, involving a car counter in the signal relay, have been in use more than fifteen years and have proved of great value.

On street railways having cars running on close headway and free to take a block when the signal is clear or permissive, this very facility of movement is an objection, since by continuous movement in the one direction, at certain spacing, traffic in the opposite direction may be indefinitely held up. To prevent the latter the Nachod Signal Company has developed a "controlled permissive" system in which not more than a predetermined number of cars may follow through the block in the same direction. To accomplish this a peg is set in any desired hole on the revolving switch of the signal relay to control the number of cars that may follow through the block; and the system is such that it may be added to Nachod signal installations already in service.

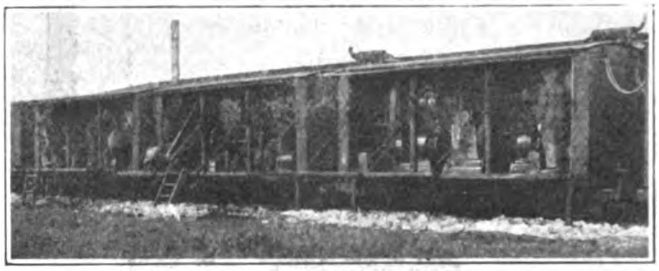


THREE INDICATIONS CONTROLLED PERMISSIVE SIGNALS FOR WINNIPEG ELECTRIC RAILWAY

The diagram shows the layout with type CD signals as supplied to the Winnipeg (Manitoba) Electric Railway. The three-indication signals *A* and *B* are located near the switch points facing the double track, with entering trolley contactors 1 and 3 two spans in advance of the signals, and leaving contactors 2 and 4 near the frog. Two line wires connect signals *A* and *B*, and two line wires connect the contactors at one end of the block with near signal. The arrangement thus far describes the standard permissive signal. The supplementary two-indication light signals *C* and *D* are located on the same poles that support the entering contactors 1 and 3, these signals being normally green, but may be thrown to red. In operation, supposing the relay to be set for three cars, then with two cars in the block running from *A* toward *B*, signal *B* will be at "Stop," signal *A* at "Permissive," while signals *C* and *D* will be green. The third car may therefore enter the block at contactor 1, but this will cause signal *C* to go to red behind the entering car, and therefore no more cars will attempt to pass under contactor 1. The cars will pass out of the block one at a time, but signal *C* will remain red until the last car goes out, when it will go to green as signals *A* and *B* clear.

Portable Machine Shop Installation Near the Battle Front

PORTABLE machine shops with such equipment as is usually found in a repair shop are used at the front in France. As shown in the illustration the equipment is mounted in cars each 20 ft. long and 5 ft. 4 in. wide. These are used on the light railways (60 cm. gage). The equipment provided includes drilling and grinding machines, hacksaws, lathes and planing machines operated by power from one of the standard petrol-electric tractors. The equipment is usually installed in groups with the intention of having four or more cars connected up as a unit. The tractors can haul the other cars constituting the machine shop forward or backward as desired. The shop remains in one location, however, unless it is decided to change the light railway base. The sides of the cars are arranged with hinges at the bottom and open outward, thus forming a platform extension on each side.



PORTABLE MACHINE SHOPS IN FRANCE

Where the nature of the repair work is too heavy or complicated to be handled readily in the field, the rolling stock is shifted to a large central repair plant thoroughly equipped with machine tools, spare parts and appliances of various sorts for rehabilitating engines or cars which suffer from the troubles incidental to light railway operation.

Increasing Capacity of Railway Motors by Vanes on Rotors

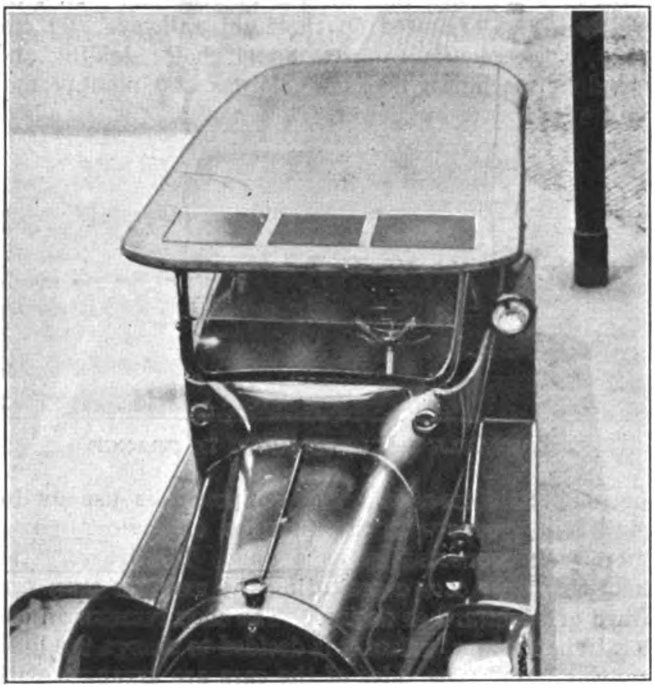
AS DESCRIBED in the ELECTRIC RAILWAY JOURNAL of Aug. 12, 1916, the Portland Railway, Light & Power Company, has been installing vanes for ventilating its GE-58 motors. Up to the present time about 100 motors have been equipped in this way. The plan has been so successful that all the motors of this type are to be so equipped as rapidly as opportunity offers.

The vaned back plates are 14 in. in diameter, and are cast with twelve equally spaced projections ⅜ in. deep, to which the vanes are riveted with two rivets to each vane. The cost of labor and materials for these new back plates with vanes attached is about $1.10 each.

Windows in Automobile Top to Facilitate Inspection

BY HAVING openings cut in the top of the automobile which he uses in overhead inspection, James Scott, superintendent of overhead Cleveland Railway, has made this inspection work a great deal easier. As the accompanying illustration shows, a line of three openings about 10 in. x 12 in. each is made in the top immediately over the driver's seat. These openings are covered with celluloid sewed to the material in the top with a reinforcing of several thicknesses of the same canvas as is used in the top. The work was done by the automobile manufacturer.

This simple arrangement permits the inspection of overhead while driving, and incidentally it is very convenient when the driver wishes to make notes at night. In the latter case he can stop his car under a street lamp and have excellent illumination for any notes he wishes to make on a writing pad.

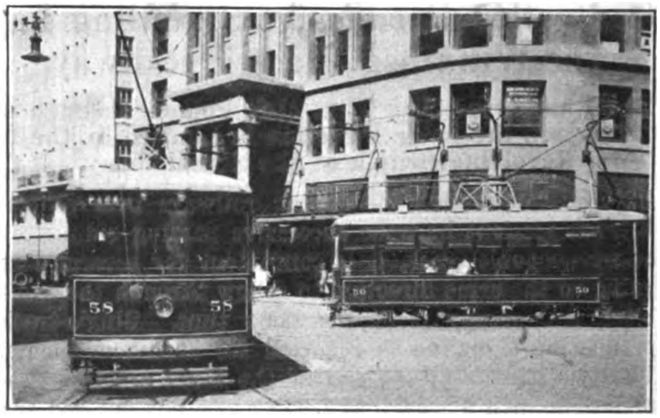


A HANDY KINK FOR THE INSPECTOR OF OVERHEAD CONSTRUCTION USED IN CLEVELAND

Twenty Cars Remodeled to Safety Type

TWELVE single-truck cars and eight double-truck cars on the El Paso (Tex.) Electric Railway have recently been remodeled for safety car operation through the addition of air brakes and the outfits of the Safety Car Devices Company. In both types resemblance to the new cars in operation has been secured by changing from monitor to arch roof, using the same type of trolley base support and completely refinishing both the interior and the exterior. The cluster lighting has been changed to two individual rows of five 23-watt Mazda lamps each.

The single-truck cars which seated thirty-two passengers now seat thirty-six through the use of extra seats on the idle platform. The seating capacity of the double-truck cars has been raised from forty-four to forty-eight. While these cars will not be so fast and so light as those of the Birney type, they will cost appreciably less to operate than before, and will permit more frequent service to be given.

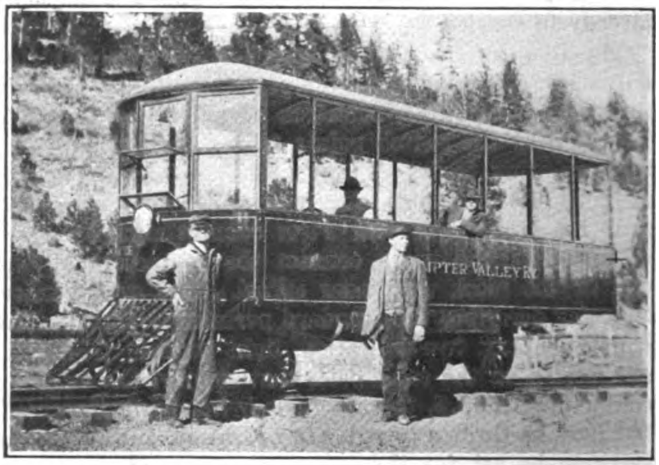


TWO REMODELED CARS IN SERVICE AT SAN JACINTO PLAZA

The rebuilt cars are going into operation on the lines first equipped with new cars so that the public will already be accustomed to front-entrance operation. The new cars will be transferred to other lines as fast as they can be replaced by cars of the remodeled type.

Home-Made Gasoline Motor Car for Auxiliary Service

The Sumpter Valley Railway, Baker, Ore., recently built in its shops a gasoline motor car for auxiliary service on its narrow-gage line. A 45-hp. White motor truck engine was used and the body was built to seat twenty-seven passengers. A light four-wheel pilot truck was set under the head end and a single pair of large diameter wheels to which power was transmitted served as the rear truck. The car was designed to make an average speed of 20 m.p.h. and operated over grades up to 4 per cent. Excellent service is reported for the thirty days during which the motor was in use. At the end of that time it was completely demolished in a head-on collision.



GASOLINE MOTOR CAR ON NARROW-GAGE ROAD OF SUMPTER VALLEY RAILWAY

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Improved Co-operative Plan

Company in Philadelphia Announces Further Liberal Modification of Employees' Co-operative Plan

The Stotesbury management of the Philadelphia (Pa.) Rapid Transit Company on Aug. 19 submitted to all employees of the company an improved co-operative plan. It will do more for the men than the plan which has been in such successful operation during the past seven years, and under which the public and the owners of the property have benefited along with the employees.

ALL EMPLOYEES INCLUDED

The co-operative plan as now improved will include benefits to all employees, putting the men in the electrical department, shops and buildings, way, and other departments on a proper comparative basis with those operating the cars. Under the plan, there will be established larger sick and pension benefits and greater life insurance. Wages will be based upon the average of wages established by the War Labor Board in the four big cities, Chicago, Cleveland, Detroit and Buffalo.

Sick benefits will be at the rate of $1.50 a day commencing with the eighth day's illness, and continuing for a period not to exceed 100 days in any year. This is in addition to the amount which the company pays in case of injury under the Workmen's Compensation Act of Pennsylvania. The present sick benefit is only $1 a day.

A pension of $40 a month will be paid to any incapacitated member who has reached sixty-five years of age and been in the service of the company continuously for twenty-five years. This compares with $20 a month now being paid. Special cases will receive special consideration. Every member will receive a life insurance for $1,000, maintained while he is in the service of the company. This takes the place of the present death benefits of $650. For all of these benefits and protection to himself and family, the employee will pay only $1 a month. The company will contribute $10,000 a month for the same purpose. Any and every employee who has been with the company a year may become a member of this co-operative plan.

HOW THE PLAN HAS WORKED

Under the co-operative plan which has been in effect some very important accomplishments have resulted. The Stotesbury management took over the property following two serious strikes. The settlement of the last one provided a wage scale of 23 cents in 1911 increasing to 25 cents an hour by July 1914. The co-operative plan was adopted by the Stotesbury management in August, 1911, and accepted by the men in November. It carried a promise that the 22 per cent of passenger receipts would give the car men 28 cents an hour by July, 1916. Actually, they were receiving 31 cents by that time and since then the fund has enabled further increases to 43 cents an hour. In dollars and cents, the result to the men has been that from July 1, 1911, to June 30, 1918, they have received under the co-operative plan $5,368,153 more than they would have had under the scale fixed in the strike award. Recently, with the approval of the co-operative committee and the management, a further advance of 5 cents an hour was given, making the scale in Philadelphia the same as that established in other cities of the first class by the War Labor Board.

NEW PLAN A FAMILY MATTER

The improved co-operative plan has been sent personally to every employee of the company that he may have it for study at home, and it is requested that the wives of all men shall join with their husbands in making such study, because it is obvious that the plan is essentially a family proposition and it is desired that the women folk indicate, along with the men, their approval of the plan. A card is inclosed with the statement of the plan with places for the signature of both the employee and his wife.

The present plan of representation by co-operative committeemen will be continued with such enlargement as to numbers as the added membership of the improved co-operative plan makes necessary.

Increase in Wages for Third Avenue Men

The Third Avenue Railway, New York, N. Y., on Aug. 21 announced an increased scale of wages for its motormen, conductors, and storage battery men. The increase affects a total of 2100 employees, on all the lines operated by the company in Manhattan, the Bronx and Westchester.

By the increase the scale of from 30 to 36 cents an hour which has been in force for all classes of employees is raised to a scale of from 40 to 43 cents. First, second, and third-year motormen and conductors will receive 40 cents, and men of more than three years' service will be paid 43 cents an hour. Storage battery men, regardless of the term of service, will receive a flat rate of 40 cents an hour.

Hearing on Cincinnati Grant

Salaries and Fares Principal Points Discussed at First Public Hearing on New Grant

At the first public hearing on the proposed revision of the street railway franchise at Cincinnati, Ohio, Councilman A. L. Murdock demanded that the Cincinnati Traction Company be required to submit a statement showing the salaries paid its officers. C. W. Culkins, director of street railways, explained that he has no authority under the present franchise to require the company to make such a statement, but he said that figures had been submitted showing that the amount of salaries paid the officers and legal representatives averaged $6,000 a month, which is less than 0.08 cent per car passenger and has little bearing on the fare question.

CITIZENS WANT FIVE-CENT FARE

W. J. Schultz, representing the citizens' committee, asked that the rate of fare in the revised ordinance be changed from 6 cents to 5 cents. He declared that if the change was not made, there would not only be a referendum, but an ordinance would be initiated which would take away from the City Council the power to regulate fares. He made a long talk in explanation of the relations existing between the Cincinnati Traction Company, the Cincinnati Street Railway and the Ohio Traction Company.

The ordinance was read for the second time before the City Council on Aug. 16. It is possible that it will be brought up for a third reading and passage on Aug. 21 or 22. Mayor Galvin has assured officers of the Amalgamated Association that he will sign the ordinance as soon as it is passed. Employees have notified the company that some action on an increase in wages must be taken by Aug. 30.

COUNCIL MEMBERS FAVOR MEASURE

Several other public meetings have been held, but there are indications that a majority of the members of Council favor the measure and will vote for it, in the belief that it is the best arrangement that can be made under present circumstances.

Another hearing was held on Aug. 19. Many suggestions were made, but few were adopted.

The report of the sub-committee on the revision of the franchise was approved by the joint Council and citizens' advisory committee on Aug. 9. The main provisions of the revised draft were reviewed in the ELECTRIC RAILWAY JOURNAL of Aug. 17, page 302.

Service-at-Cost for Chicago

Salient Features of New Plan Now Awaiting Public Approval and Passage of Enabling Acts for Unification

A "service-at-cost" plan has again been applied in the solution of a long transportation controversy. The Chicago City Council on Aug. 14, as mentioned in a preliminary note in the ELECTRIC RAILWAY JOURNAL of Aug. 17, sanctioned an ordinance to bring about the consolidation of the surface and elevated systems and to provide for the construction of subways by the city. The personnel of a board of trustees named by the companies was approved by the Aldermen and, if the measure finally becomes effective, these nine men will have full charge of the corporation and the carrying out of a construction program involving $500,000,000.

MEASURE MUST GO BEFORE VOTERS

Various steps are still to be taken before the ordinance becomes law, but the overwhelming vote in Council is said to indicate that the measure meets with popular approval. If the franchise is not vetoed by the Mayor, it will be submitted to the voters of the city on a referendum on Nov. 5 next. If it is approved by the public, the State Legislature next January will be asked for new laws, giving the trustees the right to operate the combined system, permitting franchises longer than twenty years, and amending the subway act so as to permit the city to lease bores for longer than twenty-year periods. All these acts must again be submitted to the City Council. Then the various companies will be allowed six months time in which to perfect a consolidation and accept the ordinance. It is believed that the ordinance will become effective about January, 1920.

To review briefly the main points of the ordinance, noted heretofore in this journal, it may be stated that the new ordinance gives the Chicago Local Transportation Company—the new trustee corporation—authority to take over the existing properties without paying a dollar and to construct, maintain and operate the combined system, including subways for surface and rapid transit lines to be paid for out of the city's traction fund. The plan contemplates operation of service at cost with full protection of the capital investment during an indeterminate period.

CONTROL BY TRUSTEES

Management of the corporation is to be vested in a board of nine trustees, the members of which up to 1928 are to be named by the present companies subject to approval by the City Council. Three of the members are to hold office until Dec. 31, 1928, three others for another year, and the remaining three until Dec. 31, 1930. The City Council is to designate their successors, and any vacancies are to be filled by the board. The annual salary is to be $5,000. Three of the nine trustees are to compose the executive committee and receive extra compensation. The board will have power to elect officers of the company, who may or may not be trustees.

The financial plan is somewhat complicated. The authorized capital account as of June 30, 1916, is $220,114,428, and of this amount 60 per cent is to be in the form of bonds and the remaining 40 per cent will be stock or debentures. The bonds are entitled to receive present rates of interest. The other securities are to be guaranteed a return of 8 per cent up to 1932, the end of the average franchise life, and 7 per cent thereafter. All new capital will receive a return based on actual cost. Some of the corporations have bonds outstanding in excess of the purchase price and all have more than 60 per cent of their obligations in the form of bonds. These excess securities will have to be exchanged for debentures with no lien on the property but with a higher rate of return.

There is sufficient money in the present city traction fund to build the subways called for under the ordinance. These subways will be rented to the company at 6 per cent after operation begins, while the charge for city money during construction will be 3 per cent.

For maintenance and repairs the company must spend each year 6 per cent of its gross receipts, and the unexpended portion is to be deposited in a special fund. The renewal and depreciation fund will be made up from payments of 8 per cent of the gross receipts every month, and the trustees may increase this percentage when necessary.

ACCOUNTING SYSTEM

Commencing five years after the effective date of the ordinance, one-fourth of 1 per cent of the then outstanding capital account is to be paid into an amortization fund from the receipts of the combined system. Each five years thereafter this amount is to be increased until it reaches 1 per cent of the capital account, with the provision that the amount paid in any year is never to be less than in the preceding year. This fund is to be used either for betterments and extensions other than subways or the retirement of outstanding securities.

The accounting system calls for the payment of: (1) all operating expenses; (2) interest on bonds; (3) subway rentals; (4) payments into the amortization fund, and (5) payment of interest due on other securities. If the gross receipts are insufficient in any year to meet these payments, the deficit is to be cumulative. Any surplus is to be deemed surplus receipts and be added to the amortization fund.

Rates of fare are to start with 5 cents for each passenger twelve years of age or over, and 3 cents for each passenger between seven and twelve years. If, however, any other rate is in force when the ordinance becomes effective, that rate is to continue until altered by the trustees. The latter also have authority to fix a charge of 2 cents for transfers between rapid transit and surface lines. An emergency fund of $2,000,000 is created to protect the required payments and, if this is diminished below $1,000,000, the trustees are obligated to put into effect immediately higher transfer charges or rates of fare until the deficit is made up. Moreover, if the surplus receipts at any time are sufficient to justify a reduction in the transfer charge or rates of fare, the trustees are required to make such reduction. The transfer privileges are extremely liberal under the ordinance, as each passenger is to be allowed to transfer wherever two lines connect, intersect or come within 200 ft. of each other.

CITY HAS RIGHT OF PURCHASE

The company is permitted to carry express matter and package freight on terms to be approved by the trustees, and it may enter into contracts with connecting roads for through freight business. The company is required to pave, repave and keep in repair the part of the streets occupied by its tracks. There is also a provision that the company clean and sprinkle its right-of-way, but whenever a deficit is created which would require an increase in fares or transfer charges the company may be relieved of these latter obligations until the deficit is made up.

The right is reserved to the city to purchase the property of the company at any time, on giving six months' notice, by paying the then existing capital account. This price as of June 30, 1916, was $220,114,428 for the combined properties, the elevated valuation being $70,943,020 of this amount.

There is also a section in the ordinance covering labor, which provides that hours of work and working conditions shall conform to reasonable standards, and that the employees shall receive wages not less than those customarily paid for similar work elsewhere.

PROGRAM OF PHYSICAL CONSTRUCTION

The ordinance also includes all details as to the program for physical construction. The various elevated extensions and improvements, as well as the subway routes, are listed, a considerable proportion of the work being placed in the first and second three-year periods. Detailed provisions are also set forth for permits, spacing of tracks, special work, poles and wires, pavement, power houses, cars, etc.

There is no change in the present electrolysis ordinance, except that a board of electrolysis claims is established consisting of three members, one to be named by the city, one by the company. In the event that they are unable to agree on the third member, the latter is to be appointed by the Western Society of Engineers.

Seattle Wage Contract Signed

The proposed new contract between the Puget Sound Traction, Light & Power Company, Seattle, Wash., and its trainmen has been signed and ratified by both parties, effective as of Aug. 1. The contract provides for an eight-hour day, arbitration of all differences between company and employees, time and a half for overtime, and co-operation in the arrangement of schedules to make as many straight runs as possible. A similar agreement has been drawn up to be signed by the city and the employees of the Municipal Railway.

The contract provides that the company shall not discriminate against union men, and on the other hand, that the union shall not discriminate against such employees as do not desire to join the organization.

The agreement is to continue in force until Aug. 1, 1919, and from year to year thereafter unless either party desires a change, when notice of such desire must be given in writing thirty days before Aug. 1 of each year.

The union of railway employees has asked the city to hasten the examination of the company's books, in order that a settlement may be reached on the question of relief for the company, so that the wage scale may be put into effect. The scale will be retroactive as of Aug. 1, and if no adjustment can be reached by the city and the company, the entire matter will shortly be referred to the National War Labor Board.

The new wage scale increases the present wage of 33 to 40 cents an hour to 50, 55 and 60 cents an hour. Other conditions will remain practically the same as under the old agreement.

Generator Accident at Norfolk

An accident on July 26 to the 12,000-kw. steam turbine at the Reeves Avenue power house of the Virginia Railway & Power Company, Norfolk, Va., has more or less seriously interfered with street railway service at Norfolk and vicinity. The company has been able to operate about 60 per cent of the normal regular service with the exception of two days during the week ended Aug. 10, when the commercial power load and the intense heat resulted in heating the generators to a point where it was deemed advisable to discontinue the operation of the cars in order to avoid further dynamo trouble. Service was abandoned for the two days referred to from 8 a. m. to 5.30 p. m. and from 7.30 p. m. until midnight. The service that was given enabled the company to assist in taking care of the morning and evening rush.

The president of the Board of Control of War Construction Activities for the locality at Norfolk looked into the situation with a view to cutting off temporarily such commercial power as in his opinion was not absolutely essential. This reduction of power load has enabled the company to resume the operation of approximately 60 per cent of the regular service throughout the day on the lines in the city.

Portland Would Run Line

To guide the city in its proposal to establish a municipal railway to Linnton for the relief of industries in that district along the line of the old United Railways, Mayor Baker of Portland, Ore., has asked the city legal department to furnish an opinion setting forth the legal questions involved, and outlining a complete method of procedure to be followed.

The United Railways has presented an inventory to the city giving a valuation of $232,000 on the line as railroad property, this price not including equipment. City Traffic Examiner E. M. Cousin presented an inventory of the same line, giving a valuation of $90,000 less. It is estimated that it would cost the city approximately $150,000 to place the road in operation, this price including cost of constructing 3 miles of tracks which have been torn up. Examiner Cousin states that cars can be bought for $8,000 each, and that it will cost the city about $25 a day for power and $40 a day for labor, figuring on thirty trains daily.

Judge C. H. Carey, representing the United Railway, has advised the Council that his company would not operate the line to Linnton, nor would it reconstruct the line, but that the company was willing to co-operate in any other way with the city in serving the people of Linnton with electric railway facilities.

Commissioner Kellaher proposes to issue public utility certificates bearing 4 per cent interest, and Mayor Baker advises that if the people of Linnton are willing to buy these certificates, he will favor the issuance of them. It has been virtually agreed that if the city is able to reach an agreement with the company as to price, and definite assurance is given that the Linnton people will care for the certificates, the city will purchase the line and begin operation.

Providence Wage Decision Later

A decision in the case involving the demand of the employees of the Rhode Island Company, Providence, R. I., for an increase in wages, will be delayed by the joint chairmen of the War Labor Board, probably for a month or even longer.

The question of wages for the men in Providence was one of the last to go before the board. The federal trustees in charge of the Providence property under the New Haven dissolution decree refused the demand of the union. Later an agreement was reached to put the matter before the federal board, but only on the understanding that the status of the company, financial and otherwise, would be taken into consideration.

Short Strike in Ottawa

The strike of the union employees of the Ottawa (Ont.) Electric Railway has been settled. After a tie-up, which practically paralyzed business in Ottawa for two days, the railway resumed operation on Aug. 15 on all the various lines.

The decision to return to work was reached at a meeting of the conductors, motormen and other employees held in the union headquarters at which they passed upon the proposal made by Senator Gideon Robertson to submit an appeal from the award of the conciliation board. The conciliation board awarded the men 33, 35 and 37 cents an hour. The previous wages had been 26, 28 and 30 cents. The men asked for 46 cents for men in the service six months, 48 cents for men in the service twelve months and 50 cents for men above one year's service.

The strike ended without the slightest sign of violence. Police and soldiers were on duty, but the action of the company in deferring the operation of its cars precluded all possible difficulty.

Labor Board Approves P. R. T. Wages

The National War Labor Board has approved the action of the Philadelphia (Pa.) Rapid Transit Company in voluntarily increasing the wages of its employees and otherwise revising conditions of employment to correspond with the award recently rendered in electric railway controversies by William H. Taft and Frank P. Walsh, joint chairmen of the board.

The company increased the wages of its 7000 employees to correspond with the scale applied by Messrs. Taft and Walsh in other first-class cities of the country. Moreover, it agreed that its employees may belong to any union which they may see fit to join, and offered to reinstate all of the men who participated in the strike, beginning May 29 last, without prejudice, and at the same rate of pay as they would have received had they continued uninterruptedly with the company.

As a result of the company's action, the board dismissed the complaint entered by the Street & Electric Railway Employees' Protective Union. This complaint originated following the strike. It was renewed following the company's adoption of the Taft-Walsh award, on the ground that union workers were still being discriminated against. While dismissing the complaint, the board directed the secretary to assign an examiner to supervise enforcement of the award in Philadelphia as is being done in other cities. The motion adopted by the board follows:

"That inasmuch as the Philadelphia Rapid Transit Company has accepted the award of the National War Labor Board as applied to other cities of like class, the complaint of the Street & Electric Railway Employees' Protective

Union is dismissed, and that the secretary be instructed to appoint an examiner to see that the award is enforced as in other cities."

The new scale of wages for Philadelphia was announced in detail in the ELECTRIC RAILWAY JOURNAL of Aug. 10, page 251.

Vienna Walks

Now and then the stories that are published in regard to the economic conditions within the Central Powers contain references to the matter of city railway transportation. They indicate without exception a very serious condition with respect to service, equipment and personnel. One of the latest of these sporadic articles sent from Zurich, Switzerland, indicates that the local railway situation in Vienna has reached such an acute stage that there is a prospect of total suspension of service during the coming winter. So serious are conditions that the Burgomeister had a recent audience with Emperor Charles, in which he begged him to intercede with the military authorities, from whom must come all materials for repairs and also necessary lubricants. On the other hand Budapest is said to obtain from the military authorities everything it needs for the same purpose.

Since the war the Vienna lines have assumed a service never before contemplated. They carry freight, foodstuffs, wounded, and at night perform the service of funeral cars from the war hospitals to cemeteries. It is estimated that they have transported 1,000,000 wounded. All this has been achieved although about 11,000 employees of the lines have been called to the colors.

Municipal Railway Extension Plan

The City Council of Seattle, Wash., recently passed an ordinance introduced by Councilman Oliver T. Erickson providing for the issuance of $1,200,000 of utility bonds for the construction of an extension of the municipal railway from the city limits north of Green Lake to connect with the elevated line and thence to the Lake Burien line, which runs beyond the southern city limits.

The plan contemplates the construction of the line from East Eighty-fifth Avenue to Tenth Avenue northeast, south on the latter street, across the Tenth Avenue's northeast bridge, now under construction, to Fuhrman Avenue, thence to Fairview Avenue, to Virginia Street and Fourth Avenue, and thence south over the tracks of the Seattle & Rainier Valley Railway to First Avenue South and Washington Street, where the extended line will connect with the elevated railway.

It may be necessary to construct a bridge along the east side of Lake Union, where the line will skirt the shore, as the Fairhaven Avenue bridge is not wide nor strong enough to carry cars.

News Notes

Capital Traction Men Want Increases.—An increase to a maximum of 48 cents an hour for motormen and conductors has been asked by men of Capital Traction Company, Washington, D. C.

Wage Increase for Indiana Union Traction.—An increase of 4 cents an hour has been given 400 conductors and motormen of the Union Traction Company, Indianapolis, Ind. The wage schedule, which was from 26 cents to 36 cents an hour, will be increased to 30 cents to 40 cents an hour. The increase went into effect on Aug. 15.

Northern Indiana Increases Wages.—The Northern Indiana Railway, South Bend, Ind., has increased wages on both interurban and city lines. The interurban scale, formerly from 26 cents to 35 cents an hour, has been increased to 33 cents to 40 cents an hour. The city scale, now from 25 cents to 30 cents an hour has been increased to 28 cents to 33 cents an hour.

Seattle Report Completed.—Thomas F. Murphine, superintendent of public utilities of Seattle, Wash., has completed his examination into the books and accounts of the Puget Sound Traction, Light & Power Company, undertaken to determine whether increased fares will be necessary to meet the increase in wages granted trainmen on Aug. 1. The report will be turned over to the City Council in the near future.

Strike in St. John.—Members of the street railway and allied unions at St. John, N. B., struck on Aug. 15 and the city is without railway service. A shut-down of the entire plant of the New Brunswick Power Company, which controls the St. John Railway and supplies industrial plants and house electric lighting, is threatened. The gas service has been cut off and newspapers are being set by hand. The men struck on a question of back pay.

Strike at Marion Settled.—On Aug. 16 the striking motormen and conductors on the local line of the Columbus, Delaware & Marion Electric Company at Marion, Ohio, and the management of the road reached an agreement without any outside aid. During the period of the war the men are to receive from 33 to 38 cents an hour and the scale will be advanced annually 1 cent an hour for six years of service. The increase amounts to about $7,000 a year to the company.

Separate Louisville Organizations.—Employees of the Louisville (Ky.) Railway who have declined to join the newly organized union recently held a meeting at the offices of the company and formed an independent organization, with the name of Louisville Street Railway Employees' Association. The new association is composed of the older employees, who declare their loyalty to the company and their intention not to demand an exorbitant increase in wages.

Arbitrator Protested.—The appointment of C. U. McElroy, Bowling Green, Ky., by Governor Stanley as the third arbitrator at Lexington, Ky., has been protested by the union and Secretary of Labor William B. Wilson has notified Eugene Southerland, president of the union, that he will send a representative to Lexington. The Kentucky Traction & Terminal Company had selected F. W. Bacon, Philadelphia, as its representative and the union had B. F. Kible, Portsmouth, Ohio. These two were not able to reach an agreement and the Governor was asked to appoint a third man.

Toledo Commission Files $9,500 Expense Account.—A report of the moneys received and expended during its investigation of the street railway muddle and the preparation of the so-called community plan, was filed with Mayor Cornell Schreiber of Toledo, Ohio, on Aug. 16 by the Toledo Street Railway Commission. In all John N. Willys furnished $9,500, all of which was expended in one way and another. Provision was made in the ordinance reported for the repayment of this money to Mr. Willys. Of this, it seems, Johnson Thurston received $2,600 for legal and general services. He was one of the members of the commission.

Employees Organize for Mutual Aid.—The Eastern Texas Electric Company Employees' Association of Beaumont, Tex., has been organized and charter has been filed in the office of the Secretary of State at Austin. This association has no capital stock and is for the mutual help and protection of the employees of the electric company, which recently consolidated the Stone & Webster properties of Port Arthur and Beaumont. The association will operate along lines similar to the employees' association recently organized in Galveston by the employees of the Galveston Electric Company and the Galveston-Houston Interurban line.

Wages and Fares Coupled.—With the announcement on Aug. 15 by officials of the Wilmington & Philadelphia Traction Company, Wilmington, Del., of an increase in wages of 4 to 5 cents to motormen and conductors, based on length of service, the company intimated that a further increase in fares might be asked. The new wage increase is in accordance with the recommendations of the War Labor Board. The employees have been receiving from 37 cents to 40 cents an hour. The company some time ago increased fares to 6 cents and it is expected that it will petition the Public Utilities Commission for the right to charge 7 cents a ride, or sell four tickets for a quarter. The new wage scale went into effect as of Aug. 15.

Financial and Corporate

Havana Lines Gained

Higher Costs, However, Reduced the Gain of 16 per Cent in Gross to 1.5 per Cent in Net

For the year ended Dec. 31, 1917, the earnings from operation of the Havana Electric Railway, Light & Power Company, Havana, Cuba, showed substantial gains as compared to those for 1916. The gross earnings from operation were 16.16 per cent greater than in 1916 and, although the extraordinary rise in the prices of all commodities increased the operating expenses 33.8 per cent, the net earnings from operation gained 5.24 per cent. Even after the deduction of both the United States and Cuban taxes, there still remained 1.57 per cent more than in the preceding year. Detailed figures for the last two years are given in Table I. The division of 1917 earnings is shown in Table II.

The total number of passengers in 1917 was 66,418,450, an increase of 6,719,659 or 11.25 per cent. This is the highest percentage increase since 1906, when the present management began. Passenger earnings also gained 11.25 per cent. Track statistics show 2.21 miles of main line built during 1917.

The increase in operating expenses in the railway department, caused by the unusual conditions during the year, was lower in proportion than in the gas and electric light and power departments. In the former case about 31 per cent of the increase was due to coal, 42 per cent to rise in wages of motormen and conductors, 14 per cent to loss from the book values of discarded power plant equipment sold, and 13 per cent to salaries, wages, supplies and miscellaneous charges.

Comparative statistics for the railway department in 1916 and 1917 are shown in Table III.

Out of the net income for 1917, or $2,615,261, the company set aside as reserve for depreciation and special charges the sum of $211,843. It also paid out $1,976,254 in 6 per cent preferred and common dividends, and provided $117,373 for sinking funds and $64,000 for bad and doubtful debts. The balance then carried forward to 1918 totaled $2,270,290.

TABLE I—COMPARATIVE INCOME STATEMENT OF HAVANA ELECTRIC RAILWAY, LIGHT & POWER COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917 Amount	Per Cent	1916 Amount	Per Cent
Gross earnings.....	$6,989,599	100.0	$6,017,708	100.0
Operating expenses & taxes	3,385,470	48.4	2,443,885	40.6
Net earnings.	$3,604,129	51.6	$3,573,823	59.4
Other income....	149,755	2.1	144,561	2.4
Gross income	$3,753,884	53.7	$3,718,384	6.18
Fixed charges.	1,138,623	16.3	1,297,093	21.6
Net income..	$2,615,261	37.4	$2,421,291	40.2

Dividend Complaint Dismissed

After a brief investigation of the complaint filed with the District Attorney in which it was charged that officers and directors of the International Railway, Buffalo, N. Y., violated the law last March by declaring a dividend when there was a deficit in the treasury, the District Attorney dismissed the complaint, holding there was no basis for such a charge. An investigation of the company's books showed there was a surplus at the time the dividend was declared. No inquiry has ever been made regarding the assertion that the company filed false statements with the commission.

TABLE II—SUMMARY OF OPERATIONS BY DEPARTMENTS OF HAVANA ELECTRIC RAILWAY, LIGHT & POWER COMPANY IN CALENDAR YEAR 1917

Department	Gross Earnings from Operation	Operating Expenses and Taxes	Per Cent of Gross Earnings	Net Earnings from Operation	Per Cent of Gross Earnings
Electric railway............	$3,499,011	$1,782,845	50.95	$1,716,166	49.05
Electric light............	2,454,312	790,413	32.20	1,663,898	67.80
Gas............	817,295	562,203	68.78	255,092	31.22
Stage lines............	173,968	206,804	118.87	*32,835	*18.87
Electric omnibuses............	22,523	26,625	118.21	*4,102	*18.21
Gasoline omnibuses............	22,488	16,577	73.71	5,910	26.29
	$6,989,599	$3,385,469	48.43	$3,604,129	51.57

TABLE III—COMPARATIVE RAILWAY STATISTICS FOR 1916 AND 1917

	1916	1917	Increase	Per Cent
Total number of passengers carried........	59,698,791	66,418,450	6,719,659	11.25
Passenger car-miles........	12,143,682	13,387,023	1,243,340	10.24
Passenger earnings........	$2,984,939	$3,320,922	$335,982	11.25
Passenger earnings per car-mile........	$0.2458	$0.2481	$0.0023	0.93
Total earnings from operation........	$3,122,362	$3,499,011	$376,648	12.06
Total operating expenses........	$1,307,928	$1,663,917	$355,988	27.22
Total operating expenses per car-mile......	$0.1076	$0.1243	$0.0167	15.52
Operating ratio (per cent)........	41.89	47.55	5.66	13.51
Net earnings from operation........	$1,814,434	$1,835,093	$20,659	1.14

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*Decrease.

Boston Gross Gains

First Two Weeks with 7-Cent Fare Show Gain of 30 per Cent in Gross

The recent fare increase from 5 cents to 7 cents on the Boston (Mass.) Elevated Railway affords one of the first opportunities for the industry to study the effect of a substantial rate advance upon the earnings of a great city property. In the Boston case the advance was simply a straight 2-cent additional collection on all fares. The free transfer arrangements are not involved in the matter from the financial standpoint. If the number of revenue passengers carried on the road had remained the same after the increase as before it, there would have been a gain of exactly 40 per cent in earnings of the company.

The actual gain in gross, however, as indicated by the first two weeks under the new schedule of fares, has been 30 per cent. This is a remarkable increase, in comparison with the experience of other electric railways in the State. In many other cases where the fare has been raised from 5 to 6 cents or from 6 to 7 cents, the gain in revenue has been barely half or even less than half the theoretical percentage increase; and sometimes, where the rates are complicatd through the use of tickets or the modification of zone limits, the gain has been almost negligible.

The Boston Elevated Railway operates in about a dozen cities and towns, which border on the city proper or are immediately adjacent suburbs. There is a competitive suburban steam railroad service in the Boston district which does a large business; jitneys are not at present a real factor in the situation, but the private automobile is a decided "revenue cutter." Long observation of traffic conditions indicates that the greater part of the falling off in revenue resulting from the advance from 5 cents to 7 cents is to be attributed to a curtailment of trips not associated with travel between home and office or shop, and including short-haul travel which would not hesitate at a 5-cent fare but which holds off at 7 cents. The bulk of the daily necessary patronage is continuing, and so far the increased fare is not sufficient to divert any very substantial traffic to the competing steam railroad lines.

The 30 per cent increase in revenue above obtained will, however, have to be further augmented in order to enable the company to meet its increased operating expenses, fixed charges and its specified dividends, according to present indications. It cannot be said at this time whether a further increase in the fare unit will be required, or whether some zone plan will have to be tried, at least with respect to the outer lines. Back of whatever plans for increasing revenue may be adopted stands the tax power of the State as an ultimate guarantee of the actual cost of the service of the company as a public necessity.

W F. C. Helps Aurora Line

A. E. & C. R. R. Will Have New Note Issue of $1,219,000, with Direct Federal Aid of $219,000

As a result of conferences and negotiations with the War Finance Corporation, the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., will create a new issue of $1,219,000 of three-year 7½ per cent collateral trust notes, dated Sept. 1, 1918, and secured by the company's first and refunding mortgage bonds at 75. All legal matters pertaining to the issue are to be subject to approval of the counsel of the War Finance Corporation.

Of the required amount, the War Finance Corporation will make a direct advance of $219,000, subject to certain conditions, among which are:

1. That the maturity of the outstanding $1,546,000 of bonds of the Elgin, Aurora & Southern Traction Company be extended to Sept. 1, 1921.
2. That the banks holding the company's unfunded notes—$237,000 in amount—subscribe for $200,000 of the new 7½ per cent collateral trust notes at par and accept the company's unsecured notes for the balance.
3. That the holders of the company's $800,000 of 6 per cent collateral trust notes, maturing Sept. 1, 1918, exchange their notes, par for par, for the new 7½ per cent collateral trust notes.

The company performs vital functions in the transportation, power and lighting fields in the district immediately west of Chicago. The present abnormal costs of labor, fuel and materials have brought about a condition resulting in a material curtailment of its net earnings and thus made it unable to secure funds through regular banking channels.

It is believed that a timely realization of the abnormal conditions confronting the public utility industry as a whole will influence holders of the company's maturing notes and bonds to extend them to Sept. 1, 1921, and thus enable the company to accept the offer of the War Finance Corporation.

U. G. & E. Subsidiaries Show Lower Net

The gross earnings of the subsidiaries of the United Gas & Electric Corporation, New York, N. Y., increased $1,127,119 during 1917 as compared to 1916. This gain, however, as shown in the accompanying table, was more than offset by the rise of $1,267,082 in operating expenses, so that the net earnings decreased $139,963 or 1.9 per cent. The balance available for renewals, financing and dividends showed a falling off of $402,056 or 13.6 per cent.

The increase in operating costs arose from the higher expenditures for coal, oil and wages. These were as follows: Coal and oil, $342,000, and labor, $292,000. Taxes increased $189,000.

During 1917 the sum of $3,950,822 was expended for additions, betterments and extensions in railway, gas, electric, steam and water departments. During the year there was expended or appropriated from earnings for repairs, maintenance and renewals and replacements $2,156,115, which was $104,945 in excess of the appropriations for the same purposes in 1916. The balance in the renewals and replacements reserve on Dec. 31, 1917, for all of the subsidiaries was $2,355,819, after sundry adjustments.

The current surplus earnings of the subsidiary companies, after paying their preferred stock dividends, amounted to $1,829,526, of which amount $1,111,973 was paid out in common stock dividends. The balance, or 39.23 per cent of the current surplus earnings, was appropriated to the renewal and replacement reserves or added to existing surplus. The accumulated surplus of the subsidiary companies, after all adjustments for current and previous years, amounted on Dec. 31, 1917, to $2,123,392.

COMPARATIVE INCOME STATEMENT OF SUBSIDIARIES OF UNITED GAS & ELECTRIC CORPORATION FOR CALENDAR YEARS 1916 AND 1917

	1917	1916	Increase	Per Cent
Gross earnings..	$16,287,275	$15,160,156	$1,127,119	7.4
Operating expenses (including maintenance)..	8,998,329	7,731,247	1,267,082	16.4
Net earnings....	$7,288,946	$7,428,909	*$139,963	*1.9
Taxes....	1,156,370	967,100	189,270	19.5
Gross income...	$6,132,576	$6,461,809	*$329,233	*5.0
Fixed charges....	3,575,989	3,503,166	72,823	2.1
Net income available for renewals, financing and dividends....	$2,556,587	$2,958,643	*$402,056	*13.6

*Decrease.

National Committee Studying Situation

Country-Wide Organization Is Collecting Data Regarding Utility Needs —Investment Bankers Help

To keep the Washington officials thoroughly posted on what is being done by the public utilities to secure increased rates from the local authorities the National Public Utilities Committee is working diligently through its country-wide organization. This comprises the national committee, P. H. Gadsden, E. K. Hall and H. H. Crowell, and their Washington staff, and 111 representative public utility men, composing the eight regional committees, twenty-eight state committees and the insular committees in the Philippines and Porto Rico. The personnel of the regional committees and the state chairmen were published in the ELECTRIC RAILWAY JOURNAL of March 30.

The Investment Bankers' Association of America has offered to join forces with the members of the regional and state committees in presenting the problems of the industry to state and municipal authorities and will assist in any other way that is justified by local conditions. In some states the investment bankers have already organized committees and the National Public Utilities Committee has recommended a whole-hearted acceptance of the offer of the Investment Bankers' Association.

To convince Washington officials that the public utilities have made the greatest possible effort to secure relief from the local authorities, the regional and state committees will ascertain and report to the National Public Utilities Committee what companies are in need of relief, what action has been taken toward securing it, and what the results have been. This information will be presented to the various bureaus, boards, committees and administrations having an interest in the public utility problem. It is the purpose in the future to give complete facts in every case and to avoid generalizations.

Canadian Lines Hold Their Own

The gross earnings of electric railways in Canada for the year ended June 30, 1917, totaled $30,237,633 as compared to $27,416,284 in the preceding year, a gain of $2,821,379, or 10.2 per cent. The operating expenses amounted to $20,098,637 in 1917 as compared to $18,099,905 in 1916, an increase of $1,998,732, or 11.0 per cent. The operating ratio in 1917 was 66.47 per cent, as compared to 67.24 per cent in the preceding year. The net income remained practically the same. A detailed record for the last two years is given in the accompanying table.

COMPARATIVE STATISTICS OF CANADIAN ELECTRIC RAILWAYS FOR YEARS ENDED JUNE 30, 1916 AND 1917

	1916–1917	1915–1916
Mileage, operating......	1,743.54	1,730.73
Capital stock..........	$70,606,520	$67,738,275
Funded debt..........	90,628,219	87,157,349
Gross earnings..........	$30,237,663	$27,416,284
Operating expenses...	20,098,634	18,099,905
Net earnings from operations..........	$10,139,029	$9,316,378
Miscellaneous income.	2,292,200	2,928,573
Corporate income......	$12,431,229	$12,244,952
Taxes, interest, etc....	7,552,368	7,358,283
Net income..........	$4,878,861	$4,886,669
Appropriated to reserves..........	1,285,654	1,535,071
Appropriated to dividends..........	2,468,686	2,834,906
Unappropriated net earnings..........	$1,124,520	$516,690
Passengers carried......	629,441,997	580,094,167
Tons of freight hauled...	2,333,539	1,936,647
Car mileage..........	84,073,046	82,516,612
Equipment, all kinds....	4,295	4,442
Employees, all grades...	11,696	10,622
Salaries and wages......	$9,451,685	$8,767,734

Cleveland Figures Disappointing

The figures of Fielder Sanders, street railway commissioner, for the first five days under the 5-cent fare ordinance at Cleveland, Ohio, indicate that the Cleveland Railway is receiving an increase in revenue of less than 25 per cent, while an increase of 30 per cent will be required to pay the wages of the motormen and conductors and meet the higher costs of operation in other ways. The increase is not meeting Mr. Sanders' expectations. His estimate was $2,700,000 in five months, but he now believes that more than nine months will be required to accumulate this additional amount unless conditions should change for the better soon.

He attributes the smaller increase to the extremely hot weather, the fact that many persons walk in preference to paying the higher fare and the difficulty in collecting cash fares instead of tickets. He believes, however, that time will remedy these matters. The company will soon have tickets at the rate of five for a quarter and he believes that people will become accustomed to the higher fares and go back to the cars in preference to walking.

The Tayler franchise must be renewed by May 1, 1919, or the city will lose control of the operation of the cars. Mayor Harry L. Davis has indicated an unwillingness to sign a renewal unless the franchise is amended in such a way as to include a penalty against the stockholders of the company when the service is poor or when the rate of fare is increased.

Results with Increased Fares

Railway service in Tacoma, Wash., has not improved despite the 7-cent fare recently established, according to shipyard workers in that city, and the Ship Laborers, Riggers and Fasteners' Union in that city has ordered that legal action be started to eliminate the 7-cent fare. Union officials state that the action is taken to prevent possible riots, as a result of agitation among the workers.

According to accountants of the Tacoma Railway & Power Company, 7-cent fares have produced an increase in revenue to the company of approximately $5,418 a week, or about 24.3 per cent, but have decreased the number of passengers about 8.5 per cent. Outside accountants are figuring the increase in wages paid to the men, and a complete statement will be ready shortly for the committee of twenty-five citizens who recommended the fare increase. It is stated that for the week prior to the raise in fares the company's revenues were $22,268. The second week after the fare increases became effective the revenues were $27,687. The total passengers carried decreased from 453,714 to 415,164. Transfers increased from 136,111 to 145,080, or 6.6 per cent. This indicates that the short-haul workers that formerly rode are now walking.

Financial News Notes

Stockholders Subscribe for Bonds.—Montgomery & Company and Henry L. Doherty & Company announce that stockholders of the Cities Service Company have subscribed to $2,100,000 of the $6,000,000 of Series B 7 per cent convertible debentures recently offered. The formation of the syndicate was noted in the issue of Aug. 10.

Discontinued for War Period.—The San Angelo Water, Light & Power Company, San Angelo, Tex., is not at present operating its electric railway system. The company has about 1 mile of track but no other equipment. The road will probably not be operated again until after the war.

Would Abandon and Sell Line.—The Indiana Utilities Company, which operates 3.75 miles of electric railway between Angola and Lake James, has applied to the Indiana Public Utilities Commission to sell the road for junk. In any event the company proposes to abandon its operation.

Cities Service Earnings for 1917.—The combined gross earnings of the Cities Service subsidiary companies for 1917 were $69,634,872, with combined net earnings of $25,454,032. The balance after all interest charges and preferred stock dividends were deducted was $15,533,580. The electric railway subsidiaries carried 115,657,669 passengers over 374 miles of track.

Hearing on Abandonment Petition.—Chairman Hill of the Public Service Commission for the Second District of New York on Sept. 9 will give a hearing in New York City on the petition of the Westchester Street Railroad for approval of the proposed abandonment of its line from Tarrytown to White Plains and parts of its road in Tarrytown.

Motion to Dismiss Receivership Suit.—The United Railways, St. Louis, Mo., through its attorneys, on Aug. 15 in the United States District Court filed a motion to dismiss the amended receivership petition filed by John W. Seaman of New York a month ago. The motion for dismissal set forth that the amended petition did not state sufficient cause for action, was vague and indefinite and did not allege the same liability on the part of all the defendants. It also asserted that Mr. Seaman did not seek an adequate remedy within the United Railways corporation before going into court. A similar motion to dismiss the original receivership suit filed eight months ago was sustained by Judge Dyer.

Electric Railway Monthly Earnings

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY,
GRAND RAPIDS, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$1,831,428	*$1,162,616	$668,812	$505,784	$163,028
1m., June, '17	1,550,770	*955,369	595,401	427,519	167,882
12m., June, '18	20,789,999	*13,797,411	7,062,588	5,648,168	1,414,420
12m., June, '17	18,147,509	*10,580,010	7,567,499	5,111,143	2,456,356

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$318,857	*$243,468	$75,389	$67,915	$7,474
1m., June, '17	296,753	*198,621	98,132	64,598	33,534
12m., June, '18	3,863,918	*2,810,900	1,053,018	801,618	251,400
12m., June, '17	3,362,412	*2,106,159	1,256,253	767,220	489,033

FEDERAL LIGHT & TRACTION COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$271,226	*$196,786	$74,440	$50,699	$23,741
1m., June, '17	206,827	*165,887	40,940	50,257	†9,317
6m., June, '18	1,728,476	*1,154,996	573,480	302,447	271,033
6m., June, '17	1,345,732	*918,910	426,822	293,334	133,488

GRAND RAPIDS (MICH.) RAILWAY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$103,195	*$79,973	$23,222	$19,328	$3,894
1m., June, '17	104,828	*72,133	32,695	18,972	13,723
12m., June, '18	1,286,089	*942,379	343,710	226,881	116,829
12m., June, '17	1,303,090	*865,153	437,937	211,141	226,796

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$186,672	*$126,267	$60,405	$36,025	$24,380
1m., June, '17	152,996	*100,011	53,985	34,207	19,778
6m., June, '18	958,841	*711,565	247,276	217,029	30,247
6m., June, '17	813,922	*565,065	248,857	206,043	42,814

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY,
LEWISTON, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$86,482	*$60,642	$25,840	$20,338	$5,502
1m., June, '17	75,669	*56,652	19,017	15,678	3,339
12m., June, '18	885,908	*736,714	149,194	202,235	†53,041
12m., June, '17	846,133	*626,273	219,860	184,686	35,174

PORTLAND RAILWAY, LIGHT & POWER COMPANY,
PORTLAND, ORE.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$632,552	*††$391,558	$240,994	$187,746	$53,248
1m., June, '17	490,652	*275,098	215,554	176,699	38,855
12m., June, '18	6,818,090	*††4,181,568	2,636,522	2,155,699	480,823
12m., June, '17	5,664,193	*3,070,129	2,594,064	2,173,776	420,288

CHATTANOOGA RAILWAY & LIGHT COMPANY,
CHATTANOOGA, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$149,073	*$120,003	$29,070	$31,417	†$2,343
1m., June, '17	128,805	*81,223	47,582	29,628	17,953
12m., June, '18	1,552,084	*1,354,217	197,867	367,374	†169,507
12m., June, '17	1,301,091	*907,416	393,675	357,675	36,000

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$238,570	*$154,604	$83,966	$40,527	$43,439
1m., June, '17	194,493	*126,143	68,350	40,321	28,029
12m., June, '18	2,566,877	*1,646,003	920,874	489,555	431,319
12m., June, '17	2,431,587	*1,529,333	902,254	496,976	405,278

* Includes taxes. † Deficit. †† For the month $18,977; and for twelve months, $290,512 included for depreciation.

Traffic and Transportation

Indianapolis Hearing Begun

Testimony Presented in Connection with Application for Five Cent-Seven Cent Fare

The hearing of the petition of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., for increased fares was commenced on Aug. 19. The original petition filed in November, 1917, called for the elimination of reduced rate ticket fares and the establishment of a flat 5-cent fare, with the usual transfer privileges.

CASE SLOW IN STARTING

The case has been delayed, owing to the claim of the Public Service Commission that it lacked jurisdiction. The Supreme Court of Indiana, however, on July 30, ruled that the commission has authority to hear the rate increase petition. A supplementary petition was accordingly filed with the commission on Aug. 17, in which the company asks permission to charge a flat 5-cent fare within a central zone of 2½ miles, a 7-cent fare within a zone of 3½ miles, and a 9-cent fare to points beyond the 3½-mile zone, with a charge of 1 cent for all transfers.

It is estimated that only 50 per cent of the theoretical increased revenue from the additional fares will be derived, and that the increase in earnings from the 5-cent fare will be $225,000, from the 1-cent charge for transfers $100,000, and from the zones fares $225,000, a total of $550,000 a year. The company states that this revenue will be required to meet the increased operating costs and wage increases which the company is now paying, and does not cover a request of the trainmen made a few days ago for an increase in wages to the rate recently established by the War Labor Board for such cities as Chicago, Cleveland, Detroit, etc.

CITY WOULD APPEAL CASE

At the commencement of the hearing before the Public Service Commission on Aug. 19, Samuel Ashby, corporation counsel for the city of Indianapolis, asked the commission to stop the proceedings and file a petition for rehearing before the Indiana Supreme Court, and appeal the case to the United States Supreme Court. He contended that the Supreme Court of the State had erred in asserting that the city of Indianapolis was not a party to the franchise contract, and that for the commission to assume jurisdiction in the fare case under the emergency clause of the utility commission law was a violation of the contractual rights of the city. After a conference, the commission announced that the furnishing of adequate service to a community by a public utility was a matter of greater importance than the technical points at issue, and that it would proceed with the hearing and defer its opinion on the matter of a retrial of the jurisdictional case.

Captain Webb, of the U. S. Ordnance Department, who has charge of the government work in the various manufacturing plants in Indianapolis, testified as to the need of extensions and increased railway service to these plants, and stated that these had been promised by the company when it secured the necessary funds. He stated that the employees at these plants were in favor of paying increased fares if such increase secured them the service they desired.

Testimony was introduced showing that the valuation of the company's physical property as of Dec. 1, 1917, was $24,018,040. If $916,170 were added for franchise value, $2,000,000 for development costs, $1,200,000 for discounts and $500,000 for working capital the grand total would be $28,634,210.

Columbus Goes to Five Cents

The rate of fare in Columbus, Ohio, is now 5 cents, with 1 cent for each transfer and no rebate. The Columbus Railway, Power & Light Company served notice to this effect on the evening of Aug. 20, after having tried in vain for months to induce the City Council to grant an increase that would cover the additional operating expenses brought about by war conditions.

At the same time the company declared its intention to surrender its franchises and a little later filed suit in the Federal Court to enjoin interference with the operation of its cars. Posters were placed in the cars stating that the sale of tickets would be discontinued the next morning and giving the new rate of fare that would be charged.

It is said that many people refused to pay the new rate, on the advice of City Attorney Scarlett, but endeavored to purchase tickets instead. They were allowed to ride free when they insisted. It is probable, however, that this practice will cease within a short time.

Mr. Scarlett has asked the Federal District Court if it intends to "entertain jurisdiction" in the case.

The old rate was eight tickets for a quarter. For months the company has labored to show the City Council that it is an impossibility to operate at that rate under present conditions and keep out of a receiver's hands, but that body twice refused its plea for a temporary increase in the rate of fare and since then has been marking time while conditions for the company have grown worse daily.

Chicago Fare Request

Chicago Surface Lines Asks Fair and Reasonable Rate of Return on Companies' Investment

Confronted with the prospect of financial disaster as a result of the heavy burden imposed by the recent award of the War Labor Board, the Chicago (Ill.) Surface Lines on Aug. 14 asked the City Council to make a recommendation so that a petition may be presented to the State Public Utilities Commission for such an increase in fares as may be necessary to meet existing conditions. The letter of Leonard A. Busby, president of the company, asking the city to join in the petition because of its financial interest in the operation of the road, was introduced at the session of the Council which had just approved an ordinance intended to provide "service at cost." This measure, however, is not expected to become effective for more than a year. The letter was referred to the local transportation committee for consideration.

President Busby points out in the communication that the City Council last May indorsed the application of the union employees for increased wages and that when the matter was later taken up with the War Labor Board the company submitted to its jurisdiction because of such endorsement. The award of the board fixed a wage scale for trainmen ranging from 43 cents to 48 cents an hour and a corresponding increase to other union employees. The amount involved, therefore, will be in excess of $4,200,000 a year.

The letter also sets forth that gross receipts for the first six months of the current year have decreased more than $550,000, and material costs have gone up to the extent of at least $500,000 a year. This means that the added burden will bring about a decrease in net receipts for the year of $5,700,000 and will fall short of meeting the 5 per cent interest charges on the purchase price by the amount of $6,250 a day.

Mr. Busby refers to the comments of President Wilson and Messrs. Williams and McAdoo on the situation of public utilities, and he gives a list of railway companies in the larger cities which have already received or are seeking increased fares. He points out that the people of Chicago since Aug. 1 have been receiving service at less than cost.

He says he has been advised by counsel that until the United States Supreme Court decides otherwise the exclusive jurisdiction over the question of rates of fare is now vested in the State Utilities Commission. The company proposes to seek relief from the commission, but before doing so it desires the city authorities to investigate the situation and "determine what increase in the existing rates of fare will be necessary to meet the cost of street railway service in Chicago during the period of the war, including as part of the cost of such service a fair and reasonable rate of return upon the companies' investment."

Six Cents for Key Route

In Decision Allowing Raise It is Estimated One-Man Cars Will Save $55,806 and Skip Stops $42,377

The Railroad Commission of California on Aug. 14 fixed a new rate to be charged by the San Francisco-Oakland Terminal Railways on its street cars between Berkeley, Alameda, Oakland, Piedmont, Emeryville and San Leandro, including transfer privileges for trips in the same general direction within those cities, on a basis of 6 cents instead of 5 cents as at present. Additional fares are to be charged on a basis of a 6-cent mutiple instead of a 5-cent mutiple as now, to points outside the 5-cent zone.

INADEQUATE REVENUES ALLEGED

The application alleged that the revenues derived from operation were insufficient to meet the increased costs of operation and to care for a proper depreciation allowance, and render a fair and reasonable net return on the value of the property used in the operation of the system.

The "Traction Division" of the San Francisco-Oakland Terminal Railways consists of a consolidation of the Oakland Traction Company, the East Shore & Suburban Railway, and the California Railway. The lines serve the cities of Albany, Alameda, Berkeley, El Cerrito, Emeryville, Hayward, Oakland, Piedmont, Richmond and San Leandro and parts of Eden and Oakland Townships in Alameda County. The total track mileage, consisting of 126 miles of main line and 75 miles of second track, is 201 miles, served by thirty-seven operative lines. The entire property consists of 256 miles of road.

The rate of fare as at present charged by the San Francisco-Oakland Terminal Railways is 5 cents between the city limits of Berkeley, Alameda, Oakland, Piedmont, Emeryville and San Leandro, including transfer privilege for trips in the same general direction within the municipalities mentioned. Additional fares on a basis of a 5-cent multiple are charged to points outside of the 5-cent zone.

COMMISSION CONVINCED OF NEED

The commission in its opinion finds that the cost of wages, material and supplies have greatly increased and that additional revenue is necessary to provide for such increased costs and for return upon new capital expenditure which must be made immediately if the street car system is to be maintained to the standard of efficiency necessary to furnish adequate service to its patrons and the large number of communities which it serves. The company's original estimate of the amount required to be so expended on the properties was $2,883,228.

In view of the necessity for economy, due to the war emergency, the commission has carefully investigated the proposed expenditures and has reduced the amount to $1,181,979, covering the following items:

Track reconstruction and paving.		$363,955
Construction of second track on present single-track lines		170,212
New track connections, etc.		55,000
Lines into districts inadequately served		31,600
Equipment:		
25 one-man cars	$162,500	
25 new center-entrance cars for main traffic lines	275,000	
10 trailer cars for main traffic lines	55,000	
4 dump cars for handling rock, ballast, etc.	8,712	
1 electric locomotive..	15,000	$516,212
Miscellaneous new construction (principally for new feeder lines in outlying districts).........		45,000
Total		$1,181,979

REPRODUCTION VALUE $9,803,233

The commission finds the reproduction value, less depreciation, of the "Traction Division" to be $9,803,233, which covers the operative property.

The commission made an independent investigation into the possibility of reducing operating expenses without interfering with the quality of service. Operating economies of $193,313 a year were suggested and cover the following items:

Adjustment of schedules........	$68,783
Skip-stop plan (On basis of 0.143 cent a stop eliminated)	42,377
One-man cars	55,806
Elimination of unprofitable lines..	26,346
Total	$193,313

The economies as suggested by the commission's service inspector have all been placed in effect, with the exception of the recommendations as to one-man cars, and such will result in the reduction of a portion of operating costs without decreasing the quality of service rendered by the company.

PRESENT RATES INADEQUATE

The opinion of the commission contains the following conclusion:

"The requirements of the many communities and patrons of the 'Traction Division' of the company necessitates the operative properties being maintained in a proper state of efficiency that adequate and satisfactory service may be rendered, and it is evident that such efficiency and service cannot be maintained, or given, if the return derived from the rates and charges is not sufficient to meet the necessary and increasing expenses of the company. At the various hearings on this application, no person appeared in protest against an increase in fares or a readjustment of rates as requested by the company, and the investigation made by the commission into the matter of possible operating economies was the only testimony other than that introduced by the company in support of its petition.

"After careful consideration of all the evidence in this proceeding and a minute study of the voluminous exhibits filed by the company, we are of the opinion that the rates as at present charged by the company on its 'Traction Division' are not productive of adequate revenue to enable the property to be maintained and operated at the proper plan of efficiency satisfactorily to serve the public in the communities in and through which it operates."

The new rate is to be effective within twenty days at the discretion of the company.

Milwaukee Wants More

Companies There Ask Railroad Commission for Increases Outside the Central Five-Cent Area

A petition for further revision of fares in Milwaukee city and suburbs was presented to the Railroad Commission of Wisconsin on Aug. 20 by the Milwaukee Railway & Light Company and the Milwaukee Light, Heat & Traction Company.

In this petition, signed by J. D. Mortimer as president of both companies, the companies ask that their revenues be increased not by raising the single fare above a nickel, but by increasing fares outside of a limited central zone, wherein 5-cent fares are compensatory, so that riders beyond that zone shall pay rates "fairly proportionate to the cost and value of the service rendered."

The petition states that 11,000,000 persons, in 238 American cities are now served by electric railways charging a single fare in excess of 5 cents.

It represents that fare revisions ordered by the commission for the city lines on June 1, 1918, and for suburban lines on July 2, 1918, have failed to produce revenue increases expected by the commission.

It sets forth that the wage standard established by the National War Labor Board for numerous other large cities must shortly be met at Milwaukee and that it will increase yearly operating expenses, an amount equal to 50 per cent of the 10-cents-an-hour wage raise granted to the men on May 1, 1918.

It explains that the companies are unable with their present wage scales, in competition with other local industries, to hire men enough to give the public "the transportation service which the physical property otherwise would afford" that the difficulty in getting men is increasing and the number obtainable is becoming more and more inadequate.

It states that the Milwaukee lines afford transportation to thousands of industrial workers engaged in war production, and that the companies' inability to get men to give maximum car service "tends to retard the efficient prosecution of the war."

It cites the large cost of laying and repairing pavement, of sprinkling streets and of supplying free power to move city bridges, and states that "if the car riders are to continue to pay not only the cost of the service they receive, but also the cost of carrying the above-mentioned burdens, substantially larger increases in fare must be provided than would otherwise be required."

Six Cents for Albany

New York Commission for the Second District Allows Fare Increase for the Period of the War

Six-cent fares were authorized by the Public Service Commission for the Second District of New York to be put into effect on Aug. 19 in all three zones of the territory covered by the United Traction Company, Albany. The decision was rendered on Aug. 14. The new fare schedules will continue in effect as maximum fares until the signing of a general treaty of peace, unless the commission shall otherwise order. The order of the commission apportions the territory of the company into the Albany and Troy zones and interurban zone, and permitted a new schedule of rates to be filed with the commission at once, the new rates to become effective five days after the filing of the new schedules and a notice by the company to the public. Universal transfers, upon the payment of any cash fare, will be restored by order of the commission.

ORIGINAL APPEAL MADE LAST YEAR

The decision in the case was written by Commissioner Frank Irvine. It was rendered on the application of the company, filed with the commission June 25, 1917, and amended May 2, last, by proposing a zone system. The proposed schedules of the company were suspended until Sept. 28, pending an examination of the company's accounts by the commission.

Coincident with the order granting the increased fare, the commission ordered closed the complaint of Mayor John H. McIntyre of Rensselaer against the proposed increase, based on the Barnes law, alleged to limit the rate of fare between points in Albany and Rensselaer to 5 cents.

The settlement of the long pending application was the direct result of action of the cities of Troy and Watervliet in suspending the franchises which limited the rate of fare to 5 cents. Prior action by the commission had been forestalled by the decision of the Court of Appeals in the Rochester case, in which it was held that the Legislature had not authorized the commissions to permit fares in excess of those prescribed in franchise agreements.

COMMISSIONER DISCUSSED FOUR QUESTIONS

After describing the properties of the United Traction company and telling of the application of federal officials for special consideration for employees of the Watervliet arsenal, and the subsequent withdrawal of the application, Commissioner Irvine turned to a discussion of the four questions brought up during the hearing of the case. First, the charges of over-capitalization; the Hudson Valley purchase; the charge that the Albany system is in itself profitable, and that Troy patrons alone should care for the securities issued by the individual Troy companies which now underlie the securities of the entire system. Commissioner Irvine disposed of the over-capitalzation charge with the declaration that the corporation is not entitled to sufficient return to pay dividends or interest but to a "fair return on the property used and useful in the public service."

In his conclusion Commissioner Irvine said:

"Having reached the conclusion that the company is entitled to relief in the way of increased revenues, we must ascertain whether the method proposd of effecting the increase is just and reasonable. The Troy zone, while is a group of politically separated municipalities, is compact and might for most purposes except those of government be treated as one community. In fact the industrial and social—using the latter term in its broader as well its narrower sense—interests of those municipalities blend together to a large extent. Indeed, the cities of Troy and Watervliet and the village of Green Island, in adopting the resolutions waiving the fare restrictions in their respective franchises, have insisted that a common rate should be adopted in the group constituting the Troy zone.

THE MUNICIPALITY THE UNIT

"What is said of the Troy zone applies also to the cities of Albany and Rensselaer, but perhaps not to the same extent. We must remember, however, that section 181 of the railroad law makes the municipality the unit and we cannot relieve the company from the operation of this section without finding that in the particular municipality affected the income is insufficient to yield an adequate return. The operating expenses have not been segregated by municipalities. The uniform system of accounts has not required that they should be so segregated and a complete segregation, except as many items of expense might be roughly and inexactly apportioned, is impossible. The travel in the Troy zone is so largely from one municipality to the other that it may be safely assumed that the same conditions apply substantially in each. It has not been claimed as to this zone that there is any substantial difference in operating results as between the different municipalities. It must be inferred that the inadequacy of return so far as it is applicable to this zone distributes itself farly evenly among the municipalities composing it. Certainly there is no ground for any inference that the company operating in any single one of these municipalities could operate at profit at present prices."

The order of the commission follows substantially in full:

"On the facts found and for the reasons stated in the accompanying opinion it is

ORDERED (1) That the United Traction company be and it is hereby authorized to increase its one-way fares for passenger travel over its lines as hereinafter prescribed in the following described zones, subject to conditions herein provided:

Local Zone (a):

From 5 cents to 6 cents. This zone includes all points within the city of Albany, including point known as Garbrance Lane, in the town of Colonie; also all points within the city of Rensselaer. For travel between points in this zone requiring the use of two car lines, free transfers to be given and accepted.

Local Zone (b):

From 5 cents to 6 cents. This zone includes all points within the cities of Troy, Cohoes, and Watervliet, also the villages of Green Island and Waterford, including points intermediate between said cities and villages in the towns of Colonie and Waterford. For travel between points in this zone requiring the use of two car lines, free transfers to be given and accepted.

Through Zone (c):

This zone includes points intermediate between the Plaza, terminal point in the city of Albany, and Franklin Square, terminal point in the city of Troy, or the through line terminal point in the city of Cohoes. For through travel between said points, the fare is not to exceed 12 cents. Between said terminal point in Albany and point in the town of Colonie known as Schuyler bridge, including points intermediate between said points, the fare is not to exceed 6 cents; and between said terminal point in the city of Troy or in the city of Cohoes and a point in the town of Colonie known as Garbrance Lane, including points intermediate between said points, the fare is not to exceed 6 cents. Free transfers to be given for through travel between points in zone (a) and points in zone (c) intermediate between Albany and Schuyler bridge, also between points in zone (b) and points in zone (c) intermediate between Watervliet and Garbrance Lane when such travel involves the use of a local car line and a through car line. The foregoing transfer regulations in combination will apply to through travel between points in local zone (a) and points in local zone (b) when the travel involves the use of car lines operating in both said local zones and the through car line operating in through zone (c).

The fare schedule prescribed in this order shall continue in effect as maximum fares until the signing of a general treaty of peace unless the commission shall otherwise order.

NO DIFFICULTY WITH NEW FARE

The 6-cent fare went into effect on the lines of the company on Aug. 19. The company notified the general public through posters in the cars and advertisements in the local papers, asking their co-operation in assisting the employees of the company to make the collection of the fare with as little delay as possible to the railway service.

Anticipating a large demand for pennies, the company provided 200,000 pennies for the conductors, but the advertising to the public to have a penny ready with the nickel was productive of so much good that 75 per cent of the passengers on Aug. 19 deposited the nickel and penny in the fare box and did not have to ask the conductors for change. Only about $200 worth of pennies were used on that day for change, while more than this amount in pennies was turned in by the conductors with their fare receipts.

On Aug. 20 practically no pennies were given out by the conductors. The delays to the service on account of the new fare conditions were very few, all car lines being maintained practically on time during the day.

The United Traction Company operates 111 miles of electric railway in Albany, Rensselaer, Troy, Cohoes, Watervliet, Green Island and Waterford.

Buffalo Vote Unfavorable

Six-Cent Fare for International Railway Lost at the Election on Aug. 20

The resolution adopted by the City Council of Buffalo, N. Y., on June 18, last, waiving certain franchise restrictions and allowing the Public Service Commision for the Second District, to fix an equitable rate of fare to be charged by the International Railway on its city lines, was repealed by the voters of the city at a special referendum election on Aug. 20. The vote on the question was 35,661 for the repeal of the City Council's action and 7,044 to uphold the Council.

The action of the voters means that the International Railway cannot charge a fare higher than 5 cents on its city lines and indicates that the voters of the city intend to hold the company to the terms of its franchise. The defeat of the 6-cent fares also means that the platform men employed by the company will not receive the increase in wages of 6 cents an hour over the present scale recently awarded them by the War Labor Board. This award was made contingent on the fact that the voters uphold the City Council, which as stated previously, agreed to waive certain franchise restrictions and allow the state utilities board to fix a higher rate of fare.

E. G. Connette, president of the railway, says that no statement will be issued by the company until after a meeting of the board of directors which will be held within the next week. Mayor Buck has served notice upon President Connette that if the company's board of directors votes to withdraw the wage increase to the employees and there is danger of a strike, he will appeal to the courts for the appointment of a receiver for the company's city lines.

The repeal of the Council's action is the culmination of litigation involving the legality of the council's right to pass a resolution waiving certain franchise restrictions and also involving the voters' right to hold a referendum on the question. The first decision in favor of the voters came from the Supreme Court of Erie County. This decision was upheld by the Appellate Division of the Supreme Court and by the New York State Court of Appeals. The referendum is the first special election ever held under the new commission charter and it is the first time women have voted in Buffalo under the equal suffrage law. Only 17,781 women registered and a small percentage of them voted at the referendum. The total vote at the referendum was 42,705. The special election cost the city between $30,000 and $35,000.

When the results of the election became known, every newspaper except one indirectly criticised the voters for their attitude on the issue involved.

On the day before the referendum election, all of the large banks of the city issued a public statement urging voters to uphold the action of the City Council and allow the International Railway to charge a higher rate of fare. The banks said the increase in fares was imperative because of higher operating costs, increased wages, etc. Those who opposed the higher fares in a final statement to the voters called attention to the fact that the dividends of the International Railway for the last five years had averaged 8 per cent, "which is equivalent to nearly $4,000 a day."

Detroit Case to Supreme Court

Attorneys representing the Detroit (Mich.) United Railway have appealed directly to the United States Supreme Court for an injunction to restrain the city of Detroit from enforcing the ordinance requiring 5-cent fares, six-for-a-quarter tickets and eight-for-a-quarter workingmen's tickets. The attorneys found Chief Justice William Day at Mackinac Island. He issued an order for the hearing of the case on its merits in his home city, Canton, Ohio, on Sept. 10. The city of Detroit has until Aug. 31 to answer the company's bill.

In the meantime the company is enjoined from violating the 5-cent ordinance by an order which was issued by the local circuit court. The company appealed directly to the United States Supreme Court, an unusual procedure, after the local federal court had refused to take any action in the matter.

Although the company is accepting 5-cent fares it is not selling six-for-a-quarter tickets, these tickets not yet having been received from the printers.

The company this week announced that it has stopped work on the new line to the Ford plant where "Eagle" submarine chasers are being built and has also quit work on all other construction jobs. The company explained that it was necessary to halt all such work because the present revenue, under 5-cent fares, did not produce enough money to carry on these jobs.

Several months ago when the "Eagle" line was proposed, company officials stated that the question of financing the new extension would be bothersome. An officer of the Ford Motor Company announced at a meeting of the Common Council committee on public utilities that if necessary his company would finance the project. This week when work on the line was stopped members of the Council criticized the railway, declaring that the company had not taken advantage of the financial assistance offered by the Ford people. The company then produced letter written to the Ford Company last May asking financial assistance in building the line. The Ford Company to date has not replied to these letters and has not made an offer of financial assistance.

Council members have been talking about a variety of reprisal measures against the company but at the meeting on Aug. 20 no new measures were presented.

Skip Stops for Kansas City

With 20,000 Fewer Stops a Day Local Railway May Save 15,000 Tons of Coal a Year

Kansas City, Mo., claims the distinction of being one of the first cities in the United States to experiment with the "odd and even" system of staggering car stops. Its early experience with the plan was described in the issue of this paper for April 11, 1914, page 850. and in prior issues. In May, 1911, after exhaustive tests, it introduced the alternate stop on the Troost Avenue and Brooklyn Avenue lines. Metal signs marked "odd" and "even" respectively, were placed on the front end of cars, indicating that the cars stopped at odd and even-numbered city streets respectively.

As at that time there were no exorbitant prices or shortage of coal no special attempt was made to extend the "odd and even" operation to other lines of the company. During the winter of 1917-1918, however, a very acute shortage of coal made the further introduction of skip-stops a highly desirable step. At an informal conference in March, 1918, the Public Service Commission of Missouri indicated its approval of any skip-stop plan that might be agreed upon by the company and the city. Shortly thereafter a report on the subject was submitted to the City Council by Robert P. Woods, city member of the Board of Control. This indicated that the average distance between stops on some thirty lines of the company could be increased from 422 ft. to 598 ft.

ORDINANCE PASSED ON AUG. 12

The report was referred to a joint committee of both houses and several public hearings were held, little protest being lodged against the plan when it was properly understood. Both State and National Fuel Administrators as well as Mayor Cowgill, favored the plan, and an ordinance permitting its use was passed on Aug. 12.

At all car stops the steel posts supporting the overhead are being marked with 3-ft. white bands bearing the words "Car Stop" in black letters arranged vertically. Where no stops are made 1 ft. 6. in. black bands with the words "No Stop" are being displayed. Where a safety stop and either a "Car Stop" or "No Stop" come at the same point an 8-in white band is being painted on the post 4 in. above other sign.

The skip-stop plan is being applied to practically all lines of the Kansas City Railways. Explanatory advertisements have been inserted in the daily papers and a large sheet measuring 25 in. x 28 in., showing by lines every stop which will be made and indicating by "NS" and "FS" whether it is near side or far side, has been displayed in prominent places. It is estimated that 20,000 stops a day are being eliminated with a resulting saving of approximately 15,000 tons of coal a year to the company.

Jersey Case Before Supreme Court

A suit has been filed in the Supreme Court of New Jersey by Charles F. X. O'Brien, Jersey City, to review the order of the Board of Public Utility Commissioners by which the Public Service Railway was authorized to charge 1 cent for an initial transfer to its patrons from Aug. 1. Marshall van Winkle, who opposed the granting the new rate for the New Jersey League of Municipalities, is counsel for O'Brien, whose suit is that of an individual. Under the appeal filed all the important legal points urged by the league against the granting of any increase by the commission are taken up for review.

It is set up that there was no evidence before the commission to support the order whereby the company is now charging 1 cent for initial transfers; that the board had no jurisdiction in the case to allow the increase; that there was no determination of the value of the Public Service Railway by the commission for rate-making purposes; that the commission did not determine what is a fair rate of return upon the value of the company's property, and that the order of the commission abrogates a number of franchise contracts between the Public Service Railway and Jersey City, providing that the company give service for a fare not to exceed 5 cents, and with free transfers.

The scope of the appeal involves the question of whether the Public Utility Commission in applications from utility companies for emergency relief has power to increase rates without a complete rate-fixing valuation of the property of the petitionng utility. It also goes into the more imporant question as to whether the commission has the power to abrogate franchise obligations of utilities with municipalities to render service at maximum rates of fare in consideration for franchise privileges.

Skip Stops for All Cities Over 25,000 Population

All cities in the United States of 25,000 population and above will soon be putting into effect skip-stop plans worked out in conjunction with the Fuel Administration, according to advices from the Washington correspondent of ELECTRIC RAILWAY JOURNAL. It is estimated that a coal saving at the rate of 2,000,000 tons a year will be effected.

The skip-stop will go into effect in Chicago on Aug. 25; and in Kansas City the new system is just being started, under an ordinance passed Aug. 12. The Fuel Administration now has the subject up actively with all other large cities, and the Administration is asking that the railway companies of the country do all they can to assist.

In this connection, the Fuel Administration is encouraging the use of power-saving devices.

Britton I. Budd, head of the Chicago Elevated Railways, has written a letter to officials of the Fuel Administration, in which he says that for the six months of the present year the power saving device in use on this system led to a saving in coal of 11.98 per cent, or 16,867 tons. At $3.17 per ton, this amounted to a saving of $53,468.

Transportation News Notes

Voters Reject Six-Cent Fare.—The voters of Birmingham, Ala., at the recent election defeated the 6-cent fare provision for the Birmingham Railway Light & Power Company.

Lawrence Would Increase Fares.—Officials of the Kansas Electric Utilities Company, operating 10 miles of electric railway in Lawrence, Kan., recently announced that they would apply to the City Commissioners there for permission to increase fares to 7-cents.

Six-Cent Fare for Jersey Road.—As an emergency war surcharge the 5-mile beach electric railway, which serves Wildwood, N. J., and adjacent territory, has been authorized by the Board of Public Utility Commissioners to put into effect a 6-cent fare. The rate has been 5 cents.

Chattanooga Wants Six Cents.—Application for a change in the present franchise held by the Chattanooga Railway & Light Company, Chattanooga, Tenn., so that the company may be permitted to charge a 6-cent fare instead of 5 cents was proposed to be made on Aug. 6.

Six Cents for Macon.—The City Council of Macon, Ga., on July 31 passed an ordinance allowing the Macon Railway & Light Company to charge 6 cents for fare until one year after the war, when the fare will automatically return to 5 cents. The action of the Council was unanimous.

Fare Petition Withdrawn.—The Little Rock Railway Electric Company, Little Rock, Ark., has withdrawn its petition asking the City Council to grant a franchise amendment permitting a fare increase from 5 cents to 6 cents. Mayor Charles E. Taylor announced that he would veto the amendment if it passed.

Kankakee Road Asks Six Cents.—The Kankakee (Ill.) Electric Railway has filed a petition with the Public Utilities Commission of Illinois asking for an increase in fares from 5 cents to 6 cents. It is expected that the North Kankakee Electric Light & Railway Company will file a similar petition.

Reading Wants Another Increase.—The Reading Transit & Light Company, Reading, Pa., on Aug. 6 gave notice that it was preparing to ask for another increase in fares from 6 cents to 7 cents in Reading and Lebanon. The fares on the remainder of the system have been increased to 8 cents.

Shore Line on Steam Road Basis.—The Shore Line Electric Railway, Norwich, Conn., on Aug. 21 was granted authority by the Interstate Commerce Commission to increase passenger fares between points on its line in Massachusetts and Rhode Island, provided the fares do not exceed those charged on railroads under federal control.

I. C. C. Approves Rhode Island Fares.—The Interstate Commerce Commission has authorized the Rhode Island Company, Providence, R. I., to adopt zone fares between Providence and Massachusetts points which were recommended by a special committee's report to the Rhode Island General Assembly in March last.

City Commission to Have Authority.—The legal department of the city of Forth Worth, Tex., has drafted an ordinance which will be enacted immediately giving the City Commission authority to compel public utility corporations operating under municipal franchise to make extensions and betterments of service as ordered by the commission.

Joint Rates Suspended.—The Public Service Commission of Oregon, recently issued an order suspending a 25 per cent joint rate increase of the Portland Railway, Light & Power Company, Portland, Ore., and the Willamette Valley Southern Railway, Oregon City, Ore. The suspension is for ninety days or pending a hearing to ascertain if the rate is justified.

Fare Increase for DeKalb-Sycamore Road.—An increase of fares has been allowed the DeKalb, Sycamore & Interurban Traction Company, DeKalb, Ill. The order of the Public Utilities Commission of Illinois abolishes all round-trip tickets and increases the sale price of coupon books from $3.75 to $4.25. The fare of 15 cents from DeKalb to Sycamore will remain as heretofore.

Butte Wants Ten-Cent Fare.—The Butte (Mont.) Electric Railway has filed with the State Utilities Commission a schedule of the increased rates it desires to have placed in effect. It asks for a 10-cent fare with transfer privileges within the city limits, or a fare of 6¼ cents when tickets are purchased in blocks of four. It states these new rates are to cover all traffic heretofore subjected to a 5-cent fare.

Skip Stops in San Francisco.—Both the United Railroads and the Municipal Railway, San Francisco, Cal., on Aug. 20 put into effect the skip-stop plan in the Sunset and Park-Presidio residence districts of San Francisco. Yellow bands have been painted on poles to mark the corner at which stops will be made. For the present the skip-stop plan will be applied only to the short blocks in the western part of the city.

Chautauqua Traction Hearing Soon.--The Public Service Commission for the Second District of New York has referred to Commissioner Fennell for investigation the complaints by patrons aginst the proposed increased rates of the Chautauqua Traction Company and the Jamestown, Westfield & Northwestern Railroad, and it is expected that a date for a hearing in Chautauqua County will soon be announced.

More Dallas Lines Skip-Stops.—Announcment is made by Richard Meriwether, general manager of the Dallas (Tex.) Railways, that the skip-stop system will be extended to five more lines at once. Signs have been placed along the lines indicating stops, and formal announcement of the inauguration of the service was made by the distribution of cards by conductors to every person who rode on these cars on the two days before the new plan went into effect.

New Denver & Interurban Fare.—The Denver & Interurban Railroad, Denver, Col., had its application for fare increases allowed by the Public Utilities Commission of Colorado on Aug. 7. The one-way fare will now be 3 cents a mile with a round-trip rate of 10 per cent less than twice the one-way fare. Commutation rates have been increased 10 per cent and an excess fare charge of 5 cents has been granted for fares paid on trains at stations where agents are provided. The previous rate of fare on the interurban line was 2½ cents per mile.

Scranton Wants Eight Cents.—The Scranton (Pa.) Railway on Aug. 16 filed a new tariff with the Public Service Commission of Pennsylvania providing for an increase in fares in all zones from 6 cents to 8 cents. W. E. Boileau, general manager of the company, stated that the 8-cent fare is necessary to keep the cars going. The increase in wages granted recently by the War Labor Board will add $320,000 more expense to the company and wages on the new basis cannot be paid on less than an 8-cent fare.

Action on Binghamton Appeal Put Over.—A large delegation of employees from the Binghamton (N. Y.) Street Railway was present at the Council meeting on Aug. 12 expecting that some action would be taken on the petition of the company, asking for a suspension of the franchise rights of the taxpayers relative to a 5-cent car fare rate during the period of the war, and as long thereafter as the Public Service Commission deems necessary, but no action was taken except that the committee to which the petition was referred asked for an extension of time to consider the matter further and render a report at the next meeting of the Council.

City Inquiry Into Tacoma Fare.—In an investigation of the 7-cent railway fare in Tacoma, Wash., Fred Shuemaker, commissioner of finance, presented to the Tacoma Railway & Power Company, a questionnaire for the company to fill out. Among other questions, Commissioner Shuemaker asks why the company has spent three times as much money advertising its traction interests in Tacoma as has been spent in Seattle and Bellingham; why the company continues to pay 8 per cent interest on a $4,000,000 open account with the Puget Sound Electric Company, of which it is but a branch, and why this debt is not bonded at 5 per cent.

Fare Increases on Doherty Properties.—Henry L. Doherty & Company, New York, N. Y., in a bulletin dated Aug. 5 reviewed rate increases on properties under their management. On electric railway properties they list the following changes: Cumberland & Westernport Electric Railway, Cumberland, Md., has been granted an increase amounting to 20 per cent. Meridian Light & Railway Company, Meridian, Miss., has increased its fare from 5 cents to 7 cents, with a charge of 25 cents for four tickets instead of six as formerly. Bartlesville (Okla.) Interurban Railway has been authorized to charge 7 cents in the former 5-cent zone and 14 cents in the former 10-cent zone. Toledo & Western Railway, Toledo, Ohio, has been granted permission to charge 2½ cents a mile instead of 2 cents. Toledo Railways & Light Company, Toledo, Ohio, now charges a straight 5-cent fare instead of 6 tickets for 25 cents and also charges 1 cent each for each transfer.

Twin City Fare Appeal Made.—The City Council of Minneapolis, Minn., has voted to interpose no objection if the Twin City Lines wishes to present its request for a 7-cent fare to the National War Labor Board to adjust. Action was held up one week by motion to reconsider. Agreement on a 7-cent fare was not reached at a joint meeting of representatives of both St. Paul and Minneapolis Councils attended by Horace Lowry, president of the railway, who explained the necessity for a wage increase and the critical position of the company if quick action is not taken. The St. Paul men said any change in the franchise in that city requiring a 5-cent fare must be presented to the people. Several Aldermen insisted at the meeting that a valuation of the railway property was a starting point. Although it was voted to appoint a committee from each Council to consider the whole matter, the Mayor of Minneapolis is the only one to name such a committee. Joint action under the circumstances seems unlikely.

Fonda - Johnstown Would Increase Fares.—The Public Service Commission for the Second District of New York announced that on July 30 it would give a hearing upon a tariff of the Fonda, Johnstown & Gloversville Railroad proposing to put into effect a 3-cent-a-mile passenger fare. The hearing was announced after the filing of a petition by the company in which it was stated that additional revenue must be received. The petition was also accompanied by proofs of proposed new tariffs showing that the proposed passenger fares are to be practically the same as those charged by the company during the period that it was under federal control. These tariffs it proposes to put into effect as to intrastate traffic on Aug. 1, and interstate traffic on Aug. 30. The petition states that no increase in volume of business is anticipated and that the only way by which revenues can be increased is by maintaining the increase in freight rates and by allowing an increase in passenger fares over those now in force, including city fares.

Passenger Decrease Follows Fare Increase.—The quarterly statement of the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., filed on Aug. 13 with the Public Service Commission of Indiana as required by the commission when an increase in passenger rates was granted the company last January, shows that decreased rather than increased revenues have resulted for the period of April, May and June. The total passenger revenue for this quarter in 1918 was $106,288 as compared with $107,256 for the same period in 1917. The percentage of decrease is 0.9 per cent. Total operating expenses show an increase of 11.31 per cent for the quarter ending June 30, 1918, as compared with the same period of 1917. Total gross earnings show an increase of 4.53 per cent. Total gross income, less operating expenses, shows $31,713 as compared with $35,061 for the corresponding quarter in 1917. The losses in passengers riding are: 19 per cent in April, 20 per cent in May, and 23 per cent in June. The freight business for the same months showed an increase respectively of 51, 57 and 65 per cent.

New Rates Allowed Lake Erie Line.—In the fare case of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., the Public Service Commission of Pennsylvania has handed down a decision in which it is held that an interurban electric railway may increase its rates beyond the 5-cent fare limit specified in a franchise ordinance when necessary to obtain sufficient revenue for operating expenses and to return to the stockholders a reasonable profit on their investment. Complaints were filed with the commission by the authorities of North East Borough, Harbor Creek and North East Townships in Erie County, which are connected by the line in question, against proposed increases in rates. The commission made a physical examination of the company's properties in Pennsylvania and the decision handed down is based on the valuations. The commission fails to find the discrimination alleged and decides that since rates on adjacent lines radiating from the city of Erie have been increased proportionately, the Buffalo & Lake Erie Traction Company has been unable under the present tariffs to set aside any funds for depreciation and earnings have been greatly reduced, the increase asked is justified.

Personal Mention

A. J. Bray has been appointed auditor of the Michigan Railway, Jackson, Mich., to succeed H. G. Kessler.

Miss Mary T. West has been chosen active secretary of the Board of Public Utility Commissioners of New Jersey to succeed Alfred N. Barber, who is seriously ill.

J. H. Stott, formerly engineer of cable equipment of the United Railroads, San Francisco, Cal., is now in charge of the North Beach Station of the Sierra & San Francisco Power Company, San Francisco, Cal.

George H. Smith has resigned as chief engineer of the Rockford & Interurban Railway, Rockford, Ill., to become connected with the Bay State Street Railway, Boston, Mass., as assistant to W. S. Hubbard, superintendent of roadways and buildings of the company.

Edward A. Higgins, a member of E. F. Higgins & Company, electrical contractors, has been selected by Mayor John W. Lawson for appointment as a member of the Board of Public Utility Commissioners of Wilmington, Del., representing the Fourth Representative District to fill the vacancy caused by the resignation of Frank Mock.

Paul P. Haynes of the Public Service Commission of Indiana, has been appointed a member of the special war committee of the National Association of Railway & Utilities Commissioners, with headquarters in New York City. Mr. Haynes succeeds Max Thelen, chairman of the Railroad Commission of California, who has resigned to become surveyor of contracts in the War Department.

W. M. Holtz, chief of the medical bureau of the Pittsburgh (Pa.) Railways, has recently entered the medical reserve corps and is now a captain stationed at Camp Greenleaf, Ga. Dr. Holtz described in the ELECTRIC RAILWAY JOURNAL for May 5, 1917, how the Pittsburgh Railways and affiliated companies have built up cordial relations with local physicians and how the companies care for injured employees and the methods they use to promote their welfare.

Charles A. Stanley, for the last five years in charge of the department of commercial engineering of the Kansas Gas & Electric Company, has been appointed general superintendent of the Arkansas Valley Interurban Railway, Wichita, Kan. Mr. Stanley is a graduate of the General Electric expert course, and spent ten years in the General Electric shop in charge of railway testing and design. Since that time he has served as a railway appraisal engineer and has been connected with several companies operating electric light properties.

Mr. Casey in Washington

New Superintendent of Transportation Has Grasp of Washington Problems Through the Beeler Traffic Studies

William M. Casey, whose appointment as superintendent of transportation of the Washington Railway & Electric Company, Washington, D. C., was noted briefly in the ELECTRIC RAILWAY JOURNAL, of Aug. 10, page 264, was formerly superintendent of transportation of the Denver (Col.) Tramway. At the time of his leaving Denver, at the end of 1916, and until his new appointment, Mr. Casey was on the staff of John A. Beeler, consulting engineer, who is advising the Public Utilities Commission of the District of Columbia on traffic problems in the capital. Mr. Casey was born in Ireland in 1870. At an early age his parents brought him to America, settling in Lawrence, Mass., where Mr. Casey was educated in the public schools. In 1888 he went West and enlisted in the United States Army, the chief occupation of which at that time was the stamping out of insurrections of the various hostile tribes of western Indians. As a sergeant Mr. Casey participated in the defense of the Blue Ridge Agency in December, 1890, in which Sitting Bull was one of the principal actors on the other side. Mr. Casey qualified as a sharpshooter and had the reputation of being one of the best of the famous Seventh Regiment of the United States Infantry. He also had the distinction of being pronounced by General Merriam, under whom he served, as one of the best drill masters in the service. After securing an honorable discharge from the army Mr. Casey sought employment with the Denver City Cable Company, and in 1892 worked as motorman and conductor on the old Larimer Street Line. In 1893 he was promoted to carhouse foreman. In 1902 he was advanced to the position of division superintendent of the Denver Tramway Company. In 1909 the company further advanced him to the position of trainmaster in charge of traffic and discipline and later to the position of general superintendent of transportation. Mr. Casey is recognized as one of the best qualified transportation men engaged in electric railway work. His keen insight into human nature and his early army training have been of great value to him in training others and in maintaining discipline.

W. M. CASEY

J. Kappeyne, formerly chief engineer of the Public Utilities Commission of the District of Columbia, has recently been appointed transportation engineer to the United States Fuel Administration for the State of Illinois, with headquarters in Chicago. Means for promoting the conservation of fuel by the various electric railways of the State will be worked out by Mr. Kappeyne.

Increase for New Bedford & Onset Road

The Public Service Commission of Massachusetts has issued a finding approving a general fare increase on the New Bedford & Onset Street Railway, subject to modification with respect to the use of tickets. The cash fare on lines was formerly 5 cents, with a ticket rate of 4 1/6 cents. In 1915 the commission allowed the fare to be increased to 6 cents and the ticket rate to 5 cents, and since Sept. 3, 1917, the fares have been on a straight 6-cent basis. The company now claims that its income is still insufficient and the latest schedule filed calls for a cash fare of 7 cents, with a ticket rate of 6 cents upon certain designated portions of the system.

The board's investigation indicates that the company is entitled to an increase of at least $25,000 in gross revenue, even if no allowance be made for depreciation or for a return upon the floating debt, which has never received the indorsement of the commission.

Under the company's schedule single tickets for 6 cents each are available in the aggregate on 13½ miles of the company's total trackage of about 37 miles. The distances for which they may be used are in all cases less than a regular fare zone; they are used between all points where there is an appreciable amount of daily riding; and the density of traffic is greater than on other portions of the system. The propriety of permitting a different rate of fare under such conditions has been generally recognized in previous rate cases and cannot be regarded as discriminatory, the finding states.

In addition to these single 6-cent tickets, the company proposes to issue a through round-trip ticket for 60 cents, representing a 6-cent rate for each fare zone, between the Narrows Bridge, Wareham and the Fairhaven-Mattapoisett line, where connection is made with the Union Street Railway, New Bedford.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Franchises

Mobile, Ala.—The Mobile Light & Railway Company will ask the City Council of Mobile for a franchise to build an extension to the government shipyard now in course of construction at Frascati.

San Pedro, Cal.—The Pacific Electric Railway has accepted a franchise for the construction of connecting tracks linking the old Los Angeles Traction Company line to San Pedro with the Pacific Electric Railway tracks on Vermont Avenue between 116th and 117th Streets. The proposed tracks will make it possible for the Pacific Electric Railway to resume traffic to the harbor from the southwest section of the city.

Toledo, Ohio.—The Toledo Railways & Light Company has asked the City Council for a franchise to construct an extension on certain streets adjacent to the proposed site of a new nitrate plant in Toledo. The proposed extension will be in the nature of a loop service that will provide transportation of materials and supplies to the plant, as well as furnish residents of that portion of Toledo with street car connection with the city proper.

Norfolk, Va.—The Board of Aldermen of Norfolk has granted five new permits to the Virginia Railway & Power Company for the construction of extensions of its lines in Norfolk.

Track and Roadway

Edmonton (Alta.) Municipal Railway.—The City Council of Edmonton has authorized the placing of new crossings on Jasper Avenue from 102d to 108th Streets at a cost of $1,150, and some track repairs on Saskatchewan Avenue, at a cost of $800.

Northern Electric Railway, Chico, Cal.—The City Commission of Sacramento has refused to grant the petition of the Northern Electric Railway to abandon its service to McKinley Park.

Pacific Electric Railway, Los Angeles, Cal.—A decision has been rendered by the Public Utilities Commission of California ordering the Pacific Electric Railway to construct, maintain and operate a branch railroad track about 350 ft. west of the west switch of its present passing track west of Onawa Station, Elliottsville, southwest of the quarry of the Superior Dark Granite Company, of sufficient capacity to accommodate not less than three freight cars, the entire cost thereof to be borne by the Superior Dark Granite Company.

Savannah (Ga.) Electric Company.—Improvements on a few city lines will be begun by the Savannah Electric Company following the completion of the extension to Port Wentworth.

Rock Island Southern Railroad, Monmouth, Ill.—The Rock Island Southern Railroad is again operating with only partial loss of schedule following the burning of its power-house which supplied power for its lines between Galesburg and Monmouth. A report that the company would substitute steam for electricity is without foundation. The entire equipment of the powe house, as well as the building, was destroyed. Power to operate cars between Monmouth and Galesburg is being purchased from the Galesburg Railway, Lighting & Power Company.

Jefferson County Traction Company, Beaumont, Tex.—Amendments to the charter of the Jefferson County Traction Company have been filed in the office of Secretary of State at Austin by C. R. Wharton, attorney for Stone & Webster. The amendments authorize a change of name of the corporation to the Eastern Texas Electric Company and permit the new corporation to acquire all the property and franchises of the Beaumont Traction Company, Beaumont Electric Light & Power Company, Jefferson County Traction Company, Port Arthur Traction Company and the Port Arthur Light & Power Company. The changes to be made in the organization of the company were noted in the ELECTRIC RAILWAY JOURNAL for Aug. 17, page 304.

Northwest Traction Company, Seattle, Wash.—The Board of Public Works at Seattle, Wash., has agreed to ask the interurban railways operating out of Seattle to Tacoma and Everett to vacate Fifth Avenue, between Pike and Pine Streets, and Occidental Avenue, between Yesler Way and Washington Street, as terminals, and seek new locations. This move was taken as a result of the recommendation of Charles R. Case, superintendent of streets, who states that the use of the streets by the Northwest Traction Company was without authority and results in serious congestion of traffic. The board will require the company to vacate within ninety days.

Seattle (Wash.) Municipal Railway.—The City Council of Seattle has passed an ordinance providing for the issuance of $1,200,000 of utility bonds for the construction of an extension of the Seattle Municipal Railway from the city limits north of Green Lake to connect with the elevated line and thence to the Lake Burien line which runs beyond the southern city limits. The plan contemplates the construction of the line from East Eighty-fifth Avenue to Tenth Avenue Northeast, south on the latter street, across the Tenth Avenue northeast bridge, now under construction, to Fuhrman Avenue, and thence south over the tracks of the Seattle & Rainier Valley Railway to First Avenue South and Washington Street, where the extended line will connect with the elevated railway. It may be necessary to construct a bridge along the east side of Lake Union where the line will skirt the shore, as the Fairview Avenue bridge is not wide nor strong enough to carry cars.

Municipal Railway, Tacoma, Wash.—One of the causes of delay on the Municipal Railway through Ballard will be eliminated by double-tracking of about ten blocks of the line, beginning at the end of the present double track at Twentieth Avenue and Leary Street. The city is also building a side track at Thirty-Second Avenue, N. W., and West Eighty-Fifth Street, which will later be extended to make a loop at the end of the Ballard line.

Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal.—A contract has been awarded by the Pacific Electric Railway to Kling Company, Los Angeles, for the construction of a reinforced concrete freight and passenger station, 36 ft. x 92 ft., at Fullerton, to cost about $6,400. Plans are now being prepared by the company for the construction of a new passenger and freight station at San Pedro. The structure will be 80 ft. x 100 ft., part one story and part two story, of brick or hollow tile.

Kansas City, Mo.—The Interurban Central Station Company, Kansas City, Mo., has taken the deeds to the property necessary for the building of a union interurban passenger terminal to be used by all interurban railways entering Kansas City. The proposed location bounded by Ninth, Tenth, McGee and Oak Streets is adjacent to the heart of the business district.

Power Houses and Substations

Turners Falls Power & Electric Company, Turners Falls, Mass.—The Turners Falls Power & Electric Company, which supplies energy to the Springfield Street Railway, has awarded a contract to Fred T. Ley & Company, Springfield, for improvements to its plant.

Springfield Gas & Electric Company, Springfield, Mo.—Plans are being prepared by Sanderson & Porter, engineers, New York, for the construction of a new power plant for the Springfield Gas & Electric Company.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Welding Outfits in Great Demand

Necessity for Conserving Old Material Has Thrown Increased Duties on Welding Equipment

Manufacturers report that the demand for welding apparatus is increasing steadily. This is most noticeable in equipment for shop use and for use in repairing tracks and lines. The demand for bonding equipment has remained steady, although there is very little new construction of tracks, lines or equipment taking place, outside of roads which are used by the government. The inability of roads to get the necessary rails for renewals has led to the rebonding of old sections of track and to the filling in of cupped rails so that they may be continued in service. In addition to the shortage of rails, roads have been hindered in their maintenance by the shortage of men to carry on the work and welding outfits have helped to relieve this condition somewhat.

The inability of roads to get the necessary repair and renewal parts to maintain their equipment and the impossibility of obtaining iron and steel in sufficient quantities to enable them to make new parts, together with the remarkable results that were accomplished in the welding repairs to the enemy merchant ships taken over by our government has brought welding into prominence. The chief hope that railways will be able to keep the cost of repairs within reasonable limits and maintain the equipment in satisfactory operating condition lies in the extended use of labor-saving machinery and machines for facilitating repairs to damaged or excessively worn construction and equipment.

Manufacturers of welding outfits are expecting great developments and a future demand for their equipment for use in connection with the ship-building program. Up to the present time the equipment supplied has been for the usual line of welding work done in this connection and for experimental and research work which is being conducted. Indications point to a vastly broader field of usefulness for welding outfits in ship construction as soon as the safety and durability of the new methods of construction have been properly tested and the various types of apparatus necessary have been developed. The rivetless ship is one of the developments eagerly looked forward to.

During the past three years, very few new types or sizes of welding apparatus have been developed, but the general tendency seems to lean toward greater simplicity, reliability and economy in arrangement and toward a lighter construction.

Priority certificates for iron and steel have had some effect on the supply of material used for welding, but up to the present most manufacturers have had sufficient reserve stock so that this influence has been felt but slightly. The increased attention being given by government officials to the urgent need of electric railway properties, it is believed, will result in making it easier for roads to obtain material for repairs and renewals.

Prices of complete welding equipments have advanced from 15 to 40 per cent, and prices of welding material from 50 to 100 per cent. Manufacturers report that most of the advance in the price for equipment is due to the increased cost of labor and the increase in freight rates, as up to the present time their reserve stock of material and of spare parts has not been exhausted, so they have not had to pay the increased cost for material and added expense for transportation of raw material. One manufacturer reports welding steel as having advanced from 6 to 11 cents in the past three years and carbons from 7 to 12 cents.

Most manufacturers of welding equipment report that deliveries can be made in a very short time after the receipt of order, where the apparatus used is standard. The longest deliveries are four months for the larger sizes of complete equipment, and most manufacturers give deliveries of less than one month for the smaller sizes. Welding material is being shipped 48 hours after the receipt of orders.

Mica Insulation Made in Sweden

It is reported that a factory for the manufacture of electric insulting material from mica has just been started in Gothenburg (Sweden) by a concern that has its own mines and is sure of a large supply of raw material. In Sweden it is hoped that the production of mica can be increased at home until there is enough native product to supply the entire needs of the country.

While it is stated that in all probability many of the new industries which have been started there as a result of the war will disappear when peace comes, some will continue, and it is thought the period of reconstruction following the war will create a great demand for all products used in the electrical field and result in a large increase in trade if factories are established to handle it.

Fuel Administration Issues Warning

Rigid Economy Is Necessary to Aid in Conservation and to Help Avert Shortage

In a recent bulletin the Fuel Administration states that the demand for fuel on the part of the war-making branches of the Government and the war industries is growing tremendously. Every increase in the war-making efficiency of the Nation is forcing a corresponding increase in the fuel demand. Estimates of the coal consumption for the year, which were judged high in April, are now proving inadequate.

It becomes increasingly apparent that despite the phenomenal increase in the rate of production at the mines the strictest fuel economy must be enforced if the country is to escape a serious coal shortage next winter. Every means of coal conservation must be observed, and every wasteful and unnecessary use of coal must be eliminated.

Needs of New Plants

Almost daily applications are coming to the United States Fuel Administration from war industries for allotments of coal in addition to those made at the beginning of the coal year. Some are from new plants authorized by the War Industries Board, not known to the Fuel Administration at the beginning of the year. The requirements for these plants are in addition to the original allotments. Other demands are from plants already on the preferred list of war industries, for increased allowances because of enlargements and extensions to original plants made since the Fuel Administration compiled its estimates of consumption.

The increased demand for coal for the Navy reached almost 100 per cent in July. Whereas 3,500,000 tons was allotted to the Navy in April, the requirements by the middle of July had reached a basis of 6,000,000 tons. By the end of the calendar year 1919 it is estimated that approximately 8,000,000 tons will be required to cover these demands.

Shipping Board Increase

With the launching of new ships, the requirements of the Shipping Board have likewise grown beyond all expectation. When the annual allotment was made, April 1, 10,000,000 tons was assigned for the purposes of the Shipping Board. The actual requirements as demonstrated by experience, and as a consequence of the phenomenal results being achieved by the Shipping Board, now place the figure at 13,000,000 tons.

So also coal for bunkering purposes, at first estimated at 13,500,000, has grown in demand until present calculations call for 21,000,000 tons.

New industries not in operation at the beginning of the coal year are now running full tilt or are about to start. From these come demands for coal of consequential proportions.

Old Plants Increase Demands

Aside from the increased requirements here shown, originating from new or enlarged plants, many old plants, rated at the beginning of the coal year for marked increases of allowance over the consumption of 1917, are now demanding still more coal. Practically all the steel plants and furnaces are running twenty-four hours per day. There are no suspensions of operations save for repairs and overhauling of plants. In some instances the yearly coal requirements were underestimated. In many others enlarged production, under increased efficiency, has created a demand for additional coal. Invariably, increased steel production calls for increased coal production, demanding about five tons of coal for each ton of steel produced.

In a report on coal production dated Aug. 17, the United States Geological Survey states that the production of bituminous coal during the week of Aug. 10 decreased 278,000 net tons or 2.2 per cent, and recorded the fourth successive week of decreased output. The decrease in production during this period was equivalent to 1,000,000 net tons or 7.6 per cent below the record week of July 13, when production reached 13,286,000 net tons, and makes necessary an output of 14,500,000 net tons during the balance of the summer months to make up the deficit for the coal year to date.

The output during the week of Aug. 10 (including lignite and coal coked) is estimated at 12,274,000 net tons as against 12,552,000 net tons during the week of Aug. 3 and 10,636,000 net tons during the current week of 1917. The average production per working day during the week of Aug. 10 is estimated at 2,046,000 net tons as compared with 2,092,000 net tons during the week preceding and 1,773,000 net tons during the week of Aug. 10, 1917. The daily average during the current week fell 54,000 net tons or 2.6 per cent behind the daily summer requirements established by the U. S. Fuel Administration.

General Decrease in Shipments

Shipments during the past week decreased from all districts with exception of southwest Virginia, Alabama and the district including Illinois, Indiana and western Kentucky. The increase from Southwest Virginia amounted to 24.3 per cent. from Alabama 11.4 per cent and from Illinois, Indiana and western Kentucky 2.2 per cent.

Carbon Brush Market Remains Active

Deliveries Are Prompt and the Advance in Prices Has Been Relatively Small

The carbon brush market is always active, as when motors and generators are once installed it is necessary to provide brushes or else stop operation. Manufacturers report that in the traction field the demand is about the same as it was a year ago. Outside of this field the demand has increased considerably.

No difficulty has been experienced so far in obtaining sufficient raw material to enable the manufacturers to anticipate their requirements and also to keep an ample stock of standard sizes.

Advances in prices have been governed to a large extent by the reserve stock which manufacturers had previous to the present stringent conditions. Prices of brushes are also commonly made on a quantity basis, so that the number ordered by any road affects the prices quoted. One manufacturer reports that an advance of 10 per cent was made a year ago and no further increase has since been necessary. Another reports an advance of 25 per cent for last November with no further advance. Still another reports that a small advance was made last January, another increase of 10 per cent was made last July and still another 10 per cent increase will be necessary next month.

Deliveries are being made very promptly, orders for most standard sizes being filled from stock as soon as the order is received. Where sizes can be cut from those in stock these are shipped in about ten days, and when it is necessary to have the brushes made up these take from three to four weeks.

Catalogs Wanted

W. R. Wood, acting assistant general superintendent of shops and rolling stock, officininos da Cia Light and Power, Boulevard de Sao Christavao 91, Rio de Janeiro, Brazil, wishes to receive catalogs and literature pertaining to material for a street railway and a light and power company.

Seattle Car Prospects

Mayor Ole Hanson, Seattle, has approved the ordinance passed by the Council appropriating $217,000 out of the city railway fund for the purchase of street cars in Minneapolis. Mayor Hanson has also made application to A. Merritt Taylor, director of the government transportation and housing division, for sufficient funds to enable the city to purchase necessary equipment for the municipal street railway. His telegram is as follows:

"I find on my return to Seattle that the city can secure twenty-five first-class street cars from St. Paul and six more from St. Louis, price $270,000 f.o.b. Seattle. Terminals for elevated will cost about $80,000 more. Our only way of obtaining money is for City Council to vote utility bonds which have to be sold at 6 per cent and at par. We might not be able to do this at once. In any event it would delay matters too long. The city of Seattle needs transportation more than ever. Could you arrange to loan the city railway fund $300,000 on our bonds, payable in five equal installments after the war? Security will be ample, as the bonds will be first lien on our elevated and on those cars."

Rolling Stock

Puget Sound Traction, Light & Power Company, Seattle, Wash., some months ago purchased twenty-five one-man cars for the Seattle division, built six and has fifteen more under order, making a total of forty-six of this type of car. They are now being put into supplemental service on various lines, and this service will be added to as rapidly as operators can be secured and trained. On Capitol Hill line one large car has been taken off and five of the safety cars put on, increasing service on that route 89 per cent.

San Francisco-Oakland Terminal Railways, Oakland, Cal., has been authorized by the Railroad Commission of California, in connection with a fare decision noted elsewhere in this issue, to spend $1,181,979 for improvements. This is a reduction from the amount asked for by the company, but it includes provision for twenty-five one-man cars to cost $162,500, twenty-five new center-entrance cars for main traffic lines to cost $275,000, ten trail cars for main traffic lines to cost $55,000, four dump cars to cost $8,712 and one electric locomotive to cost $15,000, the total of rolling stock expenditures being $516,212.

Trade Notes

Arthur Power-Saving Recorder Company, New Haven, Conn., announces that it has received orders within the past few days for more than 500 recorders. The complete equipment of several new properties is included in the above.

The New Process Specialty Company, Milwaukee, Wis., has moved from the Enterprise Building to its new factory at 230-232 Hanover Street. This move was necessitated to provide greatly increased facilities for the manufacture of high-grade jigs, dies, gages, tools and special machinery.

Holland Trolley Supply Company, Cleveland, Ohio, announced the appointment of Arthur C. Sullivan as sales manager. Mr. Sullivan formerly was connected with the sales department of the Hensley Trolley & Manufacturing Company, and was more recently with the Chicago office of the Hegeman-Castle Corporation.

Automatic Reclosing Circuit Breaker Company, Columbus, Ohio, announces the appointment of C. M. Hickle as sales manager of the company. For the past two years Mr. Hickle has been connected with the Pittsburg sales office of Cutler-Hammer Manufacturing Company. Previous to that time he was engaged in practical and technical work, which has given him excellent preparation for his new duties in promoting the use of automatic protective devices for d.c. equipment of railway substations.

Chicago (Ill.) Pneumatic Tool Company announces that the contract has been let and work started on the erection of an up-to-date addition to its Cleveland plant, which is planned to double the present output. It is expected that work will be completed on the building itself about Nov. 1. The necessary equipment has been ordered and it is believed will be delivered and ready for installation by the time the building is completed, so that shortly thereafter the additional production contemplated will be available.

C. A. Bird has been placed in charge of the new Pittsburgh office of the General Devices & Fittings Company, Chicago. This office is at 1303 Arrott Building. Mr. Bird has done much research work in the line of high-tension phenomena and has prepared many papers on conductor calculations and allied engineering subjects. He was formerly one of the district engineers of this company's Cleveland office, and while there had charge of Pittsburgh district work. Increasing demand for engineering service made it necessary to station Mr. Bird in Pittsburgh with a suitable staff of assistants.

E. P. Dillon, manager of the power division, New York office of the Westinghouse Electric & Manufacturing Company, has resigned to become general manager of the Research Corporation of New York. Mr. Dillon joined the Westinghouse Company in 1909, having been previously connected with various mining and electrical companies in Colorado. In 1917 he was transferred to the New York office as manager of the railway and power division. For several years he was assistant to manager of the railway and lighting department at East Pittsburgh, being in charge of power house and apparatus work. He was transferred to the New York office as manager of the railway and power divisions in 1917.

New Advertising Literature

W. N. Matthews & Brother, St. Louis, Mo.: Additions to catalog-handbook No. 9 are now available.

Ross Heater & Manufacturing Company, Buffalo, N. Y.: A circular describing and illustrating expansion joints.

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 246, devoted largely to tanks, both with and without towers.

Ross Heater & Manufacturing Company, Inc., Buffalo, N. Y.: Circular describing and illustrating surface condensers, multi-head water heaters and expansion joints, etc.

Electric Hoist Manufacturers' Association: Folder on electric hoist controllers designed to explain in non-technical language the functions of a controller on an electric hoist.

Crouse-Hinds Company, Syracuse, N. Y.: A reprint of a paper entitled "Headlights for Electric Traction Service," read by K. W. Mackall before the Central Electric Railway Association.

Cutler-Hammer Manufacturing Company, Milwaukee, Wis.: Booklet A on brakes for use with elevators and hoists where the supply is alternating current, together with dimensions of equipment.

General Electric Company, Schenectady, N. Y.—Bulletin on Type-H circular coil form transformers, oil-insulated, self-cooled or water-cooled. Covers transformers of medium size and moderate voltages.

John F. Godfrey, Elkhart, Ind.: Circular describing standard installations of the Godfrey coal conveyor. Emphasis is laid on the fact that power plants can greatly facilitate continuous operation by storing their coal now.

M. L. Oberdorfer Brau Company, Syracuse, N. Y.: Circular illustrating and describing bronze geared pumps. Their adaptibility, construction, testing, sizes carried in stock, capacity, table in dimensions and ratings are shown in this bulletin.

NEW YORK METAL MARKET PRICES

	Aug. 14	Aug. 21
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.90 to 9.00	9.12½
Tin, Chinese*, cents per lb	90 to 90.5	90 to 90.5
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.00

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Aug. 14	Aug. 21
Heavy copper, cents per lb	23.50 to 24.50	24.00
Light copper, cents per lb	20 to 21.50	20.50
Red brass, cents per lb	21 to 22	21 to 22
Yellow brass, cents per lb	15 to 15.50	13¾ to 14½
Lead, heavy, cents per lb	7.12½ to 7.50	7.00
Zinc, cents per lb	5½ to 5¾	6.00
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	Aug. 14	Aug. 21
Rubber-covered wire base, New York, cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40	32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, girder (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35

	Aug. 14	Aug. 21
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste cotton (100 lb. bale), cents per lb	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.86	$1.86
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.88	$1.88
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	63	63

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, August 31, 1918 *Number 9*

"One-Man Cars Apparently Save Only in Power and Platform Expense"

IN SENSE this is an actual quotation from a report of a traffic man who was asked to discuss the feasibility of light-weight one-man cars for his property. Please note the word "only." On this particular road power is 15 per cent and transportation 50 per cent, or "only" 65 per cent of the total operating expense! Another 15 per cent includes track and other items which would surely decrease with light cars, but the speaker did not think a car which affected 80 per cent of his costs important enough to change his hidebound practices of a generation. Yet in his own town of 50,000 the private automobile is so rampant that even two seats per passenger with the present big cars have failed to keep it down. In other words, the street railway offers ample service but in the wrong-size packages. The same number of seats in smaller cars would soon put rust on the hinge of many a garage.

Still, what can we expect from men who use the word "only" about the two controlling accounts and whose excuse is the old rubbish of "The people of this city would never stand for cars run by one man." This is mental inertia with a vengeance!

It's Time Now to Think of Next Winter's Snow

THE memory of last winter's unusual experience in fighting, but not always overcoming, in their contests with snowstorms is still fresh in the minds of railway managers in several parts of the country. It will therefore be somewhat easier than usual to stir up interest in preparation for the coming fray. Several articles in this issue of the ELECTRIC RAILWAY JOURNAL will be useful in this connection.

The secrets of successful snow fighting, if such obvious facts can be called secrets, are these: Provide adequate equipment; organize for the conflict; instill the combative spirit in the organization; get ahead of the storm. All of this requires preparation for weeks or months in advance, and there are indications that this fact is increasingly appreciated. One evidence that the public has of the real desire of the railways to give good service is furnished by the sight of electric cars plowing through the storms when other vehicles, including jitneys, are safe and snug in their garages or barns. This is possible only when thorough preparation has been made.

Complaint has reached the office of this paper to the effect that the literature of snow fighting is inadequate; that railways desiring adequately to fortify themselves could not learn readily what other roads have done in this line. A study of the recent files of the JOURNAL will, however, yield a surprising fund of information regarding special apparatus, adaptation of existing equipment for this duty, mapping out of routine and emergency procedure in snow time, and education of employees in the principles and practice of the art of snow fighting. Each season adds to this reference material. It is worthy of careful study and application between now and winter.

Electric Railway Industry Must Pull Itself Together

FOR patriotic reasons the executive committee of the American Electric Railway Association voted last week to rescind its decision to hold an annual convention this year at Atlantic City, and the convention will consequently be omitted. The original date for the meeting, Oct. 8-10, was decided upon last April, at a time, of course, long before the announcement of the date set for the fourth Liberty Loan drive. When Secretary McAdoo announced that this drive would begin on Sept. 28 and would continue for three weeks, which included the date set for the Atlantic City convention, a reconsideration of the date of the convention seemed desirable for the reason that many railway operators and manufacturers who would otherwise like to attend the convention would be active at home in local loan campaigns. This led up to the question of the wisdom of holding the convention at all.

There is much to be said on both sides, but the matter is now definitely settled and further discussion is idle. The main thing is to prepare to make the most of the conference meeting that will replace the convention. The latter in any case could not have been very largely attended. In all probability the attendance at the conference will be made up largely of the same men who would have gone to the convention. The change will make no difference, however, in the date of publication of our special number which was scheduled for Sept. 28, as the topic selected for that issue is "War Service and Efficiency." This subject is particularly appropriate at this time even without a convention and independent of the date which may be set for the conference that will take the place of the convention.

Some kind of a meeting or meetings of the industry appear to us to be essential at this time, and for this reason: A part of the present crisis in the railway business is due to the lack of what may be termed an "industry consciousness." This was closely pointed out by speakers at last week's conference in New York. Such consciousness and the unity which goes with it must be developed and developed speedily. This cannot be done by correspondence. It needs the contact of mind on mind in discussion and debate. Circumstances are hastening the evolution of this consciousness, but it must be evolved from within. The recent New York meeting was helpful in this direction; the even more representative meeting to come will be still more so.

Federal Government Increasingly Powerful in Electric Railway Affairs

THE advent of the national government in the electric railway field, through the War Labor Board in its mediation in labor controversies, the Emergency Fleet Corporation in its financing of extensions, the War Finance Corporation in its assisting in financing operations, etc., brings into being a new set of conditions for the railways to face. They can no longer consider themselves as detached local units, but realize now as never before that they must stand together if they are to do their full duty and at the same time preserve the integrity of the vast capital intrusted to them.

The industry is at present represented nationally by the Electric Railway War Board of the American Association. It is through this board that many of the relations with the government can best be fostered. It was at the instance of this board that a remarkably representative gathering of executives was held last week in New York to consider a report as to what the board is doing at Washington. A brief outline of the conference was printed in last week's issue. Obviously this conference was largely of an important character in which the executives talked very frankly about their own particular problems, but certain elements of the discussion demand widespread attention. Let us consider two or three of these.

First, in its conference with government officials the War Board needs facts. Electric railway data for the country as a whole are very scarce; the War Board has to collect them for itself. Hence the urgency of prompt compliance with requests for figures. The board can do practically nothing without them. Second, but closely allied with the first, the industry must develop in solidarity as suggested earlier in this article. Third, the present crisis, to the acuteness of which the findings of the War Labor Board have so largely contributed, seems certainly to demand federal influence in the adjustment of rates.

The way out of the present difficulty must and will be found. In the meantime it is up to the railways, individually and collectively, to do the best they can with the local authorities, while to the limit backing the War Board in its efforts to visualize the situation to the powers that be. Under the present emergency conditions the only hope of general relief is in the federal government, hence the urgency of such adequate support of the War Board that it will be seen to be truly representative of the industry.

Farmers Object to Road Damage from Motor Trucks

IF ONE may judge from the tone of an editorial in a recent issue of the *Ohio Farmer*, the agricultural interests are not viewing the matter of motor truck haulage with a very friendly eye. This well-known farm journal makes the statement that "the agitation for rural and inter-city truck service is largely discounted by the damage that is being done to improved highways by heavy trucks." As illustrative of the causes of highway failure it quotes the county commissioners of Cuyahoga County (Cleveland, Ohio) as saying that trucks weighing 20 tons or more are often run at rates of 25 m.p.h. over the county highways. It further points out that one fine brick road built two years ago at a cost of $70,000 was recently practically ruined in the course of a few weeks by extra activity in motor truck freight haulage. In the northwestern part of the same State the writer recently had occasion to drive over roads which he had traveled more than a year before. At that time it was a macadam pike in excellent condition. Now it is a trail of cuts, gullies and ridges, nearly impassable in dry weather, altogether so in wet, all the results of a few months of heavy trucking.

When it is remembered that a good modern highway costs about the same as the roadway of an interurban railway it will be seen that, from the standpoint of helping out the government-controlled steam railroads and facilitating local transportation, county officials might with far more reason build and maintain roadways for electric railways than highways for the benefit of those engaged in the business of freight haulage by the way of motor trucks. This is another instance where sane, wide-open publicity in widely-read local papers would redound not only to the advantage of the railways but of the public at large.

Seeing Through Walls of Brick and Steel in the Boiler Room

DESPITE all of our really remarkable work in the generator room of the power house in the way of instruments and methods for improving the operation of electrical machines, average boiler room practice is conspicuous by lack of actual measurement of conditions and results. On the average we are much like the merchant who accounts for his sales to the minutest detail but lets the other equally important end of his business, the purchases, take care of itself. In other words, the average boiler room needs, and needs sadly, methods and instruments for the determination of operating conditions. Our firemen need eyes wherewith to see through the walls of brick and steel of their machine. This need has been recognized by the United States Fuel Administration, as the first three recommendations of its engineering division relative to fuel saving pertain to this very thing. The day is past when a fireman, no matter how skillful and faithful to his task he may be, can by sighting at the fire over his corncob pipe tell whether a boiler is successfully doing its work. The steam gage, the pop valve and the gage cocks, introduced as they were to keep the boiler from starting off on privately conducted skyrocket trips, give no indications relative to a lot of other necessary things.

To-day not only the development of new methods and processes, but the successful operation of existing processes, is largely dependent on the use of instruments which tell the story of what is happening on the inside of things. In the field of electrical engineering, for instance, such instruments have attained a very high degree of perfection. The power output of a 50,000-kw. generator is measured as easily as is the time of day, and the oscillograph has permitted a study of the currents inside a machine almost as readily as a schoolboy studies the motions of a pollywog with a magnifying glass. And, take it all in all, a battery of steam boilers is to-day a more complicated thing to operate than is an electrical generator. We need to know whether each boiler is doing its share instead of "loafing," how much fuel and water are going into it, the amount and quality of its output, the amount of unburned fuel in the ash pile and the smoke, the draft, the amount of excess air and the amount of heat going up the chimney. It takes more than our five senses to tell us about these things. When they are known we have first-hand knowledge as to whether the dampers are set right, the baffle walls intact and the stoking correct. More important, we know it at once if the losses become excessive, for after all knowledge of losses is more important than knowledge of efficiency. If we know the losses are small there can be no question as to what the efficiency is, and the losses are the easiest things to get in contact with.

Many instruments, more or less perfect, for determining the above details and relations are on the market. More and better ones will appear when boiler users learn of their need and value. Even now records are available where plants burning as little as 600 tons of coal per month have paid for a complete instrument equipment out of the fuel savings of a very few months. Obviously the meters must be well selected and conveniently located and, in general, recording instruments are best. In any event meters that will assist the fireman are the ones needed. The old idea of meters to "show up" the men is all wrong. The men should be instructed as to proper use of the instruments and stimulated to use them in securing better results as the product of the efforts. Only when it is put up to the men that the instruments are helpers and not detectives will the best results be secured.

Too Much Home Manufacture Bars Progress

THE chance remark, "Is that scheme patented?" by a manager whose property built very large shops a long time ago, made us realize recently what a handicap eventually may be suffered by the railway which has loaded itself down with a manufacturing plant. This particular property never had such an impelling motive as isolation for making almost anything that can be made. Its railroad facilities are splendid and it is also within a few hundred miles of great manufacturing and distributing centers. This was true when, nearly twenty years ago, the then management erected a large plant and so tied up a large amount of money.

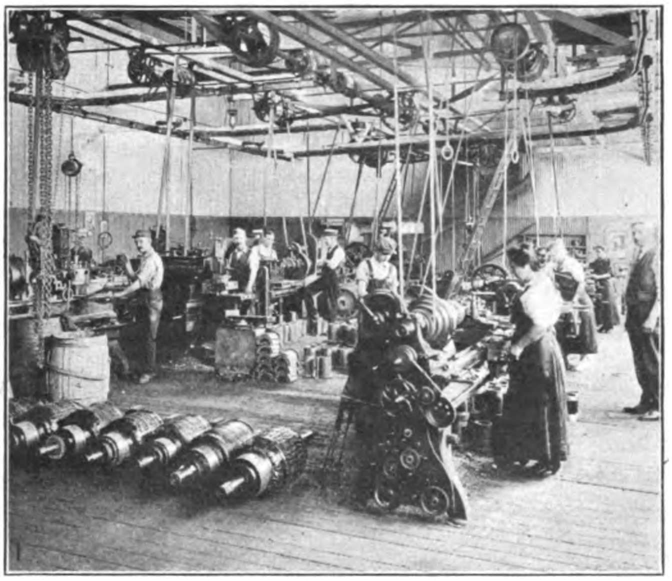
What has been the result? An almost absolute cessation of progress. Every time specialist manufacturers brought out better products—whether trolley wheels, destination signs, door mechanisms, brake shoes or what not—they knew it was next to hopeless to get this railway to use the devices, for didn't the railway have masterly mechanics who could produce something just as good and a lot cheaper at that? The management which had made the decision of course felt that it must keep the big plant busy, even if it did turn out products which meant higher operating and upkeep costs.

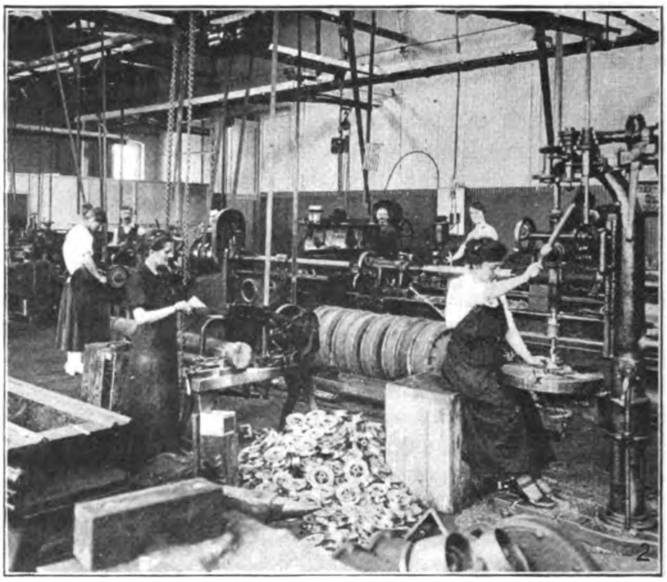
The situation is considerably simplified in this case because a new management is now in charge which is not bound by precedent and does not have to swallow the mortification of acknowledging a blunder. The new management frankly realizes that no one railway could possibly have more inventive talent than all the specialist manufacturers who have the entire experience of the industry to draw upon for ideas. Therefore this railway is now working on the sound basis of using the best there is, even if it cannot be made at home.

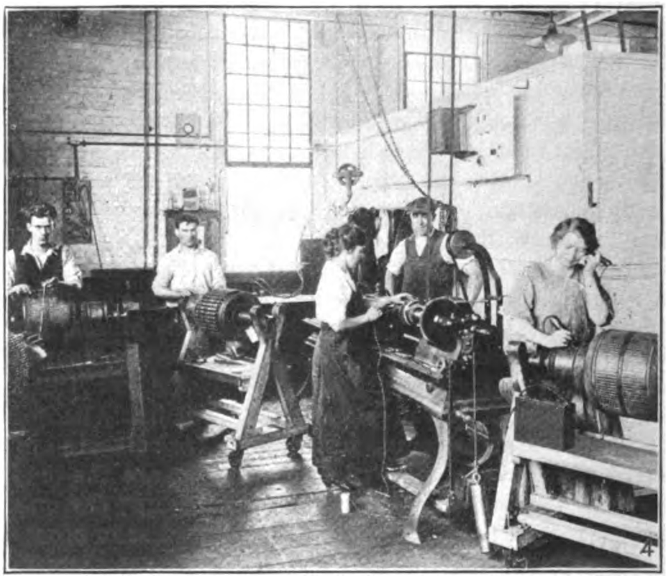
San Francisco Bus Philanthropy Willfully Misunderstood

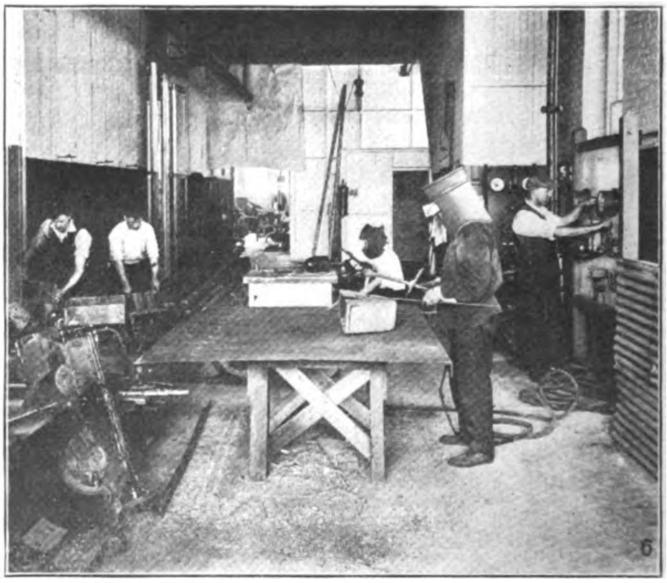
THE figures published elsewhere in this issue on bus operations of the San Francisco Municipal Railway are rather mournful evidence that municipally-owned lines are not learning much from the sad experience of privately-owned electric railways, that subsidizing the suburbanite is the road to bankruptcy. The Municipal Railways management is too capable not to realize that you cannot make money by handing the maximum haul rider a free bus ride as *lagniappe*. Therefore, this is frankly a development proposition in which the municipality as a whole may recoup itself for transportation losses by more taxes from appreciated realty values. In such a case the municipal transportation should be grouped with the parks, charitable institutions and other municipal undertakings from which no profit is expected. But if the street railway and auxiliary bus service are not to be self-sustaining, let the public so understand. Unfortunately, whatever the views of the operators may be, the demagogic newspapers of San Francisco and elsewhere still insist that municipal railways are necessarily profitable because they are municipal.

How much harm such misrepresentation is doing can be conceived from one instance in which this very San Francisco bus philanthropy was used as proof positive that the bus was cheaper and better than any street car could be. The bus protagonist, we learned, got his idea from a newspaper clipping which we espied on the wall of his office. This clipping had a line-up of the buses referred to in our article over the cheery caption "San Francisco Municipal Buses a Huge Success." The article gave no costs whatever but did say the buses were giving fine service and making money for the city. To some minds all intake is clear profit. That seems to have been the case with our interlocutor so far as buses are concerned. It was a hard task to convince him that the city, through its own railway, was really conducting a charity for a select few of its suburbanites and that the citizens as a whole had to foot the bill. If a street railway reformer can fall into such blunders, what shall we say of the run-of-mine citizen?









SCENES IN THE CONNECTICUT COMPANY'S RECLAMATION SHOP

Figs. 1 and 2—General Views in the Machine Shop. **Fig. 3—The Armature Winding Room Where Only Women Are Employed. Fig.** 4—Banding and Testing Armatures. Fig. 5—**Receiving Section with Typical Piles of Equipment Parts. Fig. 6—Welding** Division with Two Very Common Jobs Under Way.

Connecticut Company Centralizes Reclamation Work at New Haven

By Segregating Heavy Repairs, Manufacturing Operations and Reclaiming of Damaged Equipment This Company Has Achieved Substantial Economies—The Feminine Element Bids Fair to Predominate in the Reclamation Shop

A CONSIDERABLE step in the direction of rolling stock maintenance economy has been taken by the Connecticut Company during the last few months by the installation of a "reclamation" shop at New Haven. The management was convinced that by relieving the division shops of everything but routine maintenance work it would be possible to reduce labor and materials costs for several reasons. In the first place, the work of the division shops would be facilitated because there would be no distraction due to special jobs of all kinds. Again, such detailed parts as the company found it wise to manufacture could be made best at a central shop. Most important of all, a shop whose specialty is reclamation work would naturally use every means available to make the most of broken or worn-out equipment. The reclamation shop is proving of great assistance along the lines indicated, especially in view of the acute labor shortage.

The shop is at the corner of Ferry and River Streets, where there are excellent water and railroad transportation facilities. It is part of what was originally a paint shop, later used as a storeroom. From this have been partitioned off a large general machine shop and a long narrow room partly used for the reception of pieces to repaired and partly for welding work. Portions of the large room are in turn partitioned off to form a winding room and an office. The general appearance of these several sections is shown in the photographs reproduced on the opposite page.

The local or division shops will continue to take care of light repairs, including those of open circuits, grounds, etc., where rewinding is unnecessary. The reclamation shop is entirely independent of the maintenance shop at New Haven, being located in a different section of the city.

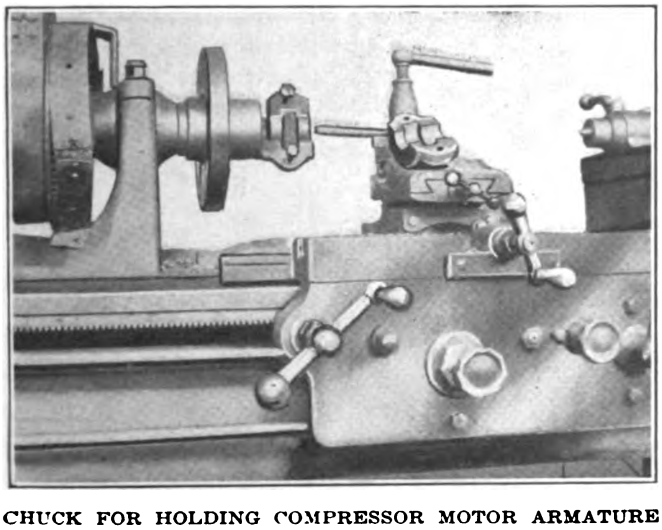
Before the present plan of centralized reclamation was inaugurated it was necessary to send out a good deal of the winding work, but this will no longer be necessary. The new shop is able to handle not only the work on the rolling stock but also helps out the power department. For example, at present the trucks for a traveling crane to be used in the coal storage yard connected with the power plant at New Haven are being fabricated. Other special jobs now under way are the building of some pit jacks for use in the maintenance shops and some apparatus for handling sand pneumatically.

The work of the reclamation shop is greatly facilitated by the regular operation of the general storeroom supply car, which reaches every division of the property once a week. The car moves in accordance with the following schedule: Monday—Bridgeport, Westport, Norwalk, Stamford and Port Chester; Tuesday—loading at storeroom; Wednesday—Meriden, New Britain, Hartford and Middletown; Thursday—loading at storeroom; Friday—Waterbury (via Cheshire) and Derby.

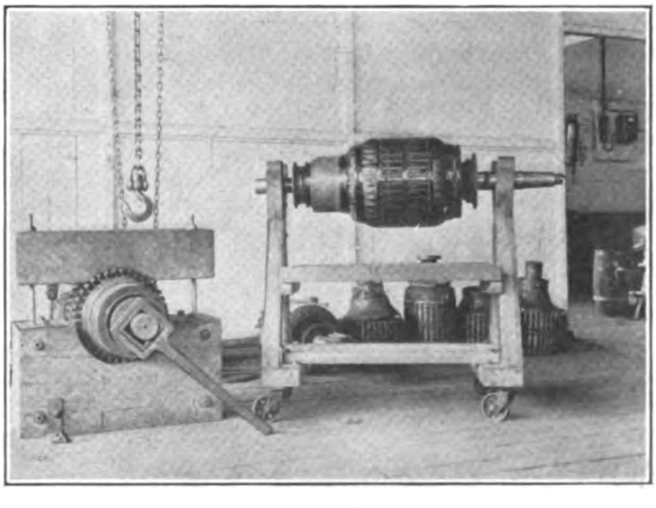
The supply car gathers up all material which is to be welded, armatures to be repaired, etc., and in return delivers repair parts and supplies. The car is run right into the reclamation shop on a special track laid so as to facilitate the handling of the equipment.

NEW SHOP HAS VARIED EQUIPMENT

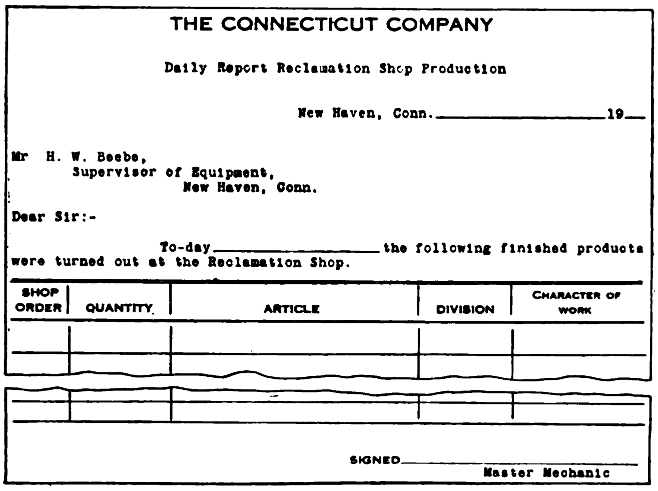
In the armature section of the shop the principal equipment consists of an armature coil winding machine, a field winding machine and a banding lathe. In the machine room are three engine lathes, a turret lathe, a boring mill, an axle lathe, a key seater, a drill press, a hacksaw machine, an emery grinder, a 100-ton wheel press and an axle straightener. The power supply



CHUCK FOR HOLDING COMPRESSOR MOTOR ARMATURE BEARING DURING BORING PROCESS
(Cap of chuck rests against tool post)



AT LEFT, WOOD CLAMP USED FOR HOLDING ARMATURE WHILE COMMUTATOR NUT IS BEING TIGHTENED. AT RIGHT, STANDARD ARMATURE STAND



THE CONNECTICUT COMPANY

Daily Report Reclamation Shop Production

New Haven, Conn. ____________ 19__

Mr H. W. Beebe,
Supervisor of Equipment,
New Haven, Conn.

Dear Sir:-

To-day ____________ the following finished products were turned out at the Reclamation Shop.

SHOP ORDER	QUANTITY	ARTICLE	DIVISION	CHARACTER OF WORK

SIGNED ____________
Master Mechanic

SUPERVISOR'S DAILY REPORT FORM

for the shop is a 50-hp. motor operated from the trolley circuit.

Overhead in the shop is a Columbia overhead trolley bar which serves the lathes and other machines, chain hoists being used on this at present. The shop is supplied with air, however, for the purpose of permitting the use of air hoists which will be installed later.

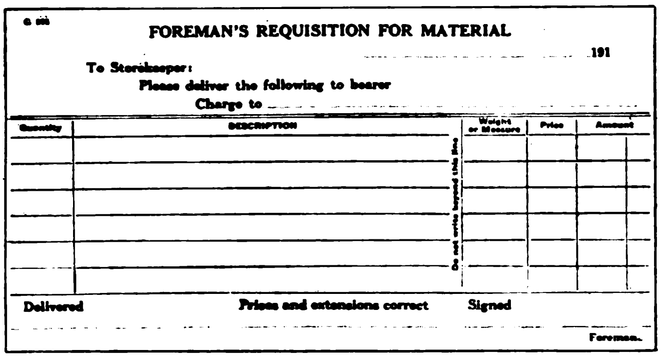
One of the most important parts of the work of the shop is the electric and gas welding. The section devoted to this purpose contains a Westinghouse 150-amp. generator and a Wilson 150-amp. generator. There is also a large motor-generator set of foreign make which was purchased from the Atlantic Welding Corporation to furnish heavy current for rough cutting work. For general cutting purposes an oxweld gas outfit is preferred.

Procedure in Connection with Repair Work

When a piece is to be repaired in the reclamation shop the following course is pursued : As the piece leaves the division carhouse it is tagged with a round aluminum tag containing a serial number. At the carhouse a list of the tag numbers is kept, and a shop order is made up from this list calling for the necessary repairs and giving requisite specifications. This tag number follows the job throughout its course and all labor and material are charged to it.

It is impracticable here to go into all details of the operation of the shop, but a few examples have been selected to indicate the scope and method of its work. For example, an important item is the repair of gear cases. For use in patching these by welding all kinds of sheet metal are collected from the system, including old dasher iron, scrap steel, old stack plates, controller covers, etc. Besides gear cases, this shop also welds motor shells, armature shafts, car axles, truck frames, journal housings and many other parts. One operation which has proved very profitable, here as elsewhere, is the cutting down of broken car axles for use as motor armature shafts, and the reclaiming of armature shafts by welding.

When a shaft is broken it is reclaimed by welding if the break comes inside the bearing, but not if it comes between the end of the bearing and the end of the core. In reclaiming, the broken ends are turned down to conical form, and a ½-in. dowel pin is used to center the two broken parts. After the cylindrical groove has been filled with the welding material and the axle has been turned off, it is found to be practically as good as new, especially as the weld is not subjected to any bending moment.



FOREMAN'S REQUISITION FOR MATERIAL

____________ 191

To Storekeeper:
Please deliver the following to bearer
Charge to ____________

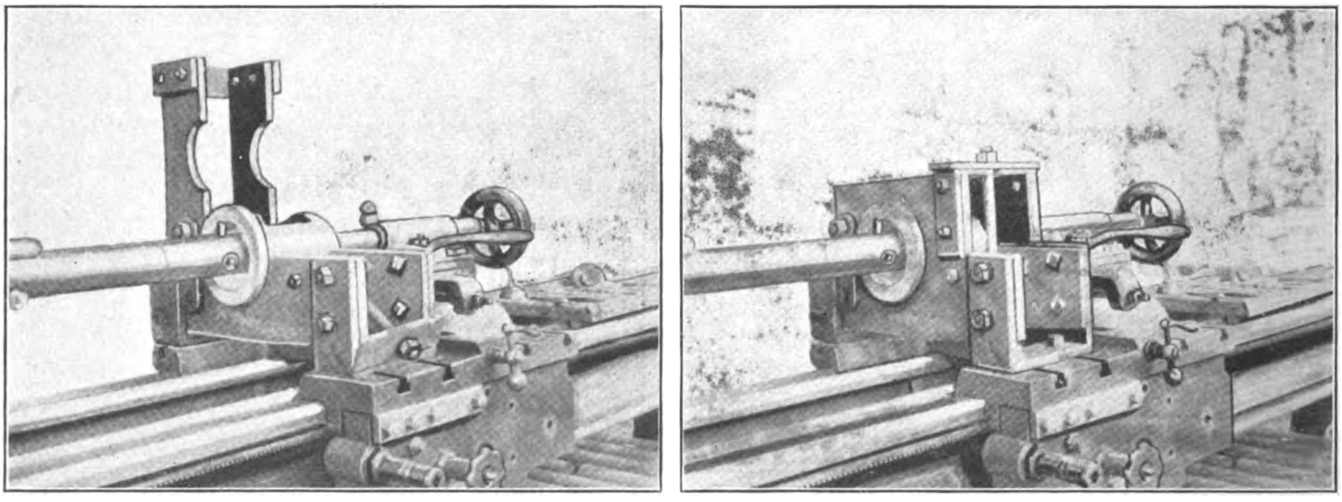
Quantity	Description	Weight or Measure	Price	Amount

Do not write beyond this line

Delivered ____________ Prices and extensions correct ____________ Signed ____________
Foreman.

A SIMPLE FORM OF REQUISITION ON STOREKEEPER

In the line of manufacturing operations the shop is making all trolley wheels in 4½-in. and 5½-in. sizes, turning all axles and armature shafts, making axle bearings and linings, armature bearings, compressor crankshaft bearings and compressor armature coils. Practically all rewinding work for the Connecticut Company's system, including both air compressors and car motors, is done in this shop.



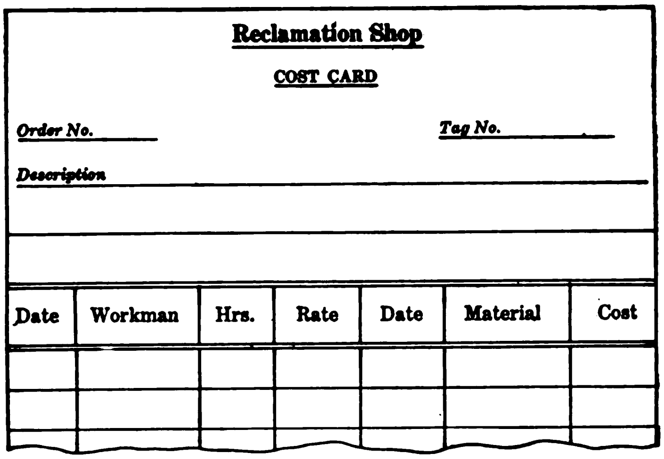
JIG FOR HOLDING AXLE BEARING DURING BORING PROCESS. AT LEFT, JIG OPEN; AT RIGHT, JIG CLOSED

As the shop is new there has not as yet been time to develop the full line of jigs, mandrels, chucks, etc., which will eventually be required, but a number have already been finished. A few of these have been shown in the small photographs reproduced with this article. One of these is a jig for holding axle bearings during the boring process after they have been turned on the mandrel shown in the pen sketch on this page. The jig consists of a lower part which rests on the lathe bed with an upper part hinged to it, a simple clamp serving to hold the two parts together with the bearing in position. The photographs show the jig open and closed. The mandrel, mentioned above, holds the two-part bearings in place by means of clamped nuts. Another device shown is a lathe chuck for use in boring compressor bearings. The chuck consists of two pieces recessed to accommodate the bearings, one attached to the lathe face plate and the other bolted to the first as indicated.

Among other interesting devices in the shop is the wood armature clamp shown in one of the pictures, which is used to hold the armature securely while the commutator nut is being tightened. This clamp serves greatly to reduce the amount of labor required in the simple operation. The same picture shows the standard armature stand used in the shop.

ONE-HALF THE WORKERS IN THE SHOP ARE WOMEN

The total force employed in the new shop at present numbers twenty-four, including one clerk. Twelve of the employees are women and they are engaged as follows: One makes all coils, including field coils for air compressors; one does the banding on all kinds of armatures; two run engine lathes up to 14 in., but the work is put into the lathe by a man; eight are armature winders trained to do work on all kinds of armatures.



Reclamation Shop

COST CARD

Order No. ______ *Tag No.* ______

Description ______

Date	Workman	Hrs.	Rate	Date	Material	Cost

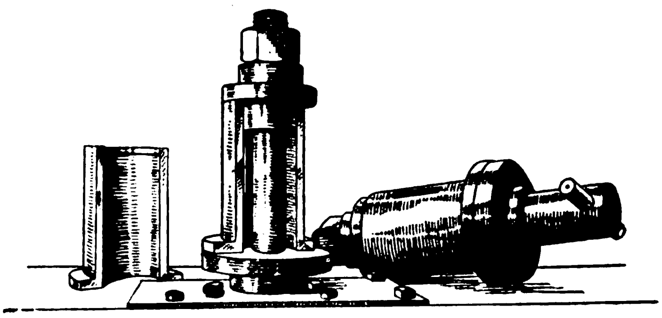
EXPERIMENTAL FORM FOR COLLECTING COST DATA

It has been found that after reasonable training women are able to do as good work in winding as the men, but of course it is necessary for them to have assistance in heavy moving, transferring armatures from the stand to the banding lathes and to the storage racks, etc. The women are paid the same rates as the men for the same work.

The company is considering putting a premium system into operation in this shop where the work seems admirably adapted for this purpose. At present the operations have not become sufficiently standardized, but data are being accumulated for the purpose of enabling specially skilled workers to receive commensurate rewards for their work.

STEPS IN THE DIRECTION OF STANDARDIZATION

The management of the Connecticut Company realizes that to make the most of this new shop it is necessary to have accurate and complete records. For this purpose a few simple forms are being developed, as shown on this and the preceding pages. One is the requisition form which applies to the work of the reclamation shop as well as to all supplies. Another is a form which shows exactly how much work has been turned out in the shop each day, thus giving a convenient check on the relation of output to number of employees. The third is an experimental form which is being tried out with a view to accurate allocation of costs, as well as determination of the speed with which work is being put through the shops. Obviously these cost charts will be very valuable if later the premium system is put in. The shop has been operating such a short time that no cost data are as yet available, but considered as a whole there has been a very noticeable saving in labor and materials. It is hoped that in a short time actual cost figures can be given. In view of the facts that practically all of the machine tools were taken from the existing shops and that no new buildings were required for the present undertaking, the required investment has been very small.



MANDREL FOR HOLDING AXLE BEARING DURING TURNING PROCESS

Snow-Fighting References

The Library of the Bureau of Railway Economics at Washington has recently issued a fifty-three-page mimeographed list of references to articles on "Winter Service on Railroads." It is divided into five parts, namely: (1) Maintenance of way in winter in the United States; (2) operation of railroads in winter in the United States; (3) snow fighting on electric roads; (4) winter service conditions in Alaska and Canada; (5) winter service conditions on European railroads. There are thirty references in Sec. 3, and some of the references go back to as far as 1891.

The following references to recent articles in the ELECTRIC RAILWAY JOURNAL are supplementary to the above list, which is not very complete with respect to electric railway snow-fighting: Mar. 23, 1918, page 579; Feb. 16, page 332; Feb. 9, page 285; Nov. 24, 1917, page 951; Nov. 3, page 826; Feb. 17, page 304; Jan. 6, page 39; April 1, 1916, page 658; Jan. 22, page 162; Jan. 8, page 94.

Snow Fighting in Montreal*

How a Far Northern City Keeps Its Streets Clear During Its Long, Severe Winters—Esprit de Corps in the Organization Essential to Success

By ARTHUR GABOURY
Superintendent Montreal Tramways

THE snow-fighting force of the Montreal Tramways comprises three separate elements, each necessary to a successful, complete unit. They are: *Experience, Esprit de Corps* and *Machines.*—Experience in every one of the employees of the snow-fighting staff, from the head down to the switchman; *esprit de corps* between every one from the head down to the switchman and entire confidence in one another; and machines, the best that science and experience have so far produced.

These three elements combined and added to a staff of assistants and carmen imbued with the determination to overcome obstacles is the secret of the successful results obtained in the past years in maintaining a car service for the public of Montreal during snow storms and blizzards.

The snowfall for the last twenty winters has averaged 104 in., but last winter we had 128 in., that is to say, nearly 11 ft. When it is said that our sweepers were sent out for the first time on Nov. 23 and that they were out sixty-five times afterward, it will tell you that the lot of a tramway man is not what you may call a very pleasant one in the winter. On the other hand, looked upon from the right angle, there is a lot of real sport in it, as there is in fighting snow the same ambition to win as there is in playing hockey or lacrosse.

In the early days of our industry, when street cars were in the experimental stage and all other conditions somewhat similar, all we could do was to do our best. When beaten by the Storm King, the public had to wait or walk, but today the public demands not only that we keep our cars running but that we run them on time, and in spite of our modern equipment and thorough organization we are kept on our tip-toes all the time and we are taxed to the utmost to meet the ever changing conditions that arise. Every snowstorm is different from the previous one; temperature, wind, kind of snow and road conditions are all factors, which never combine in the same way and keep all of us on the *qui vive* to overcome their different combinations.

From November until the end of March there is not a moment that we can safely say "We are out of danger."

HOW THE EQUIPMENT IS MADE UP

Our snow-fighting battery consists of forty sweepers, six plows, twelve levelers and ten other pieces of apparatus of different styles, and most of them are of the very latest type.

Our sweepers have two rotating brooms and two wings, a large one on the right side and a small one on the left side. The large one opens a driveway for the rigs and the small one removes the snow from the center of the tracks. Most of our sweepers are of the single truck type, but during the last few years we have had a number of sweepers of the heavy type built for the steep hills with which our city has been blessed by nature.

Our plows are of the railroad rotary type and are used on the suburban lines through the open country.

During or immediately after a snow storm our tracks are the cleanest part of the road, and all vehicles and especially autos immediately take to them, naturally to the detriment of our car service. In consequence we have had designed the levelers or wing cars to open the road alongside of our tracks wide enough to allow rigs and automobiles a safe roadway clear of our cars. Our sweeper wings push back the snow from our tracks for about 6 ft. and these levelers—which are some of our freight cars equipped with heavy concave iron wings, pushed out by mechanism—push back the snow left by our sweepers further away and leave clear a driveway of some 9 ft. for the traffic.

HOW THE ORGANIZATION IS MADE UP

Next in importance to good equipment comes the need of making the best possible use of it, and long before the winter comes, our organization is complete and plans have been carefully thought out and drawn up. The first actual move towards the success of the winter's campaign takes place at the beginning of November each year, when a meeting of all men in charge of the machines is called and addressed by the superintendent.

This address takes the form of a friendly, heart to heart talk, which further cements the *esprit de corps.* Special care is taken to impress on each man in charge that he must feel proud to be called to act as lieutenant in this fight and that he would not have been called if it was not felt that he was the best man that could be got. Suggestions are offered by the men and considered, and after further amicable testimony of confidence, we separate, each feeling that he is an essential spoke in the wheel, and each anxiously waiting the moment that he will be able to show what he can do.

A motorman in charge and an assistant motorman in charge are appointed for each sweeper and leveler at the beginning of a winter, and these men keep their own sweepers during the entire winter, subject, of course, to the proper performance of their duty. The idea of this is that if a man is in charge of one special sweeper all the time, he will soon learn its strength and its weakness. Consequently, we get better work from both the man and the sweeper than if he worked on one sweeper today and on another one tomorrow.

To each man in charge of a sweeper is given a certain route to cover, and he remains on this sweeper route each time he goes out and thus gets to know its difficulties and danger points and how best to overcome them. I might say that from this system a keen rivalry among the different crews has grown up, each claiming that his sweeper is the best and his route kept the cleanest. The routes laid out for the sweepers are separate and distinct from the ordinary car routes, the whole territory being divided among the four operating divisions of the company and the sweeper routes assigned to each being those which can be handled to best advantage. Each piece of apparatus is also assigned to a particular route.

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*Abstract of an address given at meeting of Montreal Publicity Association, Montreal, April 24, 1918.

HOW THE ROUTES ARE ARRANGED

As far as possible, the routes are arranged so that each can be completely covered by its sweeper in from forty-five minutes to an hour. The routes are also arranged so as to have one central converging point for three to four sweepers, the idea being that when help is needed, it can be quickly sent by diverting the sweeper from another route when it reaches this spot. Large blueprints of these routes are posted in the superintendent's office at snow headquarters and at each station. Smaller blueprints are also posted in each piece of apparatus, giving the detailed route of that particular sweeper or leveler.

Thus we have the routes specially defined, sweepers designated for each route, and a man in charge who is fully aware of the danger of that route and who understands his sweeper and knows how to handle it so as to obtain the best results. Hence, when the order is given from snow headquarters to pull out, there is no confusion, and no valuable time lost in asking questions. Each man knows where to go and what to do, and he simply goes ahead and does it.

The best recording barometers that science has so far produced are installed in the snow headquarters downtown as well as in the home of the man in command, and the question, "*Will it snow to-night?*" is one which he asks himself when looking at the barometer and before going to bed.

The first storm of the season is always the one awaited with the most anxiety. Sweepers have not been in use for eight or nine months, the men are more or less rusty at the first run out, switchman are not available, and all this, added to the fact that the first storm always comes when least expected, makes the men in charge do a lot of anxious thinking.

When it does come we send out the 200 odd men to man all the machines, even if they are not all absolutely needed, so as to give each machine a real test and see whether they are all ready for their winter's work. It has always been our ambition to pull out our whole snow battery in less than an hour and when this is done and the order given in time, it takes quite a blizzard to stop the movement of the cars here.

There is little worry as regards men attached to daylight snow storms. The real worry begins between midnight and 5 o'clock in the morning, and special care has to be taken so as to be able to locate our men on time if snow begins between these hours.

Call boys are held in each station and sent out to get crews as soon as the danger appears, so that all our sweepers are ready to go out when the first flake begins to fall. Our men generally live around the stations, and as they expect to be called at any moment during the winter, it does not take them long to get dressed and get on the job, especially as each one is anxious to keep his own line better than the other fellow.

The first trouble in snow storms comes at switches and intersections. The snow blocks the switchpoint, and motormen have trouble in opening the switches. That explains the delays at intersections at the beginning of every storm. We have continually some eighty odd men looking after the hills and switches, brushing off the snow and salting the switches and the rails on the hills to keep them soft and clean, but when the storm comes some 200 additional men are rushed to help them so as to keep hills and switches in perfect condition.

Sweeper crews are also provided with good lunches when the need arises. If possible, the sweeper is pulled into a convenient siding and the crew given a good meal at a near-by restaurant. If it is not possible to spare the sweeper off the road for half an hour, cans of coffee and good sandwiches are sent to them.

WHAT HAPPENS AT HEADQUARTERS

Our snow headquarters are established at our central carhouse on Cote Street, where special telephones are in operation and dispatchers are at hand. Here the superintendent takes up his position at the center of the web and directs the movement of his forces.

All orders are issued from this spot and all news is transmitted there, and there is lots of it. Divisional superintendents and inspectors report every hour. Sweeper and leveler crews also report every trip, giving their sweeper number, the place they are reporting from, the ground they have covered and the condition of their road. This means some ninety calls per hour.

All this information is tabulated in such a way that the assistant superintendent in charge at the desk during the snowstorm can tell at a glance the position of each sweeper or leveler. There is a lot of thinking to do and he must be a man having the whole system engraved in his mind, as the number of telephones per minute would not allow time to consult any map. In this way a close check can be kept on the whole system and help can be sent where it is needed, and a sweeper transferred from its own line to another where danger threatens.

Our snow season begins, as I said before, in the month of November and continues right through until St. Patrick's day. The snow in December is soft and comparatively easy to handle, as the cold is not severe, but in January and February our snowstorms live up to their reputation, and when the thermometer acts in conjunction and drops to 20 or 25 deg. below zero, then indeed we have our work to do. In these two months, storms often commence one day and continue all that day and night and sometimes the next day as well, and although the snowfall is scientifically given as 10 or 12 in., this means that the streets are covered with piles of snow 3 or 4 ft. deep.

In storms like these, something more is needed than equipment and plans, and that is men. If your men are of the kind that work only for pay, then the most complete equipment, the most carefully laid out plans will not pull you through. What you need, and need badly, are men who are real men—men who work not only for their pay but do work such as cannot be paid for in mere money.

Esprit de corps must permeate the whole staff from superintendent down to switchman. Men are wanted whose ideals are so well put by Kipling when he says:

> No one shall work for money, no one shall work for fame,
> But each for the joy of the working.

Men who answer the call on the jump, who phone headquarters even before they are called, who pull out their sweeper at the beginning of a storm and return it back only when the storm is over, whether it is after twelve or twenty-four or thirty-six hours, and who are indignant when offered relief for a few hours of needful rest. With a staff that starts in with the storm and stays right with it, eating sometimes, sleeping at no time, but fighting at all times, you feel your feet on solid ground and are ready to do your best in the battle with nature's Storm King.

And after the storm, when the last sweeper has been ordered in and your inspectors are phoning in "cars on schedule time," you turn homewards for a much-needed clean up, tired and worn out physically, but your mind at ease, and as you see the streets piled up with snow but with the car track clean and shining in the sun, the cars filled with passengers riding safely and comfortably down to work, you are suddenly filled with a feeling of joy and pride—joy in the doing of a man's work and pride in the organization of which you are the head.

Rotary Snowplow Operates in 18-Ft. Drifts

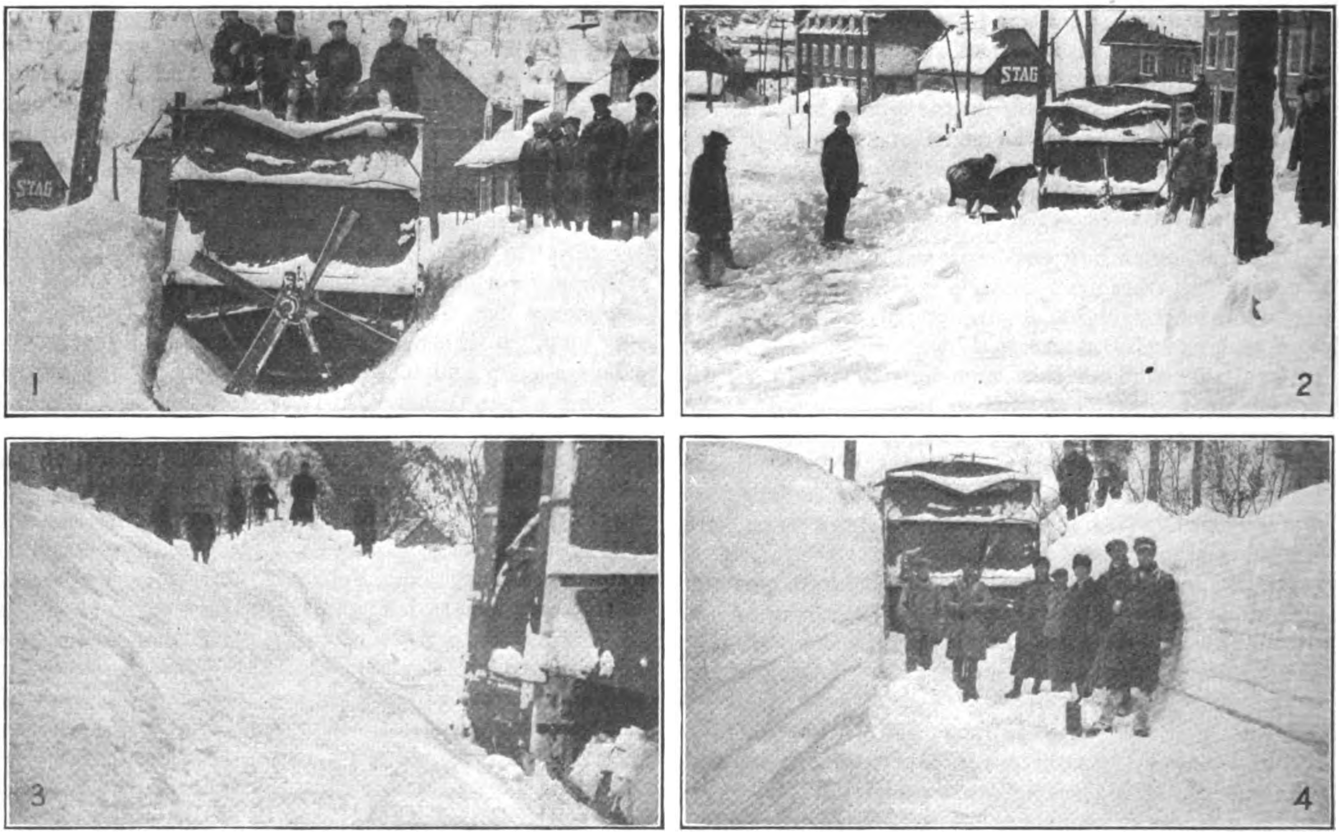
Levis County Railway, Quebec, Canada, Confronted Yearly with Exceptional Snowfalls, Handles the Traffic Problem with Efficiency

THE Levis County Railway, Levis, Quebec, Canada, operating about 12 miles of track, is located in what is known as the Snow District of Canada. The average snowfall is about 130 in., but during the past year the average was 150 in. Snows began in November and were continuous throughout December, accompanied by extreme cold with no thaws during the cold period, so that the snow accumulated to a great height.

The worst storm of the season, which continued for twenty-four hours and accompanied by very high winds, piled the drifts up 18 ft. on the railway track. Snow slides occurred along the Quebec Bridge division and several houses were completely buried and others shifted from position.

The equipment used to disperse this almost insurmountable barrier to transportation was a 300-hp. rotary plow. This plow, shown in Fig. 1, is equipped on the front with rotary blades which cut the snow. Back of these are rotary paddles which deliver the snow some 15 ft. through a funnel in either side of the plow.

By means of this plow the St. Joseph division was opened and normal operation effected on the first afternoon that the plow was placed in service.. During the night the Levis upper town division was opened and on the following morning the plow began work on the 7-mile trip to the Quebec bridge. Immense drifts and snow slides had to be overcome along practically



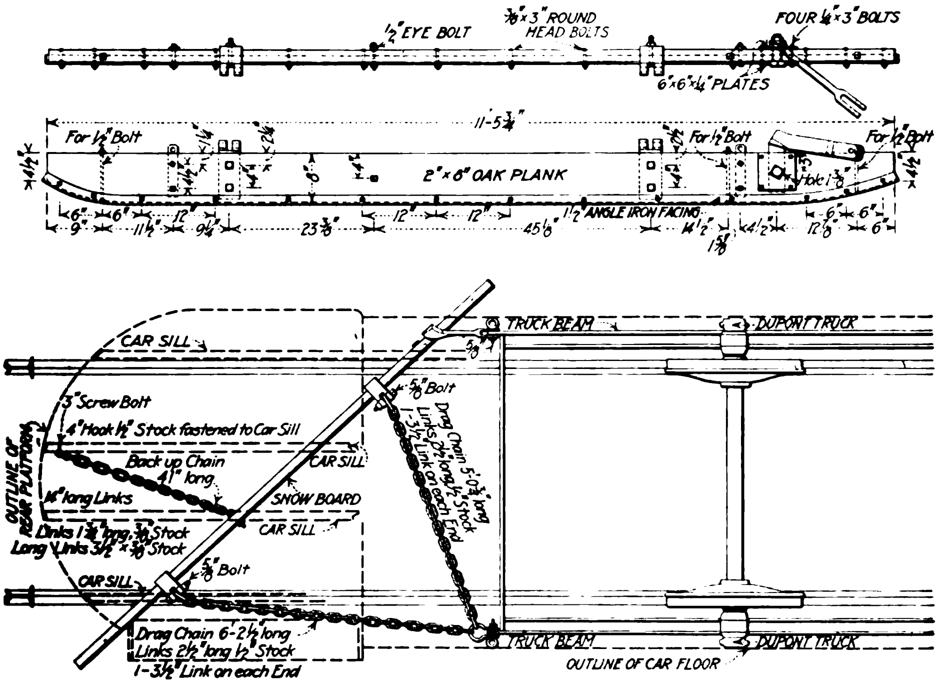
BUCKING SNOWDRIFTS IN QUEBEC, CANADA
Fig. 1—300-Hp. Rotary Plow Operating in 10 ft. of Snow. Fig. 2—Plow Assisted by Shovelers, Operating in 9-ft. Snow Slide. Fig. 3—Plow Backed Up to Show Depth of Snow. Fig. 4—A Typical Cut Through a Snow Drift After the Rotary Plow Has Completed Its Work.

the entire course and it was on this division that the company photographs were taken. The Levis County Railway supplies the only direct way to the Quebec bridge site, the bridge itself being only a five-minute walk from the terminus of the company, and it was essential that the tracks be cleared with the least possible delay.

Effective Snow Boards for City Service

Detroit Uses Interesting Type of "Drag" Board Suspended Under Rear Platform of Either Single or Double-Truck Cars

THE Detroit United Railway for many years has been using what is called a "drag" board, or snow board, to remove the snow and slush from city car tracks and to throw it to one side of the rail. Details of the construction of the board and of its attachment to the car are shown in Fig. 1.



½" EYE BOLT
⅜"x3" ROUND HEAD BOLTS
FOUR ¼"x3" BOLTS
6"x6"x¼" PLATES
11'-5¼"
For ½" Bolt
2"x6" OAK PLANK
1½" ANGLE IRON FACING
Hole 1"
TRUCK BEAM
DUPONT TRUCK
CAR SILL
3" Screw Bolt
4" Hook ½" Stock fastened to Car Sill
Back up Chain 41" long
OUTLINE OF REAR PLATFORM
1½" long Links
SNOW BOARD
Links 1¾" long, ⅜" Stock
Long Links 3½" x ⅜" Stock
⅝" Bolt
Drag Chain 5'-0¾" long Links 2½" long ½" Stock 1-3½" Link on each End
Drag Chain 6'-2½" long Links 2½" long ½" Stock 1-3½" Link on each End
OUTLINE OF CAR FLOOR

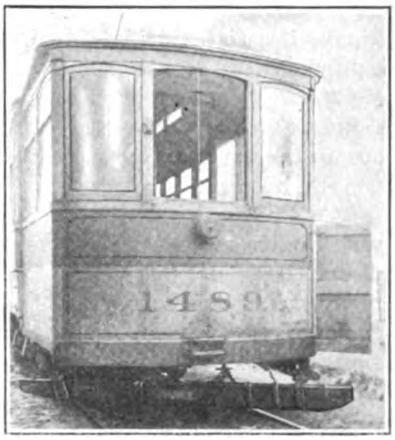


FIG. 1—DETAILS OF CONSTRUCTION AND ATTACHMENT OF SNOW BOARD, DETROIT UNITED RAILWAY. FIG. 2—SNOW BOARD IN OPERATION ON DOUBLE-TRUCK CAR

The boards are made of 2-in. oak plank 8 in. wide with a steel heel of 1½-in. angle iron. They are 11½ ft. long and slope up at the end to prevent striking any obstruction outside the rail, such as high spots in the pavement.

The method used in applying these to the rear end of the car shown in Fig. 1 is for a single-truck car, but the application to double-truck equipment is the same except that the drag chains are fastened to the car body instead of to the truck. The double-truck attachment is quite clearly illustrated in Fig. 2.

Referring again to Fig. 1, the reader will be able to note the location of the following attachments. A wrought-iron arm 1 in. x 2½ in. bent at a 90-deg. angle is attached to the board. At the point of the angle, at the top of the board, this brace is twisted 90 deg. so that it extends back with the narrow edge vertical. The end is pronged and fastened to the truck beam by a pin. This arm maintains the board in a vertical position and at the same time pivots on the pin to allow vertical motion in passing over rough spots in the pavement.

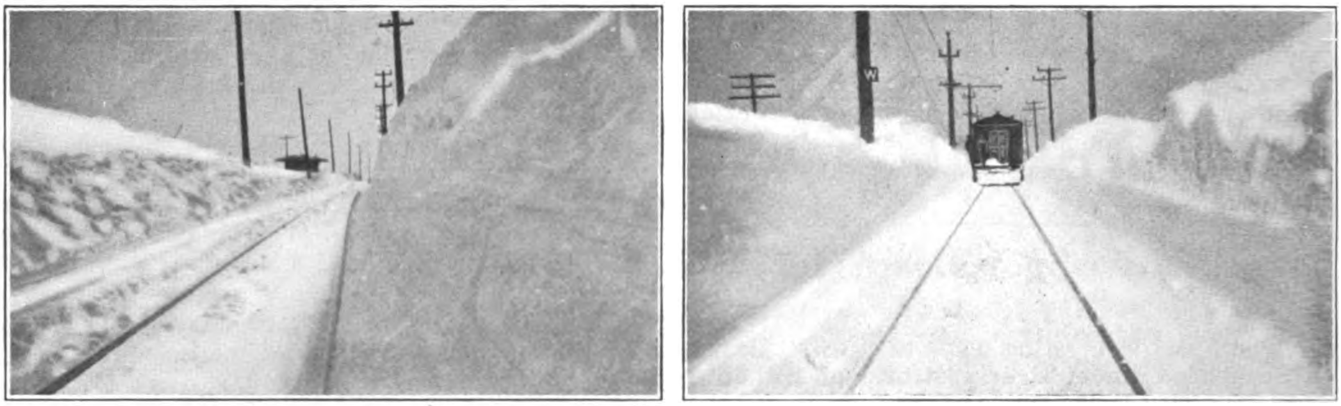
Attached to the board are wrought-iron hinges made of ⅜-in. x 3½-in. stock. From these hinges, as clearly indicated in Fig. 1 and shown in Fig. 2, a heavy drag chain passes back to a clevice. These chains, together with the twisted arm, hold the board in position when the car is moving forward.

A third chain, which is attached to the board by means of an eyebolt and to the end of the car sill by means of a screwbolt, prevents the board, also held in place by the arm, from swinging under the car and trucks when the car is backing up.

Chains suspended from the car sills hook into wrought-iron clips which are made of ⅜-in. stock 1½ in. wide and bolted to the drag board. By means of these chains the board may be hooked up 4 in. above the rails and carried in this position when not in service.

Fig. 2 shows the car also equipped with a guard board attached to the right-hand rear vestibule corner post by means of hooks. This is to prevent passengers, after alighting, from being tripped by the snow board, which projects a little beyond the body of the car.

When immediate service of the boards is not anticipated they are stored at the various carhouses on racks adjacent to the loop where the cars turn. Here they are handy and can be attached to the cars in a very few minutes by simply placing two pins, one for the drag chains and one for the arm bracket, in position, and hooking in place the back-up and suspending chains. All cars are equipped to carry the snow boards, but as a general thing it is necessary to place them on only every fourth, fifth or sixth car, depending upon the severity of the storm. These boards have proved of great value to the United Railway in keeping city tracks clear and have, it is believed, often made unnecessary the use of heavier snow-fighting equipment and avoided many delays in schedules and possibly even more serious tie-ups. The first cost is small, the maintenance negligible, and the service rendered inestimable.



CUTS THROUGH SNOW DRIFTS, CHICAGO, SOUTH BEND & NORTHERN INDIANA RAILWAY

Fighting Snow on the Interurban

Middle West Roads Had Unusual Experiences Last Winter

SOME idea of the difficulties which beset electric railways during last winter, particularly in the Middle West, can be inferred from the accompanying views of snow scenes on two roads in northern Indiana, where the winter was the most severe that has been experienced in that vicinity for many years. The snow was unusually heavy, and because the temperature was so low became packed too hard for any equipment to handle it satisfactorily. Much damage was also done to equipment, as it was not uncommon for the armature shafts to be twisted off while the drifts were being fought. While the winter of 1917-1918 was unusually severe the experiences suggested by the photographs are worthy of record.

The Chicago, South Bend & Northern Indiana Railway, which has one large rotary plow and four smaller plows, besides a number of sweepers, equipped also many passenger and freight cars with plows. This company was unable to give normal service on all divisions until Feb. 9, following the first severe storm on Jan. 11.

The entire length of the line was buried under drifts ranging from 2 ft. to 16 ft. deep, and from 400 ft. to 2000 ft. long. On account of the equipment being tied up it became necessary to hire men to clear the tracks by shoveling. W. F. Carr, engineer maintenance of way, was killed by the overturning of a plow of which he was in charge when it struck a drift just after the crew had rescued passengers in a car which had been stalled for several hours.

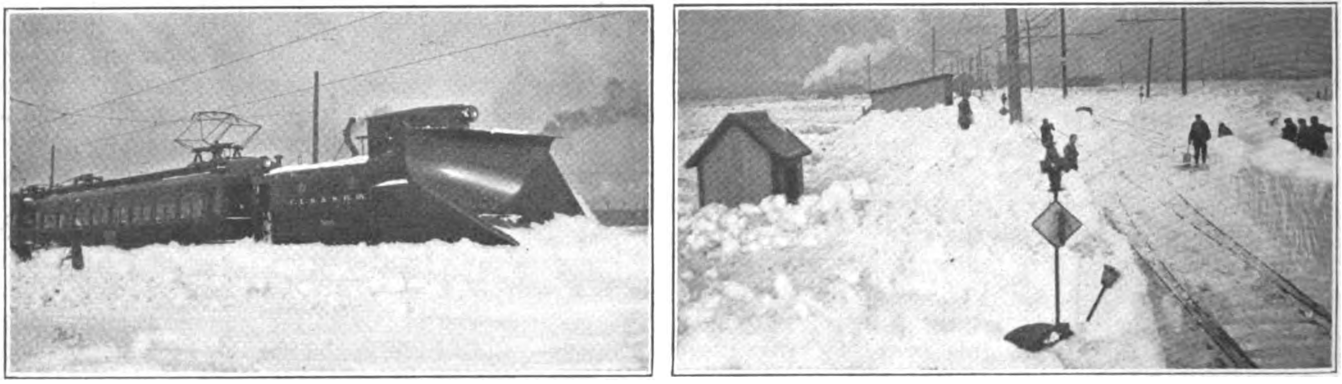
Storage of Bituminous Coal

Limitations as to Permissible Amounts Set by Administrators

AT A meeting of state fuel administrators held in Washington on Aug. 20 it was decided to be necessary to limit the amount of coal storage that industrial plants will be allowed to accumulate and carry on hand. Coal in excess of that required for current operation will be delivered to plants not on the preference list only when it is not in demand for use before April 1, 1919, by consumers on that list, which includes public utilities.

The number of maximum days storage which will be allowed to public utilities in a number of the states are as follows: Maine, 120; Massachusetts, Vermont, New Hampshire, northern New York, 90; Connecticut and Rhode Island, 75; southern New York, New Jersey, Delaware, eastern Pennsylvania, 30; Maryland, District of Columbia, Virginia, North Carolina, South Carolina, Georgia, Florida, western Ohio, 30; western Pennsylvania, West Virginia, eastern Kentucky, eastern Ohio, 30; lower Michigan, 90. It is understood that particular cases may require special treatment.

Any company which is permitted under the zoning regulations, now or hereafter in force, to obtain coal from Illinois, Indiana or western Kentucky, or from mines west of the Mississippi River, may retain such reserve stock of coal as it shall have on the effective date of the ruling, on condition that such company or concern shall thereafter use screenings or mine run only for its current necessities, and shall obtain such screenings or mine run for its use only from such last-mentioned fields.



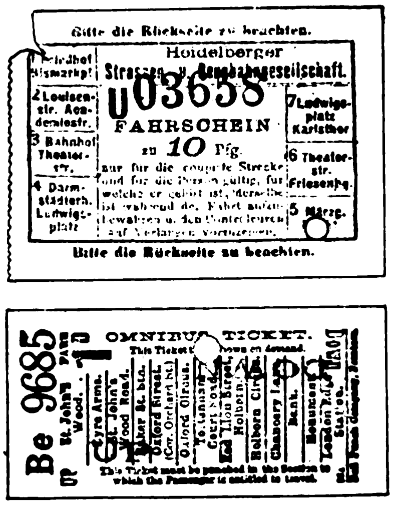
SNOW-FIGHTING SCENES ON THE CHICAGO, LAKE SHORE & SOUTH BEND RAILWAY

How Zone Fares Are Collected

Resume of European and American Practice, Showing the Methods Adopted to Facilitate Collecting of Fares and Checking of Distance Traveled

MOST railway managers will readily admit that the zone system of fares, in which the fares charged have some proportion to the distance traveled, is a more logical basis of charge than the flat fare. The principal objection urged against it in the past has been the difficulty of obtaining a correct accounting between conductors and the company and of checking the riders to see that they do not ride more than the distance paid for. The great interest now manifested in the subject, however, prompts a brief comparison of the systems now in use for fare collections and registration.

Most of the European tramways and bus lines use the zone system of fares The fares are collected by a conductor who passes through the car, as was formerly the custom in this country. The passenger tells how far he wants to go, and after paying his fare he receives from the conductor a ticket punched or marked by tear or pencil to indicate the stated point of destination. These fare receipts, two which are reproduced herewith, bear a serial number and also may have separate figures and initial letters to identify the conductor or route still more readily. The more elaborate do not look unlike American transfers. Sometimes the color of the ticket differentiates the inbound and outbound trips. Sometimes, too, the ticket specifies the hours of the day, but usually not. Every ticket says that it is non-transferable and good for that particular ride only.


Bitte die Rückseite zu beachten.
Heidelberger
U03658
FAHRSCHEIN
zu 10 Pfg.
Bitte die Rückseite zu beachten.

Be 9685
OMNIBUS TICKET.
This Ticket must be punched in the Section to which the Passenger is entitled to travel.

FARE RECEIPTS USED ABROAD

The passenger retains the receipt during his trip and must keep it within view, so that it can be readily examined by an inspector boarding the car at any time. When the passenger leaves the car, he is not required to give up the ticket but may take it with him or throw it away.

The system on the whole is crude, and it seems to the average American as if it could easily be beaten by both passengers and employees. For example, there is little or no safeguard against the issuance of an old ticket by a conductor except that he is supposed to tear each ticket when issued from a roll or pad, and no safeguard against the use of an old ticket or overriding by a passenger except the vigilance of the conductor and the inspector. It should be remembered, however, that prosecution in most European countries in the case of either passenger or conductor who attempts to defraud the company is likely to be much more swift and sure than in America.

From the American point of view, however, the system, even if perfect as regards proof against fraud, possesses two serious objections. One is that the conductor has to collect the fares by passing through the car. The second objection is even more important. It is that inspectors have to be used to check up passengers. These inspectors are supposed to board and pass through a car quickly, but it would take much longer for them to get through the larger cars in America, and such a task would be practically impossible during the rush hours. Moreover, the additional labor charge would be prohibitory. If the zone system were applied in this country, it would seem that one improvement might be for the passengers, when leaving the car, to drop their tickets into a box. These could be subsequently collected by some employee other than the conductor and then checked by their serial and other numbers.

The Milwaukee zone system was originally designed for operation with both pay-as-you-enter and pay-as-you-leave cars. Passengers inbound from suburban zones, when riding into the city single-fare area, were to be required to pay the entire fare upon boarding the car. They would not secure receipts but would receive transfers in case they wished to ride on some transfer line in the city. Passengers who boarded a car in the suburban zone, wishing to ride to some other suburban point on the same line and not through or into the single-fare area, would pay the entire fare and receive a receipt. This receipt they would then be required to surrender upon leaving the car.

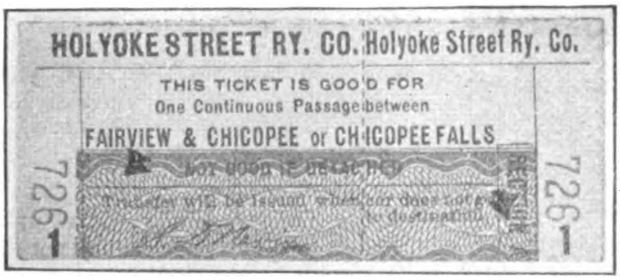
Passengers who boarded the car inside the single-fare area to ride into some suburban zone were to be required to pay the city fare upon boarding the car. When they left the car the additional zone fares corresponding to the one or more zones across and into which they had traveled since leaving the single fare area were to be collected. Passengers boarding outbound cars in a suburban zone to ride into some other zone were to be required to pay the entire fare upon boarding the car. Like passengers inbound and traveling under the same conditions, they were to receive receipts which they would surrender upon leaving the car.

Thus it would appear, under this plan, that all outbound passengers would be required either to pay a fare upon leaving the car or present a receipt. The receipt contemplated under this plan naturally would become valuable to the passenger to whom it was given, as he would either have to surrender it when he left the car or be required to pay additional money.

Presumably the reasons why the system just described was not put into effect in Milwaukee were that it involved a change from the old method of passing the fare box through the car at zone points, and that it required a different plan for paying for an inbound ride and an outbound ride. It also required a different plan of payment for passengers in or out from the central zone and those simply from one suburban zone to another or within one suburban zone. On the other hand, all passengers would pay on the platform. The plan actually put in use in Milwaukee sacrifices this last advantage, though possibly it is more simple for the passenger. Under both plans the passenger whose ride begins and ends within one zone pays only 5 cents, whether that zone is the central zone or one of the suburban zones.

PLAN NOW USED IN MILWAUKEE

Under the existing practice in Milwaukee passengers who originate in the suburban territory and are inbound pay the entire suburban and city fare when they enter the cars. Those who plan to ride through only one or two zones signify their intention to this effect to the conductor and pay only the fare charged for such a ride. When the central zone is reached, the conductor glances through his car to see whether there are any passengers in it who have not paid to ride into the central zone. As there are only a few in any case who do not pay the full fare in advance, he can easily remember them. He then passes through the car and collects the additional fares with a portable fare box.


HOLYOKE STREET RY. CO. Holyoke Street Ry. Co.

THIS TICKET IS GOOD FOR
One Continuous Passage between
FAIRVIEW & CHICOPEE or CHICOPEE FALLS

7261

7261

TWO-ZONE TICKET USED IN HOLYOKE

On outbound cars passengers who board the car within the city single-fare area pay only the city fare. When each zone point is reached the conductor goes through the car with a portable fare box and collects the zone fare either in tickets or coins. An exception to this rule is the plan practiced on the South Milwaukee line, where on account of congestion the entire fare is collected upon boarding.

A 5-cent initial fare is charged which is good within the central zone or good for a ride wholly within one of the suburban zones or from one suburban zone to another. The fare to ride through each additional zone is 2 cents.

Although in many respects satisfactory, the management of the Milwaukee Electric Railway & Light Company does not consider the present plan, by which the conductor passes through the car and collects fares in a portable fare box, as a final solution. It regards the present method as temporary and subject to supersession in favor of the plan as originally developed. It believes that the conductor should, if possible, remain on the platform, and if any fare receipts or coins are to be collected they should be deposited in a stationary box under supervision of either the motorman or the conductor. Neither should have access to the box.

PITTSBURGH HAS PAY-ENTER-PAY-LEAVE

In Pittsburgh there are only two zones in the city proper, the fare being 5 cents for a ride entirely within the central zone and 7 cents for a ride between any point within the central zone and any point in the outer zone, or between two points in the outer zone. The cars are operated as pay-as-you-enter on the inbound trip and pay-as-you-leave on the outbound trip. On an outbound trip those who leave before the single-fare zone boundary is crossed pay 5 cents, and those who leave after the boundary is crossed pay 7 cents. Conversely, with an inbound car, those who enter the car at the suburban zone pay 7 cents and those who enter after the zone boundary is crossed pay 5 cents. There has been no difficulty in collecting 7-cent fares from passengers as they leave the car.

This plan, of course, requires that the rate of fare for any passenger who begins or ends his trip within the suburban zone shall be 7 cents, regardless of whether he travels through parts of two zones or only through a part of the suburban zone. The company believes such a fare justified for two reasons. First, the average length of ride per passenger is greater in the 7-cent area than in the 5-cent area. Second, the number of passengers on each car in the 7-cent area is less than that in the 5-cent area, so that the cost per passenger is very much greater in the 7-cent than in the 5-cent area. Moreover, even if it were logical to base the charge on the distance ridden alone it would not be practicable to collect the fares on any such basis in a large city.

Two registers are used, one for the 7-cent fares and one for the 5-cent fares. Only one of these can be operated at a time, and when the car is passing from one fare area to the other the conductor has to go forward in the car and change certain mechanisms, so that the operation would be noticeable to the passengers if performed at other than the proper time. Thus both error and dishonesty are eliminated. Eight of the 7-cent tickets are being sold for 55 cents, and these tickets are rung up on the 7-cent register. All fares are collected on the platform, but fare boxes are not used.

THE PROVIDENCE METAL-TICKET SYSTEM

In Providence there are for the city cars one central zone and two suburban zones, the fares being 5 cents for a ride wholly within any zone and 2 cents more for each additional zone. For a number of years the Rooke register has been used for city fare collection, the conductor passing through the car and collecting the fares after the passengers are seated. This plan is still followed except that the conductor collects an additional 2 cents whenever the car passes a zone boundary.

This 2-cent fare is collected by means of a 2-cent metal ticket which the conductor sells to the passenger and immediately receives back through his Rooke register. This plan was considered better than to have the passenger deposit two 1-cent pieces in the register, as that would have required two registrations instead of one. It was also considered better than to have the passenger pass 1 cent through the register and hand the other to the conductor, because such a plan would cause an exception to the rule of the company that all money must pass through the Rooke register.

On inbound trips, inasmuch as the destination of practically all passengers is the central 5-cent zone, through fare of either 7 cents or 9 cents is collected on the first collection. Moreover, on outbound trips on lines having two 2-cent zones, the fare for both is collected at the same time.

Further particulars of the Providence city and interurban system of fare collection will be found in the ELECTRIC RAILWAY JOURNAL of July 13, pages 65 and 66.

HOLYOKE TWO-ZONE TICKETS

On the Holyoke Street Railway the fares are 5 cents a zone if paid in cash. If a traveler buys tickets, he can ride through into two zones for 6⅔ cents or 7½ cents, depending on the distance or the direction. A typical two-zone ticket is shown on page 374.

This pasteboard ticket is partially perforated so as to be torn in two easily when the fare is collected. The conductor retains one half and the passenger keeps the other, to be collected when the second zone is reached. Both parts have the same serial number. The ticket is registered only once, namely, when the first half of the ticket is collected. The conductor cancels both parts of the ticket with his punch, and at the end of his trip turns in both.

BAY STATE PRACTICE

The fare system of the Bay State Street Railway, as described on page 1210 of the issue of this paper for June 22, is somewhat complicated owing to the variety of fares changed, including "off-peak" tickets. In general, however, there are not more than two zones in any one city, and the plan of pay-as-you-enter inbound and pay-as you-leave outbound, used in Pittsburgh, is followed. On the suburban lines a duplex ticket is used, the passenger retaining his half until he leaves the car.

"Keep the Home Wheels Turning"

IN ITS campaign for a higher fare, a rehearing on which was opened on Aug. 29, the Public Service Railway, Newark, N. J., is using the epigram "Keep the Home Wheels Turning" from the running headline of recent issues of the ELECTRIC RAILWAY JOURNAL. Dasher signs like that illustrated are being carried on the cars, in order to impress upon the people of New Jersey the importance of supporting the local electric railway service as one means of helping to win the war.

"Keep the
Home Wheels
Turning"

DASHER POSTER IN USE THIS WEEK ON CARS OF PUBLIC SERVICE RAILWAY

In an address before the Newark Board of Trade, delivered on Aug. 21, Thomas N. McCarter, president Public Service Railway, used the phrase as the title of his remarks, and also used it by way of illustration. He said, in part: "The ELECTRIC RAILWAY JOURNAL, which is one of the official organs of the industry in the country, in its issue of last Saturday had printed across the top of every other page in large type the epigram "Keep the Home Wheels Turning." That is the best statement of the whole problem I have seen. That is what this application is for. It isn't whether I, my brother, or any other investor in any of these enterprises, gets his money or gets his dividend in his pocket. It is whether the financial status of this outfit can be maintained so that we can "Keep the home wheels turning."

The Competition Between Safety Car and Jitney

Reduction of Man-Power Because of War Needs and Publicity on Financial Conditions Remove Objections to One-Man Cars

BY M. B. LAMBERT
Assistant Manager Railway Department, Westinghouse Electric & Manufacturing Company

THE safety car has come to stay. Its practicability and economy have been proved in numerous parts of the country. War conditions have contributed much to its popularity. The average citizen will admit that under present conditions it is a waste of man-power to use two able-bodied men on each street car, whereas he formerly looked upon the one-man car as a measure toward reducing costs and increasing dividends at the expense of the car rider.

The publicity that has been given to the financial conditions of the electric railways has also borne fruit. Many people now understand that the electric railways have not been coining money but, instead, have been rapidly approaching and are now on the verge of bankruptcy and must have relief.

A great number of men who have given serious thought to the electric railway problem say there are three possible consummations: (1) Financial breakdown followed by municipal or state operation. (2) Company ownership and operation regulated by public commissions, with a fair return on the investment guaranteed by the state. (3) Company ownership as at present, securing a fair return on the investment through the usual business methods of providing reasonable service at a reasonable price.

The last plan is, of course, the best if it is possible of accomplishment. The great difficulty lies in the fact that very few electric railway companies have an organization capable of conducting business publicity. It is something that cannot be accomplished in a few months. It requires a year or so of honest, straightforward publicity work with real honest effort to provide good service. Furthermore, it means that this sort of activity must be kept up if continued progress is expected.

It is also true that a great deal of publicity work must be done in order to make the second plan work out successfully. The people, as a whole, will not be content with a guaranteed return on the investment unless they believe they get a good service for the price paid.

The safety car looms up on the horizon as a solution of a part of our city transportation problems and offers an opportunity to numerous companies to provide rapid service at frequent intervals at low cost. It is no longer an experiment. It has been tried out and has shown wonderful results on a great many properties, not only in economy but also in satisfactory operation and service to the people.

The operation of the jitneys proved conclusively that most people tolerated the discomfort of the crowded jitney because it made faster schedules and vice versa, where the one-man safety cars make faster schedules than the jitneys, the people have shown they prefer to ride on the safety cars. In other words, experience has shown that the people want fast service at frequent intervals. The introduction of the skip stop has made faster schedules possible. There remains only to provide sufficiently frequent service at a reasonably low fare to make the service attractive and pay an adequate return on the investment. With this accomplished, no further competition may be expected from jitneys and, above all, in this plan which the safety car has made possible there seems to lie a solution for many electric railway properties.

The wonderful growth in the popularity of the safety cars, with one-man operation, like most other things that have benefited humanity, is to a large extent due to a man or group of men who had the courage of their convictions.

The American Car Company had faith in Birney's car, and placed orders for large numbers for stock. The sales have exceeded all expectations, notwithstanding the general curtailments due to war conditions. The reason for this is the safety car is solving the problem on many street railway properties. The scheme is economically sound; hence, we may look more and more to safety cars in the future.

San Francisco Buses a Costly Accommodation

TO GIVE service to outlying parts of the city, the San Francisco Municipal Railway last year purchased five White buses and rented three others, all of nineteen-passenger seating capacity. Since May two of the rented buses have been discontinued in order to reduce the losses. With eight buses, one was used as a spare; with six buses all are in service. The reduction was secured by combining Routes 3 and 4, the buses going up one street and returning down another to connect with the "K" or Twin Peaks Tunnel line. The traffic data concerning each line follows:

Route 1—Two buses giving free transfer to and from the "A" line for twelve-minute headway service across Golden Gate Park. Maximum ride for 5 cents, 4.8 miles in car and 2.08 miles in bus. Total 6.88 miles.

Route 2—One bus giving free transfer to and from the "B" line along Great Highway (ocean shore) from Cabrillo to Kirkham streets on fifteen-minute headway. Maximum ride for 5 cents, 7.06 miles in car and 1.12 miles in bus. Total 8.18 miles.

Routes 3 and 4—Three buses (instead of four regulars) or Ingleside and Parkside routes combined from Ocean and Phelan Avenues to Thirty-third Avenue and Tarraval Street on ten-minute headway, connecting with "K" line. Maximum ride for 5 cents 6.04 miles in car, 1.70 miles in bus. Total 7.74 miles.

The average schedule speed of the municipal cars including the congested sections is 9.4 m.p.h.; of the buses, 12.5 m.p.h. These speeds include layovers.

Routes 1 and 2 reach sections not accessible by trolley car. Routes 3 and 4, however, parallel lines of the United Railroads via the Twin Peaks tunnel. The municipal cars reach the Ingleside transfer point in thirty minutes compared with forty-nine minutes on the United Railroads. This fact, however, does not invalidate the contention that a duplication of investment could have been avoided if both interests could have agreed on a car-to-car transfer system.

The degree of necessity for the service on the different routes may be gaged by a comparison of the car and bus passengers on the linked routes. According to Table I herewith, Route 1 in April had 34,656 passengers compared with 632,664 passengers on line "A," a ratio of 0.054:1; Route 2 had 14,346 passengers compared with 754,245 passengers on line "B," a ratio of 0.019:1; Routes 3 and 4 combined, 52,089 passengers compared with 165,741 passengers on line "K," a ratio of 0.31:1. It will be seen, therefore, that the bus travel is significant only on the thinly-patronized Twin Peaks tunnel line because the latter has so many through riders. It is true that the Twin Peaks tunnel was built by local assessments, but the running expense of operation is carried by the Municipal Railway.

Table II, operating costs for April, shows that the bus receipts were only $2,651.10. Against this were charged $3,859.79 for operation and repairs, $1,632.25 for tires (5 cents per mile), $518.74 for depreciation and workmen's compensation insurance. After allowance of a credit of $1,199.48 for tickets and transfers, the net loss for April's 32,645 miles was $2,160.20. In other words, each of the 101,191 bus riders received a gift of 2.1 cents from the city every month aside from the fact that they were also the riders who averaged the maximum trolley haul! The net loss per bus-mile was 0.66 cent.

TABLE I—PASSENGER TRAFFIC CARRIED ON SAN FRANCISCO MUNICIPAL BUS LINES, APRIL, 1918

Line	5 Cents	Tickets		Transfers	Free	Total
		Q.M.	School			
No. 1	19,190	1	779	14,654	32	34,656
No. 2	7,579	...	116	6,649	2	14,346
Nos. 3 and 4 combined	26,273	1	595	25,182	33	52,089
						101,091

NOTE.—During April, the total traffic on line "A" was 632,664; line "B," 754,245; line "K," 165,741, a total of 1,552,650.

TABLE II—STATEMENT OF BUS LINE OPERATION, SAN FRANCISCO MUNICIPAL RAILWAY, APRIL, 1918

Receipts:	
Route No. 1	$959.90
Route No. 2	378.95
Routes Nos. 3 and 4 combined	1,332.25
Total receipts	$2,651.10
Repairs to buses owned, exclusive of $749.13 for tires which are charged on mileage basis	400.53
Conductor-chauffeur of buses owned	1,172.15
Garage expense of buses owned	973.77
Rental of buses	747.29
Conductors, chauffeurs, buses rented	566.05
	$4,607.08
Operating loss	$1,955.98
Reserves:	
Depreciation (18 per cent. of receipts)	$477.20
Compensation insurance ($2.39 on $1,738.20)	41.54
Total reserves	$518.74
Gross excess of expenses over receipts exclusive of tires	$1,727.43
Revenue Credits:	
Two quartermaster's tickets 10 cents, 1,490 school tickets $37.25 and 46,485 local transfers, $1,162.13	$1,199.48
Net excess of expenses over receipts, exclusive of tires	$527.95*
Tire Expense:	
32,645 miles at 5 cents per mile (estimated)	$1,632.25
Net loss for April, 1918	$2,160.20
Average net loss per diem	72.01
Bus Mileage, April, 32,645 Miles	
Receipts per bus-mile in cents	0.081
Operating expenses per bus-mile, except tires and reserves	0.118
Operating loss per bus-mile, except tires and reserves	0.037
Gross excess of expense per bus-mile, except tires and reserves	0.053
Net excess of expense per bus-mile, except tires and reserves	0.016
Net loss per bus-mile, tire expense included	*0.066

* After crediting bus line with proportionate transfers and tickets.

Labor and the Electric Railways

Of Three Factors in Railway Operation, Employees, Public and Investor, Employees Come First—Their Co-operation Must Be Secured and the Public Be Convinced that Good Service Demands Fair Pay

BY BRITTON I. BUDD
President Chicago Elevated Lines and Chicago, North Shore & Milwaukee Railroad

THE electric railways of the United States are to-day facing the most serious problems in their history. Conditions brought about by the steadily increasing costs of operation, due to the enormously advanced prices of materials and labor, with revenues limited by national, state and municipal regulating authorities, call for clear thinking and sane acting, if receiverships and industrial chaos are to be averted. Owners of electric railways must look forward, not backward. The problems confronting them must be met and solved in the light of present day knowledge and understanding, rather than by the experience of the past. Especially does this apply in dealing with labor problems, for methods which might have been applicable even ten years ago are to-day obsolete and out of place.

THE EMPLOYEES, THE PUBLIC AND THE OWNERS

In the operation of electric railways there are three factors to be considered, namely, the employees, the public and the owners of the properties. Each factor is entitled to a fair return on his contribution toward the success of the enterprise, and each must be given consideration in determining what that return shall be. If one of the factors in this equation demands and receives more than its fair share, it must be at the expense of the other two factors, and this presents a condition which calls for an adjustment.

In my classification of the factors I have given the employees first place, because in many ways I feel they are the most important. If employees are reasonably well paid, if they are given the best working conditions which the character of the work will permit, they will be contented and will work and co-operate with the company. Such co-operation makes possible the best service to the public, which means a better return on its investment. If the employees and the public both are satisfied, the owners of the property are more apt to be satisfied, because operation under such conditions will be successful, assuming, of course, that revenues are sufficient to make a reasonable return to all factors.

Let us briefly consider what are the rights of each of the factors in this equation and their relations each to the other.

The National War Labor Board, in laying down certain general principles and policies to govern relations between workers and employers, has said: (1) "The right of all workers, including laborers, to a living wage, is hereby declared." (2) "In fixing wages, minimum rates of pay shall be established which will insure the subsistence of the worker and his family in health and reasonable comfort."

It will be observed that in laying down these general principles, the War Labor Board has not considered the financial condition of the employer. The inference is plain that workers are entitled to a living wage, and that the ability of the employer to pay that wage is not the main issue.

The owners of electric railways should face the situation squarely. Demands of employees for increased wages cannot be dismissed on the plea that the company is financially unable to meet them, even though that plea is literally true. Such a plea will satisfy neither the employees nor the public and it behooves the owners of electric railways to face about and seek ways and means of increasing revenues.

RAILWAYS ARE NOT A PHILANTHROPY

At the present time wage demands have been made on many electric railways which if granted would mean utter financial ruin, unless ways are found for increasing revenues. If the electric railways wish to be regarded as eleemosynary institutions and sell transportation at less than cost, the employees cannot be expected to engage in such philanthropic enterprises. The public should not receive goods at less than cost, at the expense of those engaged in producing such goods, and this applies to the investment made by both capital and labor.

The term "living wage," which the War Labor Board has declared each laborer entitled to, is rather a loose term and ambiguous. It would, however, be impossible for any board to define in exact terms what constitutes a living wage. We find one man supporting a family in comfort on a wage which another man similarly situated finds altogether inadequate. A great deal depends also on locality. What might be a fairly adequate wage in one part of the country may not be adequate in some other section.

LABOR MUST BE HELD IN A COMPETITIVE MARKET

The owners of electric railways, however, need not greatly concern themselves on that point. They must be prepared to pay wages relatively as high, all things being considered, as are paid in other industries, or they will not be able to procure the labor necessary to operate their lines. Many already are experiencing difficulty in this direction and the public suffers as a result of the quality of the service. However much we may differ in opinion as to what constitutes a fair rate of pay for employees of electric railways, we can all agree, I believe, that wages that were fair in pre-war times are not fair to-day, because the purchasing power of the dollar has materially decreased. We must recognize that fact and deal with our employees accordingly.

What are the rights of the public in the matter? What attitude should the public assume toward electric railways? The public is entitled to the best service that can be given for the price paid. In this respect the public often is short-sighted as it does not fully appreciate the relation of the service to the fare. It is impossible for any public utility company to give the best service unless it is earning a fair return on its investment. In other words, the character of the service must depend upon the price paid for that service.

Generally speaking, the attitude of the public toward electric railways and other utilities is not a fair one. While demanding more and more in the way of service, the public is unwilling to pay for what it asks and expects. Any suggestion of increasing rates for transportation usually meets with public opposition, regardless of the financial condition of the company. Prices of all other necessities advance, but to-day the price of transportation on many electric lines is actually less than it was ten years ago, although the service given has steadily improved.

WHERE DO THE OWNERS COME IN?

The owners of electric railways are entitled to as square a deal as the other two factors in the equation. They are performing a great public service, for which many times they receive neither credit nor adequate return on their investment. Sometimes, perhaps, they are themselves to blame. Too often in the past the electric railways have taken a position of standing between the public and increased fares. They have met the demands of their employees for increased wages with the assertion that the rate of fare will not warrant any advance in wages, and they have appealed to the public to support them in that position.

This policy has never earned the good will and support of the public, while it has incurred the ill-will of the employees. The owners must adopt a policy of perfect frankness with their partners in the industry. They must first have a good case to present, as most of them have, and then they should see that it is intelligently and frankly presented. They have no right to expect their employees to accept lower wages simply because they are selling their product to the public at too low a price. Instead of flatly opposing reasonable wage demands on the part of their employees, they should bend their energies toward producing higher revenues and, by dealing frankly and openly with their employees and the public, they will have the co-operation of the former and lessen the opposition of the latter.

RATE ADVANCES ARE GENERALLY SLOW

We all realize that it is an extremely difficult and slow proposition for a public utility company to advance rates. The manufacturer engaged in private enterprise meets increased wages or higher costs of materials by advancing the price of his product to the consumer. The burden is easily shifted. Not so with the electric railway company. It must be able to show the various commissions and boards, charged with the regulation of rates, that the increase asked for is justifiable. It is a matter of common knowledge that in some states, boards and commissions in making awards frequently are governed by popular sentiment rather than by the actual merits of the case. This makes it all the more necessary for public utilities to be frank and open in their relations with their employees.

Never was there a time as opportune for educational work on the part of electric railways as the present. They are absolutely essential to the successful prosecution of the war. The hundreds of thousands of employees engaged in war industries must be provided with means of transportation to and from their work. The public has grown accustomed to higher costs of every necessity, and the necessity for increasing wages is generally recognized, even if the scarcity of labor did not make such increases imperative in order to hold men in the industry.

ELECTRIC RAILWAYS ARE AN ESSENTIAL INDUSTRY

The importance of the electric railways in these war times is not yet fully appreciated by the public, but there is no one factor probably that is of more importance to the successful prosecution of the war than the electric railways, inasmuch as they serve practically every form of industry engaged in the manufacture of war munitions, ships, etc. In fact they are indispensable and it is most essential that their revenues be sufficient not only to enable them to maintain the best of service, but also to put in improvements and extensions to plants, shipyards, cantonments, naval stations and other war activities.

The banks, trust companies and insurance companies throughout the nation are large holders of the securities of electric railways, and conditions which would bring about depreciation of these securities would have a serious effect upon the entire financial structure of the country. Government officials realize the importance of the electric lines and have shown a disposition to deal with them fairly. This fact should be emphasized in every possible way, until the truth is forced upon the public mind. When the public is fully enlightened on the seriousness of the situation, the way will be paved for a comprehensive plan which may require national legislation to insure sufficient revenues to do justice to those who have invested their capital in electric railways and to enable the companies to perform the service which is expected of them.

In this campaign of enlightenment the employees of the companies, if fairly treated, will be found ready to co-operate. It is inexcusable to overlook the fact that the employees of the industry are a powerful influence in making public opinion. The question for the industry to determine in these critical times is how much of an effort it is willing to make to break down antagonisms that have existed too long and, in lieu thereof, to enlist the employees' help in working out the complex situation in which the companies find themselves. A way must be found to bring about this result. Although it may not always be possible to comply with all the demands which employees may make, it will be possible to go a considerable distance on the road to solving differences. Not to realize this is to miss completely the signs of the times—the entire drift of the relations between employer and employees—and the inevitable result of every controversy between the two.

Facts Must Be Faced

Messrs. Putnam and Doolittle Set Inquiring Journalist Aright in Regard to Operation in Cleveland

THE public does not understand. This applies both to the fundamental economics of the electric railway industry and to the detailed financial and operating facts in particular localities. Nor is this lack of knowledge confined to the so-called unthinking part of the public. Many an educated and influential citizen either does not realize or misunderstands the present serious conditions of utility operation.

A striking example of this fact is a reply that has been elicited by the open letter of Frank Putnam, of the Milwaukee Electric Railway & Light Company, to Charles E. Elmquist, president National Association of Railway & Utilities Commissioners, reproduced in the ELECTRIC RAILWAY JOURNAL of Aug. 17, page 298. The writer of the reply, an experienced journalist in a city in one of the Central States, takes issue with Mr. Putnam's conclusion that the condition of the electric railway industry demands federal relief, and he asks why other cities cannot do what Cleveland has done. He writes that, according to his understanding of the Cleveland situation, the fare at present is 5 cents, the wages are abnormally high, the bond interest and a sinking fund is assured and the stockholders will get 6 per cent on shares for which many paid little or nothing twenty-five to thirty years ago. If Cleveland can do all this "on terrifically watered stock" with a 5-cent fare, to say nothing of the previously existing 3-cent fare, he asks, why cannot other cities do the same?

HOW MR. DOOLITTLE SEES THE CLEVELAND SITUATION

In order to present the facts in the Cleveland case to the journalist and others needing similar information, both Mr. Putnam and F. W. Doolittle have prepared summaries which have been forwarded to the editor. Mr. Doolittle, in an exhaustive statement, has gone into the various pertinent phases of capitalization and operating results. He points out, for example, that in 1910 the stock of the Cleveland Railway, which was then $26,205,600, was scaled down $10,530,000. Of this about $8,250,000 represented accrued depreciation, and about $2,250,000 was a further reduction to bring the capitalization down to the amount allowed by the appraisal. Subsequent changes in capitalization have taken place under the provisions of the Tayler ordinance. The stock remains near par in spite of decreased earning power of the company, because the city in effect guarantees the 6 per cent return, and its option to purchase the stock of the company under the franchise must be exercised at 110 if at all. Moreover, owing to the scaling down above referred to, the stockholders are securing 6 per cent on only 60 per cent of the shares originally issued, or 3.6 per cent in effect on the par value of the original stock. As for wages, Cleveland is paying rates no higher than those of many other companies.

In general, the reasons why other cities have not been able to show the same results as Cleveland are outlined by Mr. Doolittle as follows:

1. The stock is not watered, but as shown by appraisal the company is under-capitalized by from $8,000,000 to $10,000,000, or 25 per cent to 30 per cent.
2. Interest has not been earned and large deficits are shown by the balance sheets of the company.
3. No reserves have been accumulated to insure replacement of worn out property.
4. The city's guaranty has maintained the company's credit and cheapened its cost of capital.
5. Operation is cheap in Cleveland as compared with other cities for these reasons:
    a.—All lines terminate in the center of the city, minimizing dead and low revenue car mileage but increasing the use of transfers, for which an extra charge is made.
    b.—The designated stop (skip-stop) system has been in effect since 1912, saving power and reducing wages per car mile because of the increased speed of cars.
    c.—Owing to designated stops, wide streets and co-operation of traffic police, the average speed of Cleveland street cars is 2 to 3 miles per hour higher than that of street cars in other comparable cities, enabling a given number of Cleveland street cars to transport a larger number of passengers within a stated time limit than a like number of cars in other cities.
    d.—Low accident hazard and consequent relatively small bill for injuries and accidents, owing to designated stops.
    e.—High percentage of trail car operation with increased headways but decreased cost of platform labor.
    f.—No line extensions unless immediately profitable.
    g.—Minimum expense for constructing pavement, as compared with that laid on electric railway systems in other cities of Cleveland's class.
    h.—Extensive use of short routing—that is, turning cars back before they reach the end of the line—to economize on car miles and car hours.
    i.—Minimum tax burdens, as compared with electric railways in other cities of Cleveland's class.
    j.—Standards of service much below those usually prescribed by regulating bodies.

All these things, Mr. Doolittle says, spell economy and represent savings growing out of co-operation between the various departments of the city government and the company.

MR. PUTNAM'S SUMMARY

The substantial facts of the Cleveland situation appear to Mr. Putnam to be as follows:

1. Cleveland's cheap car fares enabled those who bought them to ride for less than the actual cost of carrying them.
2. This deficit was covered partly by confiscation of a substantial percentage of actual investment, and partly by failure under city control to provide out of earnings for the replacement of worn-out and abandoned equipment.
3. This discarded equipment must now or hereafter be paid for by the Cleveland public in fares as much above normal for their period as the so-called 3-cent fare was below normal for its period. Car riders of to-day and to-morrow must make good the losses on the joy riding done by car riders of yesterday.
4. Public control has resulted in "watering" the company's scaled-down reorganization stock (by failing to replace worn out equipment), to the extent of $2,612,000, or about the same amount that the original stock was found to be "watered." On the assumption that the guaranty of 6 per cent yearly return on the investors' shares of the scaled-down stock was meant to represent only a fair rental for the use of their money engaged in public service, and that it was not meant to apply on the purchase by the city of the stock, the city it would appear must presently restore the balance between plant value and outstanding securities in one of these ways:
    a.—By confiscating stock of the company to the amount of $2,612,000—requiring that it be canceled and withdrawn; or
    b.—By authorizing car fares high enough to cover current operating interest and replacement cost, plus a percentage sufficient within a reasonable time to replace the wornout and abandoned equipment for whose replacement no provision was made during the low-fare period.

Mr. Putnam reiterates the outstanding facts in regard to the whole electric railway industry in this way:

1. Except subways financed with public credit, in one or two of the larger cities, new construction and purchase of additional equipment has ceased.
2. The railways are wearing out and for want of earnings at present fares to make repairs and replacements are declining in efficiency.
3. The failure of state regulation to assure a regular yearly fair interest return on legitimate investment, and to assure maintenance of the property in good condition, has made it next to impossible for electric railways to induce the public to invest its savings in the business—even though all new securities bear the approval of public service commissions.
4. The public, as dependent on adequate good street car service as it is on adequate good water supply for living in cities, and misled by newspapers and politicians constantly telling it about past electric railway sins instead of about present electric railway needs, is dangerously indifferent or openly hostile to every proposition to give the railways terms on which they can live and serve.

The radical newspapers, Mr. Putnam believes, are chiefly responsible for public ignorance of what is being done to their urban transportation systems, and it is up to the real newspapers to get and publish the new state of facts. In Mr. Putnam's words, this new state is:

"Yesterday in the electric railway business was the day of the franchise sellers and buyers, security promoters and sellers.

"To-day is the day of the trained engineers, trying to make $1 of street car earnings do the work of $2, and slowly learning how to get the needs of the business across to the public.

"To-morrow is either to be the day of the merchant in this business, selling good service at a fair price with popular satisfaction by modern merchandising methods, or it is to be the day of municipal or of state operation under either public ownership or management by trustees in the public interest.

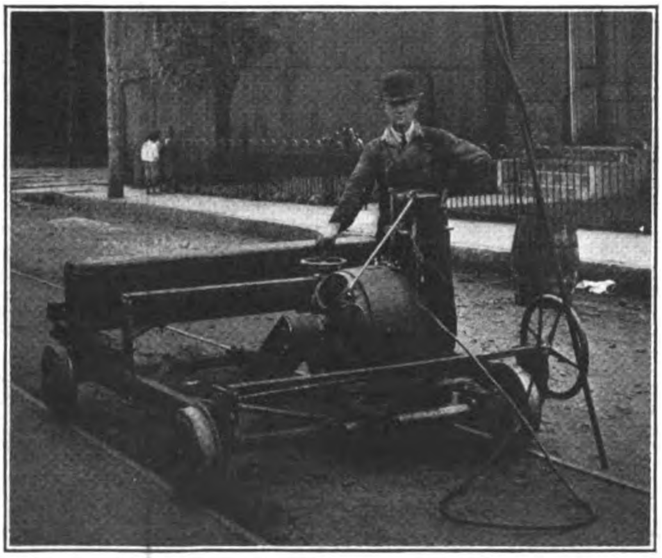
"Whatever is to come to-morrow, communities that lynch their street car systems to-day might as wisely dynamite their water supply systems."

An Effective Home-Made Track Grinder

BY C. L. CARTER

Superintendent and Chief Engineer Charlottesville & Albemarle Railway, Charlottesville, Va.

A TRACK GRINDER made from old material in the shops of the Charlottesville & Albemarle Railway has proved of great assistance in making track repairs. This consists of a framework of old rails, to connect the wheels and axles, on which is mounted a 5-hp. 500-volt motor. The motor is belted to the emery-wheel shaft. A gear is mounted on one of the wheels which meshes with a pinion on a shaft extending across the frame of the grinder. A steering wheel from an old automobile is attached to the end of this shaft and by turning this the girder is moved back and forth over the joint. A tool box is mounted on the opposite end of the grinder and under this a circuit of five lamps is installed to illuminate the joint when the work is being done at night. With this grinder and an Indianapolis welder, four men can, in a single night, build up and grind fifty joints, some of which are more than ¼ in. low.



TRACK GRINDER READY FOR SERVICE

Chicago Surface Lines Print 4,000,000 Transfers a Day

Printing Department of This System Has Recently Been Enlarged and New Machinery Installed to Meet the Increasing Requirements

THE Chicago Surface Lines handle more transfer passengers than any other street railway system in the world. The task of providing transfers which confronts the management is, therefore, no small one. Adequately to meet the growing demand for transfers a new Meisel rotary printing press was added recently to the equipment at the South Shore shops. The new press even when running below normal speed, 326 r.p.m. shaft speed, is more than able to take care of the transfer requirements. At low speed it turns out 132 sheets per minute, or 7920 per hour. The next higher speed calls for 8400 sheets per hour. Each sheet has the impressions for ninety-six transfers, and ten sheets are accumulated on the cylinder, delivered at once and jogged into place. The present output is at the rate of 43,000 sheets, or 4,128,000 transfers per day.

The general plan of the printing room, which is about 88 ft. long and 46 ft. wide, is indicated by the accompanying engraving giving a bird's-eye view of the plant.

FROM THE ROLL TO THE CAR STATION TRANSFER SUPPLY

The system of providing transfers for the Surface Lines works out about as follows: Rolls of paper, 31 in. wide, of four different colors are always kept on hand, the average supply running from 300,000 lb. to 400,000 lb. Paper is fed into the press from a roll, and while passing through it receives four different impressions—back, front, serial number and dating heads. As it comes out it is cut into sheets of ninety-six transfers each, which are jogged into place. When 100 sheets are in place they are taken off by the operator.

Next the sheets, 500 at once, are cut into six strips of sixteen transfers each by means of a Seybold cutting machine. Each hundred sheets of sixteen transfers are then fed into a new Christensen stitching machine, which turns them out in stitched packages at the rate of 162 books per minute, or five times the rate of the machine formerly used. Again these strips are put on the Seybold machine and cut into single books of 100 transfers each. The transfers are now ready for sorting and distribution.

GENERAL VIEW OF THE TRANSFER PRINTING ROOM

INTERIOR OF THE SORTING AND PACKING ROOM

Carried into another room, the transfers are put in bundles of ten books each with rubber bands. They are then wrapped in canvas packages to meet the requirements of each station. Printing is usually twenty days ahead of the date of issue, and the surplus supply which is not required at once at the stations is kept in fireproof steel bins in the shipping room. Transfers are sent to the stations about two weeks ahead of the date on which they are to be used. The station requirements call for 3,560,000 transfers daily, and these estimates stand for six months, the figures being different of course for Saturdays and Sundays.

OPERATING CAPACITY NOW AMPLE FOR SOME TIME TO COME

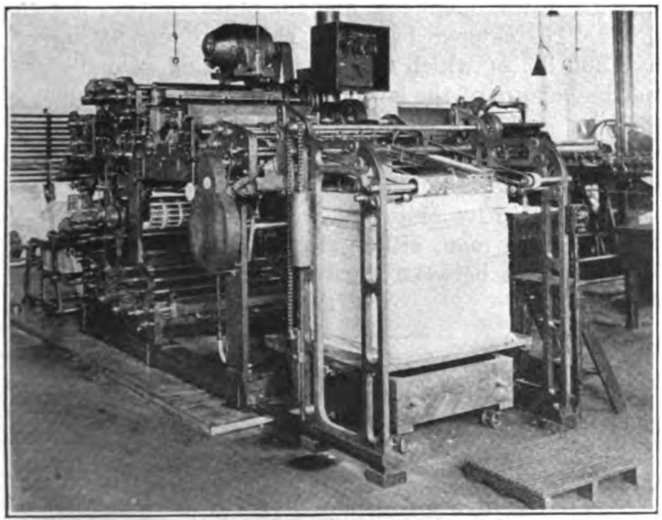
The new press has been in operation only a short time, and it has never been necessary to work it to full capacity. The old transfer press of the Kidder pattern, is kept ready for emergency use. This press has seen considerable service since it was installed in 1907. It turns out transfers at the rate of 7000 sheets per hour, there being fifty-five transfers to a sheet and only one sheet being cut at a time.

For some time the printing department has had trouble due to static electricity in the heavy filled paper used for transfer printing. When a change was made in the quality of paper the trouble was eliminated, and there has since been a noticable economy in the cost of manufacture.

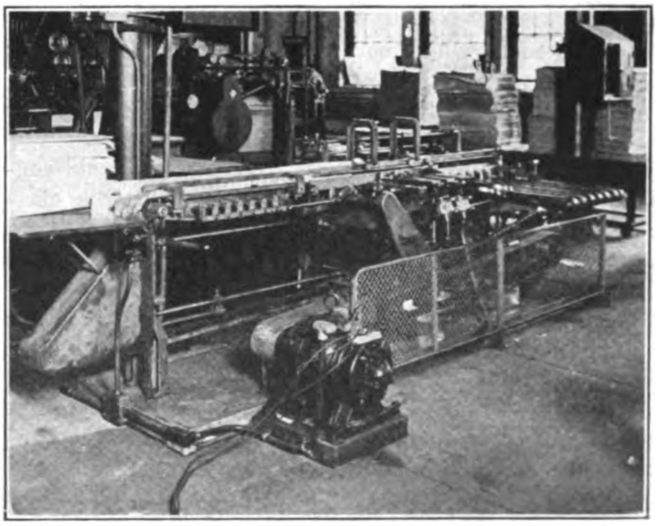
ONLY TWO TYPES OF TRANSFER USED

While the Chicago Surface Lines operate about 1000 miles of track and 172 different routes, the form of transfer which has been in use since 1914 has proved entirely satisfactory. There are only two types of transfers, one for north and south lines and the other for east and west lines. The former has the names of forty-four routes and the latter fifty-one routes. These ninety-five names are made to serve the purpose of the total of 172 routes by providing additional spaces for punch marks worded "Thro L," "Short L," "Downtown" and "Extension."

Thus cars on a Halsted Street line may be routed either "short" or "through" or "downtown," and by punching one of these spaces there is no need of printing the name "Halsted" so frequently. The color system is also used in addition to the word "north," "south," "east" or "west," so that a conductor may more readily determine the direction of travel of the passenger who hands him a transfer.



NEW ROTARY PRINTING PRESS INSTALLED



STITCHING MACHINE IN THE PRINTING ROOM

LETTERS TO THE EDITORS

Indiana Order on Freight Rates Contains Inconsistencies

Aug. 26, 1917.

TO THE EDITORS:

In the recent order issued by the Public Service Commission of Indiana granting increased freight rates to the various electric lines and abstracted on page 260 of your issue of Aug. 10, there are a number of peculiarities.

It will be remembered that when the Interstate Commerce Commission was considering the 15 per cent increase on steam railroads, considerable time was given to a study of the relation between the different classes, and the best steam railroad talent in the country was called into conference. As a result of this conference, which represented more than fifty years of experience of the steam railroads, the relation between class rates was established, it is understood, by Examiner Disque. Nevertheless the Indiana Commission says that its scale "is better balanced, better graduated and more logical than the steam railroad scale."

A comparison of the rates, which on the electric companies is based upon groups of 4 miles and on the steam railroads on groups of 5 miles, will show discrepancies as follows:

Miles	First Class	Second Class	Third Class	Fourth Class	Fifth Class	Sixth Class
10 Steam..................	25	21.5	17	12.5	9	7
10 Electric..................	23.5	20	16.5	13	9.5	7

It will be observed that there is a differential against the steam lines in all of the classes except the fourth and fifth classes. Most of the commodities handled are of the third and fifth class. For distances of ten miles or less from a large shipping center, most of the shipments, independent of the rate, are handled either by wagon or truck. Apparently the commission considered the electric line as a peddler for jobbing houses within a short radius. This will be demonstrated later.

Miles	First Class	Second Class	Third Class	Fourth Class	Fifth Class	Sixth Class
80 Steam..................	40	34	27	20	14	11.5
80 Electric..................	40.5	35	28.5	22.5	16	12

In this scale, which covers a very common haul, for the electric lines, local to some and inter-line with others, it will be noticed that the differential is in favor of the steam lines.

Again on interstate business, the Indiana scale conflicts with intrastate traffic. For example, the class rates from Louisville to Indianapolis, 117 miles, will be as follows: 46.5, 39.5, 31.5, 23, 16.5, 13. At the same time, the class rates from Jeffersonville to Indianapolis, 114 miles, will be 49.5, 42.5, 34.5, 27, 20, 15. In other words, the intermediate rate intrastate will be higher than the through rate interstate.

The city of Fort Wayne received a good many shipments from Indianapolis. The class rates from Indianapolis to Fort Wayne, via the electric line, 124 miles, will be as follows: 51.5, 44.5, 36, 28.5, 20.5, 15.5 as against the steam railroad rates of 47.5, 40, 32, 24, 17, 13. This will enable Toledo, Ohio, on account of interstate rates to enter the Fort Wayne field on the basis of the following rates via steam lines, 44.5, 37.5, 30, 22.5, 15.5, 12.5, or using the basis of a longer haul via electric line and using the electric line mileage of 137 miles the rates will be 49, 41.5, 32.5, 24.5, 17, 14. Again the class rates from Chicago to Fort Wayne, a distance of 147 miles, 50.5, 43, 34, 25.5, 17.5, 14.5, are lower than the electric line rates from Indianapolis to Fort Wayne. This is true to a greater extent between Indianapolis and Kendallville and between Indianapolis and South Bend.

It will be noticed that wherever the differential is given in favor of the electric lines it is on the higher classes, although it is a well-known fact that the shipments second class and higher form a very small percentage of the total tonnage handled by either steam or electric lines. The heavy tonnage, particularly of the electric lines is largely confined to the third, fourth and fifth classes which, under this order, are usually higher than those of the steam lines.

Long-haul freight traffic by the electric railways is penalized under this order, while the short-haul traffic out of commercial centers is divided between the electric lines and the trucking companies.

During the present war conditions the effort should be made to have the electric lines relieve steam lines of a great deal of the l. c. l. traffic to short-haul points, that is to say, "short haul" from the steam railroad point of view. The electric line has its place in the field of transportation, and if placed upon the same basis as the steam line it can relieve the steam lines of a vast amount of l. c. l. shipments, thereby allowing the steam railway equipment to be used in moving c. l. shipments of both commercial and government commodities.

The service performed by the electric line is just as valuable to the shipper and consignee for short haul distances as that of the steam railroad, and for the longer haul, even up to 200 miles, it is worth more to the public than the steam on account of the frequency of service and the short time consumed between terminal points as compared with the steam lines. The electric lines did not ask for an increase above the steam line rates but would have been satisfied with the same general increase.

From the shipper's standpoint, to have two separate bases for rates, one steam and the other electric, is confusing. No shipper having a shipment, consisting of say 1500 lb., of which 200 lb. is first and second class and the balance of the lower classes, will separate such a shipment and give the 200 lb. to the electric line on account of the differential in high-class rates and the balance to the steam line where the other classes are lower. The entire shipment will go to the steam line. To any traffic man, either electric or commercial, the inconsistencies between the rates are very apparent.

TRAFFIC SUPERINTENDENT.

Working through the Priorities Board, the War Industries Board is formulating a new list of preferred industries which will be almost twice as long as that issued last April. The list is maintained by a system of priority in determining the use of the six basic elements of industry, which are material, facilities, fuel, transportation, labor and capital.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE · PERSONAL MENTION · CONSTRUCTION NEWS

Municipal Ownership Offer

Inability to Agree on Advance in Fares Results in Offer from City to the Seattle Company

The transportation problem in Seattle, Wash., was given a new twist recently when Mayor Ole Hanson, in a letter to A. W. Leonard, president of the Puget Sound Traction, Light & Power Company, offering to take over the traction system and lines of the two private concerns operating in Seattle and run them under municipal operation.

The offer was made by Mayor Hanson and the City Council, following conferences held between city and traction officials, in which it became evident that no basis of agreement could be reached on the proposition of increasing railway revenues sufficiently to meet the requirements of the company in taking care of trainmen's increases. The City Council expressed itself as irrevocably opposed to an increase in fares, and President Leonard asserts that no other means of increasing revenues is practical.

The report of Thomas F. Murphine, superintendent of public utilities, who has completed an investigation of the books of the Puget Sound Company, recommends immediate improvement of railway service in Seattle, but opposes higher fares to meet added expenses.

THREE PLANS SUGGESTED

To increase the company's revenue, the report suggests three possible plans:

1. Increase the fare to 7 cents. This would add $1,282,279 to the revenue annually. 2. Increase the fare to 6 cents with 1 cent additional for transfers. This would increase the revenue approximately $1,000,000. 3. Reduce the cost by waiver by the city temporarily of the franchise requirements calling for the 2 per cent gross earnings tax, $400,000 for paving, and the charge for use of bridges built and maintained by the city, and add to the revenue by economies in management, such economies to include skip stops and one-man cars.

The third plan is strongly recommended by Superintendent Murphine for adoption. It is this plan that the Council as a whole favors.

President Leonard of the company argues that the plan is impracticable and purely theoretical, and that only a substantial increase in fares would enable the company to meet the new wage scale and provide additional service demanded by the city. He placed the rate of fare which he thought the company should be allowed to charge at 6 cents, with an additional cent for each transfer.

When it became evident that no agreement could be reached between city and company officials, the Mayor and Council made the offer to the company to lease the lines during the period of the war.

President Leonard declined to comment on the lease proposition, other than to say: "It has possibilities." It is expected, however, that F. S. Pratt, chairman of the board of directors of the company, who will arrive in Seattle shortly, will submit the matter to the board of directors.

A serious phase of the situation resulting from the failure of the city and company officials to agree upon the rate of fare to be charged, is the effect upon the wage agreements which had been entered into between the company and its employees. The new wage scale, under its original terms, was to have been ratified by Aug. 20, or the question of wages would be submitted to the War Labor Board for adjudication. Mayor Hanson has asked the local branch of the Amalgamated Association to delay action for another week, pending action of the companies on the proposition from the city.

Mayor Hanson and Mr. Murphine favor advanced wages to trainmen, and recommend the adoption of a flat scale for the municipal street car men of 62½ cents an hour, 2½ cents more than the maximum to be paid by the traction company.

Labor Board on Individual Contracts

Frank P. Walsh, joint chairman of the National War Labor Board, and Frederick N. Judson, alternate for Joint Chairman William Howard Taft, have issued the following statement with regard to the board's decision on Aug. 21, in the case of the Smith & Wesson Company, Springfield, Mass.:

"The National War Labor Board, in its recent ruling in this case, did not pass upon the validity of the individual contracts of the company with its employees, but said that whether such contracts were valid or not, a further making of them should be discontinued during the continuance of the war under the principles of the board, in the interest of industrial peace. The board also recommended for the same reason that the company should reinstate the employees who had been discharged for violation of the contracts, whether the discharge was legally valid or not under the terms of the contracts."

Denver Wage Negotiations

Company's Attitude on Wages and Unionization Stated Frankly to the Public

The answer of the Denver (Col.) Tramway to the demand of employees for a wage increase averaging 22 cents and hour, and totaling $882,596 a year, is an offer of an increase of 6 cents an hour, totaling $240,708 a year.

At the end of a conference between F. W. Hild, general manager of the company, and a committee of the employees, no agreement being reached, the committee announced that if the company agreed the union would be willing to take the matter before the War Labor Board at Washington. The union would not consent to lay its case before the Colorado Utilties Commission.

PRESENT WAGES ADEQUATE

The reply of the tramway to the wage schedule proposed by the new association asserts that the wage increases announced by the company on July 16, to go into effect from Aug. 15, are just and sufficient, because on the whole they parallel the increase in the cost of living.

The accompanying table shows the scale of wages in cents per hour in effect in 1914, the scale now granted by the tramway, and the scale demanded by the trainmen:

TRAMWAY TRAINMEN'S WAGE SCHEDULE PER HOUR

Years of Service	1914 Scale	1918 Scale (Aug. 15)	Per Cent Increase Granted	Scale Asked by Trainmen	Per Cent Increase Demanded
First	24	34	41.8	50	108
Second	26½	36½	37.7	52½	98
Third, fourth and Fourth.					
Fifth	28	38	35	55	96.4
Sixth and following	30	40	33⅓	55	83.3

The demand of the union for a closed shop contract is answered by the tramway with the statement that the policy of the company is exactly the same as the policy of the government as expressed by President Wilson and as laid down by the War Labor Board in its statement of April 8.

The wage question is discussed at length in a pamphlet addressed to all the employees of the company on Aug. 18. The matter was considered of such vital concern that copies were distributed for the information of the public.

Cincinnati Settlement Ordinance Passed

Service-at-Cost an Outstanding Feature of New Grant, Which Will Expire in 1931

The revised railway ordinance, upon which a committee has been at work for some time, was passed by the Council of Cincinnati, Ohio, on Aug. 23 by a vote of twenty-five to three. It provides for a sliding scale of fare based upon the cost of operation, with 5 cents as the initial rate. Mayor Galvin had already pledged his signature to the ordinance, which is to become operative on Sept. 23, unless referendum proceedings should block it. The grant will expire on April 27, 1931, the end of the revision period.

FEW CHANGES MADE

Of the 167 amendments adopted by the general committee since the submission of the draft by the sub-committee on Aug. 9, all but a few related to phraseology and other minor matters. In the main, the provisions are as established by the sub-committee.

The most important amendment accepted by both the company and the committee substituted an initial fare of 5 cents for one of 6 cents, as provided in the original draft. A long discussion of this point took place before the committee on the day previous to the passage of the ordinance and the company agreed to it in order to give it a test that will satisfy the public. At the same time Walter A. Draper, vice-president, stated that the officers felt sure that it would not yield an income sufficient to cover the expenses.

The 5-cent rate will continue three months, after which readjustment will be made every two months, with one month additional each time for putting the new rate into operation. This really means that the periods of change will be three months apart. At the last committee meeting the citizens' committee seems to have changed front and asked for a flat rate of 5 cents for the entire revision period of thirteen years, with a 6-cent rate during the period of the war and one year thereafter. This was probably due to a realization that the rate might run higher than 5 cents at other times than during the war.

The change in rate in the fare schedule is one-half of 1 cent at a time. For instance, if, at the end of the first three months, it is found that there is a deficit, the rate will be advanced to 5½ cents. Should the same condition prevail two months thereafter, the 6-cent rate will go into effect at the expiration of the third month. Likewise, the fare will be reduced automatically one-half of 1 cent each time, when it is shown that an unnecessary surplus is accumulating.

CLEVELAND FARE PLAN COPIED

For regulating the fare, a plan has been adopted resembling that in effect at Cleveland. A reserve fund of $400,000 will be provided, into which will be paid all surplus remaining after the payment of operating expenses, taxes and returns on investment and for rentals. When this fund shall have reached $650,000, the fare is to be reduced to the next lower rate. It is provided that when the income is insufficient to meet the expenses and payments mentioned, the deficiency shall be made up from the reserve fund. When the fund reaches a minimum of $250,000, the fare shall be advanced to the next higher rate. The company must provide the minimum of $250,000 and the amount must remain above this to preserve the initial rate.

An amendment made to the original draft at the last meeting of the committee gives to the city complete control of the re-routing of cars and the construction of extensions.

TERMS FOR INTERURBAN OPERATION

All of the principal provisions of the loop lease ordinance passed last year were embodied in this ordinance, except those which were specifically set aside by the Supreme Court.

The company is authorized to carry freight and express over its tracks during non-rush hours. The receipts from this source are to be used for the reduction of the passenger rate.

Provision is made for the operation of interurban cars over the company's tracks on terms to be agreed upon by the companies interested. If an interurban company should not be satisfied with the terms demanded, it may appeal to the city and the city's order shall be enforceable. The company is also required to make track connections with any rapid transit or underground railway that may be constructed by the city.

The company objected to the provision which requires it to make out an annual budget subject to the approval of the Director of Street Railroads. Supplemental budgets may be made out to take care of emergencies.

INCENTIVE TO LOWER FARES

As an incentive to lower fares, when the rate of fare is 5 cents or less, 55 per cent of the surplus gross receipts is to be paid to the reserve fund and 45 per cent to the company. When the rate is 5½ cents, 70 per cent is to go to the reserve fund and 30 per cent to the company. When it is 6 cents, 80 per cent will go to the reserve fund and 20 per cent to the company and when the rate is above 6 cents, all the surplus receipts are to be paid into the reserve fund.

The other provisions of the ordinance remain substantially as summarized in the ELECTRIC RAILWAY JOURNAL for Aug. 17, page 302.

The sub-committee which framed the original revision of the ordinance consisted of the following: Director of Street Railroads W. C. Culkins, City Solicitor Saul Zielonka, Assistant City Solicitor Dennis J. Ryan, Councilman Cliff E. Martin, James A. Wilson, member of the Mayor's Advisory Board, and Charles A. Groom, attorney for the Cincinnati Traction Company.

The general committee which conducted the hearings and recommended the ordinance for passage included Councilmen George J. Schlichte, Michael Mullen, O. K. Jones, Cliff E. Martin and John Burkhauser, comprising the Council committee on street railroads, and James A. Wilson, James P. Orr, C. H. M. Atkins, G. M. Sherz and Walter J. Friedlander, making up the Mayor's advisory committee.

It will require a petition with the names of 10,000 voters to bring the ordinance to a referendum vote.

Chicago Measure Repassed

The Chicago traction ordinance, passed by the City Council on Aug. 14, was again approved by the same body on Aug. 22, after Mayor Thompson had vetoed the measure and after States Attorney Hoyne had turned the matter over to the grand jury to investigate charges of corruption in connection with its passage. The vote of fifty-one to nineteen, a gain of three supporters, showed how the Aldermen were impressed by the action of the Mayor and the State's Attorney. Politics was said to be the basis for opposition on the part of both these officials. The latest reports from the grand jury were to the effect that no basis for criminal action had been found.

Hardly had the franchise been passed on Aug. 14 when the States Attorney sprung his charges of bribery and brought them to the attention of the grand jury. Aldermen who had voted against the measure, as well as several real estate dealers, were subpœnaed and there were many stories printed about money having been promised for votes. There was no mention of company officials in this connection. The newspapers did not take the charges seriously, and it was suggested that the State's Attorney had taken this step to "steal the thunder" of Mayor Thompson, who is a candidate for United States Senator and was known to be opposed to the ordinance.

Even when the Council was about to convene on Aug. 22 to listen to the Mayor's veto message, the State's Attorney had his deputies around the city hall serving subpœnas. The Mayor's message was bitter in condemnation of the ordinance. When it had been presented the Aldermen debated for five hours and the count of votes then showed an overwhelming majority in favor of submitting the measure to popular referendum.

While the Council's approval does nothing more than give the people a chance to vote on the measure, it is likely that politics will play a big part in its consideration during the next few months. The popular vote will take place on Nov. 5.

Nation to Control Power Resources

Proposed Bill Gives President the Authority to Build or Use Stations or Energy to Meet the Paramount National Interest

T. W. Sims, chairman of the House committe on interstate and foreign commerce, has introduced in the House of Representatives a bill to provide further for the national security and defense, and for the more effective prosecution of the war, by furnishing means for the better utilization of the existing sources of electrical and mechanical power and for the development of new sources of such power. The bill provides $150,000 for administrative expenses and $200,000,000 for the purchase and building of power plants.

The proposed legislation is to be known as the emergency power act. It is not to be confused with the water power bill now pending in the House of Representatives. It will not be considered in connection with that bill, which is already on the floor of the House, while the emergency power act has just been referred to the committee.

In making the bill public, Mr. Sims issued a statement in part as follows:

> We are facing a power shortage which is and for some time past has been acute and is hampering our progress on war production. So this measure authorizes the President to erect power stations near the coal mines and at other points where he may deem them necessary, or to extend financial aid to persons or corporations about to do so, and therefore desiring to secure results of tremendous, immediate and inestimable value to America. It is considered necessary by representatives of the administration, by representatives of the great power companies and by economists, who attacked the problem from various view points, and is indorsed by all of them.
>
> The plans are to confer upon the President all necessary power to deal with the urgent power situation properly and effectively and to place at his disposal sufficient funds with which to assure adequate operation. The bill concerns:
>
> 1. Increased production of power available for war industries and shipyards.
> 2. Economy in the use of fuel.
> 3. Reduction in the railroad freight load, especially in the fuel load.
> 4. Increased production of metallurgical coke, toluol, ammoniacal liquor, all recovered from coal.
>
> The greatest immediate need is perhaps to give the munition factories and shipyards additional power, which cannot be supplied by the existing supply companies with the most economical and efficient means of producing power, and to decrease the amount of fuel to be transported by the railroads and in turn make possible an early electrification of congested railway lines, which Director General McAdoo prepared for only a few days ago.
>
> In addition to our war needs there is a wide spread demand for increased production and adequate distribution of fuel, light, heat and power for city, rural communities and industries, which will continue to increase after the war when the country will return to normal conditions and can and will compete for the trade of the world.
>
> The plan adopted to solve any one of those problems should primarily include conservation of transportation and increased production of coal products and power. The appropriation required for all these is provided in the bill just introduced.

The bill grants sweeping authority to the President to construct power plants, to install and lease additional machinery in existing private plants, to make advances for expanding private plants, to acquire or lease private plants or to commandeer the power output. Provision is made for repayment of government advances and for the return of private property at the President's will.

The bill includes penalties of imprisonment or fine or both for any who knowingly neglect or refuse to comply with any order or requisition made by the President or any officer, agent or agency designated or created under the act.

The proposed act has the backing of the administration. The bill was drawn three months ago by the War Industries Board after consultation with J. B. McCall of Philadelphia, P. H. Gadsden and E. K. Hall. It was submitted to several public utility companies at the instance of different departments of the federal government.

At hearings beginning on Aug. 23 Secretary of War Baker made a general statement to express, after conversation with President Wilson, the attitude that should be taken by Congress toward an increase of power facilities to assist in winning the war. Secretary Baker said that there is existing power to take over plants and operate them on government account, and the War Department has taken over some and is operating them.

In his opinion, however, this is not the time to settle the great policy of federal ownership. What is wanted now is to get the power. He thought that in passing legislation of this sort the question should be left wide open so that the succeeding Congresses will be free to determine the great peace policy when the time comes for them to turn their attention to it.

In regard to the basis upon which utilities might repay government loans, Secretary Baker said:

"We ought not to jump at an estimate of the difference between peacetime value and war-time costs, but ought to make an arrangement by which the government will aid in the financing as far as may be necessary and allow the exact amount of the government's contribution to be determined after the war is over and things have returned to normal by an appraisement of the value of the plants to the company, and let the government then pay the difference between the appraised value and the cost during war times."

$200,000,000 Will Be Needed

Lieut. W. W. Stanley, executive assistant to Frederick Darlington, chief of the power section, War Industries Board, testified that in the Philadelphia, Chester and adjacent district there will be required during this year and next year about 120,000 hp. additional, at an estimated cost of $14,500,000. New Jersey will require at least 40,000 hp., estimated to cost $5,500,000. The Pittsburgh District will need 440,000 additional hp., at an estimated cost of $35,000,000. Baltimore, Lancaster and the territory between will need 53,000 hp. more, at an estimated cost of $3,942,000. The Pennsylvania anthracite region needs 53,000 kw., involving an estimated cost of $8,000,000.

Seventy of the larger New England plants, out of a total of about 260, will need 75,000 hp., additional, and the cost is estimated at $14,625,000. In the Southern States the additional power required for 1918 and 1919 will be 135,000 hp. It will cost approximately $15,000,000. A miscellaneous group of smaller power systems in the Eastern and Middle West States will need about 250,000 hp., at an estimated cost of $31,250,000. The Pacific group is short of power, owing principally to the increase in shipbuilding on the Pacific Coast, and a preliminary estimate of desirable expenditure for this year and next year is not less than $10,000,000.

The total figures show a present installation of about 3,716,210 hp., and 1,233,300 hp. more are required at a total cost of $138,427,000. Lieutenant Stanley said that it is not intended that these figures shall be final. It cannot be predicted in power what the increase of the army to 5,000,000 men will mean. These figures do not make allowances for that increase. An estimated expenditure of $200,000,000, however, is not too large by any means, because work all over the country will have to be started this fall and next winter and next spring, as soon as weather conditions are considered favorable, to get the plants built in time to pick up the load that will come on as the army and navy contracts are fulfilled.

Bernard M. Baruch, chairman of the War Industries Board, stated that the board feels not only that it should help work out the war program, but that it should look after the necessary and vital civilian needs—that is, the heating, lighting and transportation necessary in order that the populace back of the army may live in ordinary comfort.

In speaking of the coal situation Mr. Baruch declared that the real reason why the emergency power legislation is wanted is the immediate need of power in the quickest way to get it, and he believes that the cheapest way to get it and the only way to get it is as suggested by this bill.

Relief Plan Impracticable

F. I. Fuller, of the Portland Railway, Light & Power Company, Portland, Ore., has advised the City Council that the plan of operating city railway cars over the lines of the Southern Pacific Company, to serve the shipyards, is impracticable. He asserts that there are no cars available in the equipment of either company, and in addition numerous switches and side tracks would have to be built for this service, as there is now only a single-track railway past these industries.

News Notes

Fire Destroys Power Plant.—The power plant of the Rock Island Southern Railroad at Cameron, Ill., was destroyed by fire recently. The entire equipment of the building, as well as several cars, was burned. Arrangements have been made with the Illinois Traction System to secure energy from Galesburg for a short time.

Public Opinion in Favor of Mr. Cameron.—Although more than a month has passed, no return has been made on the indictment charging Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., with instigating the theft of referendum petitions, as noted in the ELECTRIC RAILWAY JOURNAL of July 20. Indeed, accountants employed by Circuit Attorney McDaniels to investigate the case have reported themselves unable to find payments alleged by one Jackson, who committed the theft and upon whose charges the indictment was drawn. Public opinion is growing that Jackson's story was a product of the imagination.

Agreement on Working Hours.—An agreement between the United Railways, St. Louis, Mo., and the union of its employees regarding the working hours for the men became effective on Aug. 15 according to Anthony O. Piant, president of the union. By terms of the agreement all runs are to be ten hours, or as near as conditions will permit. A 25 per cent bonus is to be paid to regulars for overtime. Car crews who work five hours or less will receive pay for the full five hours. Those working more than five hours will be paid for eight hours. Regular crews will be paid a 25 per cent bonus over platform time for single trips. Motormen will be paid 10 cents for each bundle of newspapers which they handle.

Electrification at San Francisco.—Electrification of the Belt Line Railroad in San Francisco, Cal., has been decided upon by the State Board of Harbor Commissioners under whose jurisdiction the line operates. The Belt Line runs along the waterfront, connecting the various piers with the several railroads that enter San Francisco. The decision to electrify was primarily the result of the high cost and the uncertain delivery of additional steam equipment which is now needed. It is recognized, however, that electrification will improve the terminal facilities and decrease fire hazard. While trolleys and feeder lines are being strung, it has been deemed advisable to provide also for electric service on the piers so that labor saving devices, which may be installed later, can be readily accommodated.

Board of Control Reports on Kansas City Railways.—The annual report of Robert P. Woods, city member of the Board of Control of the Kansas City (Mo.) Railways, has been issued for the fourth year, ended July 7, 1918. The report contains 241 typewritten pages, 8 in. x 11 in., including many tables and several illustrations. It is bound in cloth boards. The introduction is a brief résumé of the events of the year, and the remainder of the report is divided into chapters on accounting, way and structures, transportation, equipment and power, electrical distribution and substations, summary of contents of previous reports and several appendages. Some of the more important subjects covered are a special financial report with the budget for 1918. The history of the skip-stop, data on the 6-cent fare case, a report of the increased power rate case between the railways and the light company, and a history of the various labor troubles which have occurred during the year.

Temporary Wage Increase at Holyoke.—The Massachusetts State Board of Conciliation and Arbitration has awarded a temporary increase of 6 cents an hour to employees of the Holyoke Street Railway, covering the period from June 14 to Oct. 1, 1918, when a new agreement will be made. The following wages now apply: First six months, 35 cents; one year, 36 cents; two years, 37 cents; three years, 39 cents; four years, 41 cents an hour. The carmen's petition for another increase after Oct. 1 will be settled on the basis of initial periods in the first year of three and nine months, with 41 cents an hour as the minimum rate for all who have worked more than one year. The present decision of the State board awards linemen, shop and carhouse employees and truckmen 8 cents an hour increase over the rate of wages in effect on Sept. 17, 1916. The wages of employees who have by agreement received an increase of 8 cents an hour since the foregoing date are not to be reduced.

Government Needs Thousands of Draftsmen for War Work.—The vast activities of the government in construction and manufacture in connection with the war program necessitate the employment of literally thousands of additional draftsmen of various kinds. The United States Civil Service Commission, whose duty it is to recruit these civilian positions, announces vacancies in large numbers of drafting positions. The filing of these positions is urgently necessary, as they have a direct connection with the war organization. Applicants will not be required to report at any place for examination, the ratings being based upon the applicant's education, training, experience, etc., as shown by the application and corroborative evidence. Full information and application blanks may be obtained by communicating with the United States Civil Service Commission, Washington, D. C., or with the secretary of the board of civil service examiners at Boston, New York, Philadelphia, Atlanta, Cincinnati, Chicago, St. Paul, St. Louis, New Orleans, Seattle or San Francisco.

Emergency Railway Lease Arranged.—The Board of Public Utility Commissioners of New Jersey has approved the proposition of the Emergency Fleet Railway, a part of the United States Emergency Fleet Corporation, to lease a war emergency trolley line from Gloucester City to Newton Creek, in Camden County, N. J., to the Public Service Railway for the period of the war and six months after the war. The line will be built and operated by the Public Service Railway for the Emergency Fleet Railway, and the Public Service Railway is to pay annually 5 per cent of the cost of the road as rental to the leasing company. At the close of the war the Public Service Railway will lease the line for 75 per cent of its cost. This line has been found necessary by the Emergency Fleet Corporation to provide transportation facilities for workers in the shipyards of the New York Shipbuilding Company at Camden and the Pusey & Jones yards in Gloucester City. The cost of the road will be about $215,947. The Emergency Fleet Railway was recently incorporated.

Program of Meeting

Safety Congress at St. Louis This Year

One hundred and seventy-four speakers are scheduled to address the Sixth Annual Safety Congress, which will be held in the Hotel Statler, St. Louis, Mo., from Sept. 16 to 20 inclusive. President Wilson will give a five-minute talk by telephone from Washington, Charles M. Schwab will speak on "The Democratization of Industry," Secretary Franklin K. Lane will discuss "Safety as an Asset in Winning the War," and many other men of national reputation will appear on the program.

The electric railway section will meet on Sept. 19, at 9.30 a. m.

The program is as follows:

Reports of officers and committees. Addresses: "Getting Results: Education vs. Discipline," by C. G. Rice, Pittsburgh Railways; "How the Various Efforts to Promote Safety in a Community Can Be Co-ordinated," by V. J. Waltz, Toledo Railways & Light Company; "The Small Company and Intensive Training," speaker to be announced; "The Mission of the Municipal Publicity Expert," by D. E. Parsons, East St. Louis & Suburban Railway; "The Conservation of Humanity and Prevention of Accidents by Traffic Survey," by R. N. Hemming, Fort Wayne & Northern Indiana Traction Company.

The officers of the electric railway section this year are: Chairman, Julien H. Harvey, Director Public Safety Campaign, Rochester, N. Y.; vice-chairman, S. W. Baldwin, The Connecticut Company; secretary, J. C. Davidson, Denver Tramways.

Financial and Corporate

Appeals to Put Work Off

Capital Issues Committee Wants All New Utility Work Stopped Except that Necessary to War

Every extension of an electric railway line, electric lighting system, water main, street paving or other public utility enterprise not absolutely essential to the war should be postponed until peace times, said the Capital Issues Committee in a letter sent on Aug. 26 to all state public utility commissions. These state bodies were urged not only to frown upon additions and betterments requiring capital expenditures, but also to remove from public service corporations, if possible, the necessity of carrying out contract or franchise obligations which might be dispensed with in the war emergency.

A Preliminary Measure

The letter was the first of several measures planned by the Capital Issues Committee in co-operation with the Treasury and other financial agencies to draw tighter the nation's purse strings and prevent by a voluntary, though effective, method of supervision the dissipating of capital in less essential enterprises. In writing to the state commissioners the committee made the following statement:

"You are, of course, familiar with the creation by Congress of the Capital Issues Committee for the purpose of giving effect to the Government's policy of 'War Business First' by supervising the issuance of new securities for capital expenditures. It is plain that all of us must avoid every unnecessary use of capital, involving also the use of labor and materials, in order not to interfere with the financial and industrial requirements of the government in its paramount task of waging and winning the war.

"If the men, money and material which the government needs are to be made available for essential war purposes, there must necessarily be a considerable degree of sacrifice on the part of individuals, communities and corporations in adjusting themselves to the substitutions and changed standards which the situation compels. Existing facilities must be made to serve in place of new ones, regardless of temporary inconvenience and discomfort, unless the public health or paramount local economic necessity is involved.

Apply with Marked Force to Utilities

"May we suggest to you that these considerations apply with marked force to the public utility situation. The extensions and betterments which public service corporations are accustomed to make in normal times, either on the initiative of their own enterprise or by direction of the regulating commissions under which they operate should, in our opinion, be postponed until after the war, unless an immediate war purpose is served, and may we ask of you consideration of the propriety of deferring even the performance of contractual obligations arising from franchise or other local requirements, when no military or local economic necessity is served by such expenditures.

"The Capital Issues Committee feels certain that your commission will recognize the paramount need of the national government when passing upon proposed additions and extensions by public utility companies, and asks that you co-operate in giving effect to the purposes of the government by restricting every unnecessary use of capital, labor and materials for extensions, betterments, street paving, or other purposes, even waiving, if in your power, the legal requirements that obtain in times of peace, until the present emergency has passed."

Committee Has Whip Hand

The suggestion of the committee, which consist of seven members, with Charles S. Hamlin, member of the federal reserve board, as chairman, carries special weight in view of the committee's power to supervise applications for issuance of stocks, bonds or other securities for capital purposes, and to withhold its approval if it deems the project non-essential to the war. Recent developments have shown that most banks and organized investors decline to buy securities not approved by the committee.

P. R. T. Stockholders Meet in October

The annual meeting of the stockholders of the Philadelphia Rapid Transit Company regularly called for Sept. 18, the third Wednesday of the month, will be adjourned until Oct. 16, the third Wednesday of October, and the completion of the full annual report for the year ended June 30, 1918, will be deferred until after the date set by the Public Service Commission for its consideration of the city contract. As the action of the commission on this important matter will be far-reaching in its effects on the future financing of the company and the transportation facilities supplied to the public, it is greatly desired that the management be in a position, when submitting the annual report to the stockholders in October, to then recommend such policy as may be made necessary by the decision of the Public Service Commission.

Reorganization Approved

California Commission Sanctions Plan for Rehabilitation of Petaluma & Santa Rosa Railway

The California Commission has issued an order approving the reorganization plan of the Petaluma & Santa Rosa Railway. This plan contemplates that the properties of the company, which have been ordered at foreclosure sale, be acquired by a new corporation.

1,872,000 of new securities.

Under the order of the commission the new corporation is authorized to issue $698,400 of 5½ per cent, twenty-five-year first mortgage bonds, $173,600 of 6 per cent cumulative preferred stock, and $1,000,000 of common stock to acquire the properties. The order of the commission, however, provides that none of these securities shall be issued until the commission has rendered a supplemental order approving the company's articles of incorporation and trust deed.

The Petaluma & Santa Rosa Railway has outstanding $655,000 of 5 per cent first mortgage bonds due on March 1, 1924, $217,000 face value of 6 per cent second mortgage bonds, due on April 21, 1917, and $994,100 of common stock. In addition the company has pledged $80,000 of first mortgage and $33,000 of second mortgage bonds to secure the payment of $76.600 of notes.

The holdres of stock of the Petaluma & Santa Rosa Railway are asked to subscribe for stock in the new company at the rate of $10 a share. The funds thus realized will be used to pay the $76,600 of notes and pay reorganization expenses. The first mortgage bondholders of the Petaluma & Santa Rosa Railway are to receive an equal amount of 5½ per cent bonds of the new corporation. The $217,000 of second mortgage bonds outstanding will be refunded through the issue of $43,400 of first mortgage bonds, $43,400 of common stock and $173,600 of 6 per cent preferred stock.

Voting Trust for Seven Years

In referring to the voting trust, the commission in its decision makes the following comment:

"The reorganization plan provides for a voting trust, effective for a period of seven years, under the terms of which the preferred stockholders are given control of the properties in the event that the dividends on the preferred stock are not paid regularly. We believe that all classes of stockholders should have all the power and control to which their ownership entitles them. We do not believe that one class of stockholders should be restricted in their complete enjoyment of all their usual rights. However, as they have seen fit, or may be willing, to surrender their rights, the commission should not interpose any objections."

Denver Feels Higher Costs

Result of Operation in 1917 Was a Decline in Net Income from $424,700 to $201,500

The gross earnings of the Denver (Col.) Tramway System during the year ended Dec. 31, 1917, increased $143,591 or 4.38 per cent over those for the preceding year. The operating expenses, however, advanced $301,158 or 18.6 per cent. This increase was principally caused by wage grants at the rate of $161,000 a year and the great rise in costs of materials.

The taxes in 1917 increased approximately $76,742. On the other hand, the other income fell off slightly. The deductions from income decreased on account of retirement of bonds through sinking funds and maturities. The net result of these changes was a loss in net income from $424,732 in 1916 to $201,553 in 1917.

During the last calendar year the expenditures for betterments and improvements totaled $237,347. Of this amount $167,336 covered the cost of a new steam turbo-generator of 9375 kva. capacity, with condenser and auxiliaries, and one 3000 kw. rotary converter with transformer and additional switchboard apparatus. This installation brought substantial savings through the large reduction in coal consumption and the reduction in power-plant payroll. Owing to the doubling of coal prices, however, the power-plant economies were practically all absorbed.

The operating ratio (taxes not included) was 56.0 per cent for the Denver Tramway in 1917, as compared to 66.6 per cent for the United States and 66.9 per cent for the Western District. Moreover, the report states, the cost of operating a car one mile averaged 17.04 cents for 1916 and 19.95 cents for 1917 in the case of twenty-two American cities, while the same costs for the Denver Tramway were 13.03 cents and 15.38 cents respectively.

The accompanying table gives some miscellaneous statistics for passenger traffic and earnings on the city and the interurban lines of the system.

TRAFFIC STATISTICS OF DENVER TRAMWAY SYSTEM FOR CALENDAR YEARS 1916 AND 1917

	1917	1916
Passengers carried:		
City lines	78,908,562	75,133,046
Interurban lines	1,075,435	1,065,451
Total	79,983,997	76,198,497
Passenger earnings per car mile (cents):		
City lines	26.65	25.86
Interurban lines	27.76	29.30
Passenger earnings per car hour:		
City lines	$2.55	$2.49
Interurban lines	4.95	4.89
Car miles operated, passenger:		
City lines	11,696,325	11,427,964
Interurban lines	381,162	389,726
Total	12,077,487	11,817,690
Car hours operated, passenger:		
City lines	1,220,789	1,184,588.2
Interurban lines	21,359	23,351.2
Total	1,242,148	1,207,939.4

COMPARATIVE INCOME STATEMENT OF DENVER TRAMWAY SYSTEM FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	$3,419,467	100.0	$3,275,876	100.0
Operating expenses (including partial depreciation):				
Maintenance	$472,313	13.8	$317,301	9.7
Operation	1,143,194	33.4	1,026,268	31.3
General	300,426	8.8	271,206	8.3
Total	$1,915,933	56.0	$1,614,775	49.3
Net earnings	$1,503,534	44.0	$1,661,101	50.7
Taxes and franchise payments	353,182	10.3	276,440	8.4
Operating income	$1,150,352	33.7	$1,384,661	42.3
Other income	19,818	0.5	21,233	0.6
Gross income	$1,170,170	34.2	$1,405,894	42.9
Deductions from income:				
Interest on funded debt	$966,440	28.2	$980,488	29.9
Interest on notes and accounts payable	2,177	0.1	674	0.0
Total	$968,617	28.3	$981,162	29.9
Net income	$201,553	5.9	$424,733	13.0

Increased Traffic in Glasgow

The report of the Glasglow Corporation Tramways Department for the financial year ended May 31, 1918, shows substantial increases. The traffic receipts amounted to $6,833,102, an increase of $771,837 over the preceding year, while the number of passengers carried reached the aggregate of 430,946,566, an increase of 42,651,690.

As was the case a year ago, the returns show an increase in the number of passengers carried at each of the several fare denominations from 1 cent to 8 cents. The large increase has occurred, however, in the number of passengers carried for the 1-cent fare—272,902,138, a gain of 24,930,790 passengers. There is an increase of 10,489,891 in the number of passengers carried for the 2-cent fare. As compared to the 272,902,138 passengers transported at the 1-cent fare, the total for all other fares is 158,044,428.

The car mileage was 26,261,231, an increase of 475,184 miles. Traffic receipts per car-mile were 25 cents, an increase of 2½ cents, and traffic receipts per passenger were 1½ cents, an increase of 0.023 cent. Passengers carried per car-mile numbered 16.409, an increase of 1350.

New Capital Stock Tax Rulings

Collector William H. Edwards of New York made a statement on Aug. 27 to elucidate the capital stock tax, returns for which must be filed and payments made by Sept. 30.

The statement is based on the latest rulings from Washington. Mr. Edwards said:

"All companies not specifically exempt are required to file returns, even though they are not taxable, and regardless of the market value of their capital stock, whether over or under $75,000.

"Previous regulations also held that both parent and subsidiary companies were liable to tax. The new regulations hold that companies exclusively engaged in the holding of securities of other companies are not engaged in business within the meaning of this act. However, a company engaged in business in addition to owning the securities is liable to the tax.

"Previous regulations held that capital stock once issued would be regarded as outstanding, even though it had been reacquired by the company and carried on its books as treasury stock. This ruling is canceled by the new orders.

"Previous regulations provided rates for capitalizing average of annual net income for determining fair value. New regulations provide that taxpayers shall use for this purpose the rate prevailing in the particular business and locality to make the stock of companies similarly engaged worth par.

"Previous regulations provided that fair value would be determined and reported as follows: First, by market quotations; second, by prices at which shares were sold if not listed on any exchange; third, by an estimate based on book value or a capitalized average of the annual net income.

"New regulations provide for reporting as the fair value the amount shown by the exhibit reflecting the greatest value, except under certain conditions, when the fair value would be the sum reflected by the exhibit which more nearly conforms to the required value."

Financial News Notes

Canadian Line Loses Too.—The municipally owned London & Port Stanley Railway, London, Ont., showed net earnings of $23,508 for the year ended June 30, 1918, as compared to $26,581 the year preceding. Traffic on this electrified line has gained and rates have been increased, but despite these the higher operating costs caused a reduction of $3,077 or 11.5 per cent in net. The gross earnings in 1918 totaled $368,914 as compared to $316,685 in 1917, but the expenses rose from $290,103 in 1917 to $345,410 in 1918.

Interstate Railways Report Loss.—The income of the Interstate Railways, Camden, N. J., for the year ended Jan. 31, 1918, totaled $519,117. After meeting expenses and taxes of $447,504 and preferred dividends of $30,000, the company had remaining a surplus of $41,613 for the year. The net income of the last year was substantially less than that for 1916, which is explained by an increase in taxes and the failure of the Trenton systems to pay the instalments of rent due Sept. 30, 1917, and Dec. 31, 1917. This was attributable to financial, commercial and labor conditions.

American L. & T. Breaks Even.—During the calendar year 1917 the number of passengers carried by the subsidiaries of the American Light & Traction Company, New York, N. Y., increased 9,430,662 or 33.52 per cent. The total gross for the period increased $2,307,138, but this was largely offset by a rise of $2,010,000 in operating expenses and taxes. The net earnings of the holding company for the year were $5,023,381 as compared to $5,648,026 in 1916. Dividend disbursements in the two years amounted to $4,828,107 and $4,457,767 respectively. The surplus balance on Dec. 31, 1917, was $12,246,872 as compared to $12,051,598 at the end of 1916.

Emergency Measures to Save Road.—The Laconia (N. H.) Street Railway management has decided not to junk the entire road as originally contemplated. Instead it is planned to install one-man cars and improve the finances of the company. Various plants of partial reorganization are under consideration. The part of the road known as the South End loop, about 1.3 miles, is no longer operated and will be ultimately torn up. It is planned to give fifteen-minute service with new one-man cars on the important section of the road from Walker Square, Laconia, to Stark Street, Lakeport, in place of the present thirty-minute service with large two-man cars.

Commonwealth Bond Plan Effective.—A majority of the bondholders of the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., have deposited their holdings under the plan for the refunding of the $8,000,000 of 6 per cent securities outstanding and which matured on May 1 last. The War Finance Corporation advanced $2,400,000 to the corporation and asked bondholders to accept a new five-year bond bearing 7 per cent interest instead of 6 per cent. The War Finance Corporation ruled that its advance of $2,400,000 was contingent on the acceptance of the new plan by at least 70 per cent of the bondholders, and this requirement was more than met.

Will Let Dividends Accumulate.—In a statement to stockholders the board of directors of the Middle West Utilities Company says: "Public discussion indicates quite clearly that the normal tax on incomes will be considerably increased. While it is not altogether clear that the interest bearing certificates heretofore issued in lieu of cash dividends upon preferred stock of the company will not be taxable as income, the board of directors, having due regard to the wishes of the stockholders from whom they have heard, are persuaded that it is to the best interest of the stockholders for the time being to defer the declaration of preferred dividends in certificates and allow the dividends to accumulate.

Ferries Carry 46,000,000.—Transbay ferries on San Francisco Bay carried more than 46,000,000 passengers during the fiscal year ended June 30, 1918, according to a statement recently made by John K. Bulger, supervising inspector of steam vessels at San Francisco. Of this number the Southern Pacific carried on its Oakland, Alameda and Creek routes 24,513,713; 18,982 between Port Costa and Benicia in local travel, and 717,541 between Vallejo and Vallejo Junction. The Key Route, San Francisco-Oakland Terminal Railways, carried 14,319,326, the Northwestern Pacific 5,529,644, the Santa Fe 262,988 and the Western Pacific 67,137. Other ferries included are the Monticello Steamship Company, the Petaluma & Santa Rosa Railway, Martinez-Benicia ferry and Richmond-San Rafael boats.

Three-Year 7 Per Cent Notes Offered.—Stone & Webster, Boston, Mass., are offering for subscription $750,000 of Eastern Texas Electric Company, Beaumont, Tex., three-year 7 per cent gold coupon notes dated Aug. 1, 1918, and due Aug. 1, 1921, at a price to yield about 7¾ per cent. The notes are in denominations of $100, $500 and $1,000. They are callable prior to Aug. 1, 1920, at 101 and accrued interest and at 100 and interest thereafter on thirty days' notice. The proceeds from the sale of the notes will be used to retire the present issue of $500,000 of 6 per cent coupon notes of the company due on Dec. 1, 1918, and will also be applied to the retirement of the company's floating indebtedness now amounting to $300,000, which has been incurred for additions and extensions to the company's plant.

Northern States Notes Offered.—The Guaranty Trust Company, New York, N. Y., the Illinois Trust & Savings Bank, Chicago, H. M. Byllesby & Company, Bonbright & Company and Spencer Trask & Company, compose a syndicate offering an issue of $2,000,000 of five-year sinking fund convertible 7 per cent notes of the Northern States Power Company (Minnesota). The offering price will be 96 and interest, yielding about 8 per cent on the investment. The notes are to be dated Aug. 15, 1918, and will fall due Aug. 15, 1923, and are convertible at any time after Jan. 1, 1919, into 7 per cent cumulative preferred stock or common stock of the Northern States Power Company (Delaware) at a price of par for the notes, 95 for the preferred stock and 100 for the common stock, with adjustments for accrued interest and cash dividends. Strong sinking fund provisions will retire 45 per cent of the notes before maturity.

Electric Railway Monthly Earnings

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$1,789,252	$34,960	$1,754,292	$7,062	$1,747,230
1m., July, '17	1,365,312	34,011	1,331,301	229	1,331,072
12m., July, '18	21,331,886	399,580	20,932,306	20,648	20,911,658
12m., July, '17	16,559,106	314,280	16,244,826	3,759	16,241,067

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$453,488	*$324,612	$128,876	$97,643	†$38,173
1m., July, '17	388,062	*257,983	130,019	84,221	†56,142
12m., July, '18	5,833,075	*3,899,150	1,633,925	1,124,700	†596,973
12m., July, '17...	4,344,363	*2,749,919	1,594,444	923,281	†714,354

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$2,437,393	$1,429,475	$1,007,918	$811,330	$196,588
1m., July, '17	2,726,262	1,680,547	1,045,715	814,287	231,428

*Includes taxes. †Includes non-operating income.

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$73,723	*$43,850	$29,873	$19,502	$10,371
1m., June, '17	65,662	*40,422	25,240	18,738	6,502
12m., June, '18	910,855	*539,500	371,355	234,003	137,352
12m., June, '17	862,877	*488,713	374,164	221,471	152,693

CLEVELAND, PAINESVILLE & EASTERN R.R., WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$50,169	*$34,998	$15,171	$11,795	$3,376
1m., June, '17	47,431	*31,632	15,799	11,615	4,184
6m., June, '18	256,192	*175,870	80,322	68,939	11,382
6m., June, '17	243,320	*152,559	90,761	70,569	20,192

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$349,168	*$214,254	$134,914	$55,452	$79,462
1m., June, '17	311,975	*236,732	75,243	47,019	28,224
12m., June, '18	4,229,372	*3,084,224	1,145,148	615,711	529,437
12m., June, '17	3,747,491	*2,474,273	1,273,218	531,282	741,936

Traffic and Transportation

Columbus Explains

Fare Rebate Slips in Effect Will Be Redeemed if Courts Decide Against Company

Henry L. Scarlett, city attorney of Columbus, Ohio, has filed a motion in the Federal District Court in which he asks that the suit be dismissed that was brought by the Columbus Railway, Power & Light Company to prevent the city from interfering with its increase in the rate of fare. He asserts that the court does not have jurisdiction in such a case and that the company's petition does not state facts sufficient to constitute a cause of action.

TRAFFIC FALLS OFF

The increase in the rate of fare has been followed by a reduction in traffic. Some of the patrons have used the cars every day without paying, when the conductors refused to sell them tickets. Conductors made no effort to eject them and this policy will be maintained until the courts decide the matter.

A rebate slip good for 1⅞ cents is given to each person paying a cash fare and a slip good for 1 cent, to each person paying 1 cent for a transfer. In case the courts should declare the increase in fare illegal, these slips will be redeemed by the company in cash or Thrift Stamps.

Officers of the company state that the increase in wages recently granted to the motormen and conductors will aggregate $700,000 annually and that people who are engaged in circulating stories to the effect that the new rate of fare will yield large profits are misinformed.

S. G. McMeen, president of the company, published the following statement in regard to the action taken by the company:

"In furtherance of its plan to charge 5 cents for a ride and 1 cent additional for transfer, the company appeals to the people of Columbus and to their American spirit of fair play.

EARNING $31,000 LESS THAN BOND INTEREST

"For the twelve months ended June 30, 1918, the company's railway earnings, after deducting the necessary amount for taxes and depreciation, fell short by more than $31,000 of the amount of bond interest properly chargeable to its railway property. In addition to this deficit the company faces a further deficit of more than $560,000 for the next twelve months as a result of the wage increases recently awarded its railway employees by the War Labor Board. In making that award, the War Labor Board recognized the necessity for higher fares in order to meet the increased wages so awarded, and in strong terms urged the proper rate-making body to grant the company relief in the form of such higher fares. No such relief has been granted and the company now submits to the people the following plan:

"1. The company's railway patrons are asked to pay a 5-cent fare with 1 cent additional for transfer.

"2. Each person paying a 5-cent fare will receive a rebate check for 1⅞ cents and each person paying 1 cent for a transfer will receive a rebate check for 1 cent, these rebate checks to be redeemable provided it is finally decided by a court of competent jurisdiction or otherwise that the discontinuance by the company of the sale of eight tickets for 25 cents is illegal.

"3. For the purpose of properly determining, among other things, whether or not these rebate checks shall be so redeemed, the company has already instituted suit in the United States Court.

"4. Outstanding tickets, with free transfer privilege, will be accepted as heretofore until all such tickets shall have been honored.

"5. Until further notice there will be no discontinuance of service unless ordered by some competent authority.

"In this endeavor to secure sufficient revenue to meet its operating expenses the company earnestly asks the co-operation and support of the public."

NEW TRANSFER RULES ADOPTED

In making this change the company adopted new transfer rules, fixing the points of transfer, so that patrons can not ride up town and back on one fare and a transfer, or sell the transfer to some one else for that purpose.

Youngstown Report Accepted

The City Council at Youngstown, Ohio, on Aug. 16 adopted the report of the street railway committee which recommended that the Cleveland plan be used there in operating of the railway, which is owned by the Mahoning & Shenango Railway & Light Company.

A special committee has been investigating the Tayler plan at Cleveland and will shortly make a report of its findings. It appears that most of the members of Council are favorable to the plan, which calls for a cost basis, plus proper return on the investment. The railway is willing to accept the idea, as are the state officials.

Peter Witt, former street railway commissioner at Cleveland, will speak in Youngstown soon and explain the operation of the plan. It has been suggested that Mr. Witt be retained in connection with the settlement in Youngstown, but this has not been fully settled.

Buffalo Retrenching

Owl Service Cut Materially in Effort to Keep Down Expenses Following Refusal of Fare Increase

Service between midnight and 5 a. m. was abolished on thirteen of the lines of the International Railway, Buffalo, N. Y., on Aug. 25. This step was taken by the company to decrease its operating expenses and to continue in effect, temporarily at least, the advance in wages of the trainmen, made on June 18. As a result of the referendum of the voters taken on Aug. 20, the International Railway is prohibited from increasing the rate of fare on the company's city lines in Buffalo.

E. G. Connette, president of the company, in a statement announcing the curtailment of all-night car service says:

FIVE-CENT SERVICE FOR A FIVE-CENT FARE

"It was decided by the referendum vote that the International Railway must continue to operate under the limitations of a 5-cent fare, and therefore, it will be necessary for the company to effect readjustments and economies in the service. The officers of the company were directed by the board of directors to give the best possible service within the fare limitations, and to announce any readjustments in advance of their going into effect. A shortage of 250 trainmen makes it necessary to give service during periods most required and to curtail it when it is least needed. So light has been the traffic on the owl cars up to 5 o'clock in the morning that the service will be discontinued except on six city lines."

Under the order discontinuing all-night service many sections of the city are without service after 12:30 a. m. Even on the lines where owl service is maintained, the schedules have been cut from half-hourly service to one car an hour.

Members of the Council who aided the railway in its campaign for higher fares and voted for the resolution to raise the fares are opposed to the company's abolishment of all-night service on the majority of the city lines.

DIRECTORS DISCUSS WAGES

At the meeting of the board of directors of the railway, called to discuss the action of the voters at the special referendum, it was agreed to continue in effect the wage advance recently granted the platform men. The directors took no action on the award of an additional increase of approximately 6 cents an hour granted the employees by the War Labor Board. This latter award was based upon the company's right to collect a 6-cent fare. The award is automatically canceled with the voters' disapproval of a higher fare. No other action was taken by the directors, according to a statement made by President Connette.

Lacks Jurisdiction Over Rates

Georgia Commission So Holds in Atlanta Fare Case, but Recommends a Six-Cent Fare

The Railroad Commission of Georgia has recommended to the City Council of Atlanta that a 6-cent fare be granted to the Georgia Railway & Power Company but has withheld its decision regarding fare increases on the interurban lines to Stone Mountain, Camp Gordon and Marietta, Ga. The following extracts from the commission's report give the gist of the situation:

COMPANY FACES SERIOUS PROBLEM

"We do not believe the applicant is facing bankruptcy. We are impressed, however, with the fact that serious problems of financing confront the company, and that upon their prompt solution depends in a large degree its ability to render the vitally important services the public demands.

"It is our conviction that such emergency relief as seems necessary should be spread throughout all the rates covering the entire business of the company.

"The commission finds itself, however, confronted with a grave and difficult question of jurisdiction and power as to affording any of such relief through increases in applicant's street railway rates.

"Section 5 of the act of the general assembly approved on Aug. 23, 1907, increasing the membership and powers of the commission, is in part as follows:

"'The powers and duties heretofore conferred by law upon the Railroad Commission are hereby extended and enlarged so that its authority and control shall extend to street railroads and street railroad corporations, companies, or persons owning, leasing or operating street railroads in this state;

"'Provided, however, that nothing herein shall be construed to impair and valid subsisting contract now in existence between any municipality and any such company; and provided that this act shall not operate as a repeal of any existing municipal ordinance.'

MATTER NOW UP TO COUNCIL

"This commission believes that the applicant is entitled to an increase in its car fares, and that a 6-cent fare would be reasonable and just, so long as existing abnormal war conditions prevail, and the justice of granting such increases by amendment to existing contracts and ordinances, is earnestly urged upon the councilmanic authorities of Atlanta, Decatur and College Park, with the assurance on the part of this commission that, simultaneously with the effective date of such amendment, similar provisions will be made by it as to fares in territory not included in the municipalities mentioned. The commission does not recommend any charge for transfers."

The granting of increased fares is entirely up to Atlanta's Councilmanic body, unless the courts decide that the commission is clothed with the proper powers. Expressions of opinion from the commission's special counsel follow:

"It must be borne in mind that the question in this case is not whether the state of Georgia has surrendered to the city of Atlanta the sovereign right to fix the rates of this company, so that the same can not be altered or changed, but whether the Legislature of the State has delegated to the Railroad Commission the power to fix such rates, where the same had been previously fixed between the city of Atlanta and the company by contract or ordinance. This distinction is of vital importance in this discussion. We repeat that the question is not, whether the State of Georgia has surrendered its power, to fix those rates, but whether it has granted to the Railroad Commission of Georgia the power to fix such rates, when the same had been fixed by contract between the city and the company, or by municipal ordinance. We do not contend that any such surrender of this governmental function has been made by the Legislature to any of the towns or cities in which this company operates.

"As the State has not actually divested itself of the power to fix these rates, an agreement by which the city and this company fix these rates is made subject to the right of the State to change the same.

CAN'T IMPAIR CONTRACT

"The street railway asks for a 6-cent fare within the city limits of Atlanta and 2 additional cents for each transfer. So clearly if the commission grants the application of the company its action will impair this contract between the city and the railway and will pro texto repeal the consolidating ordinance under which the railway is now operating.

"There is no question that if the application of the railway is granted by the commission this action will amount to an impairment of the contracts between the cities of Decatur, College Park and Edgewood on the one part and the railway on the other part.

"So, in my opinion, the Railroad Commission of Georgia is without jurisdiction to fix the rates within the city of Atlanta, and the rates from and to the other cities above mentioned, so as to alter or change the rates prescribed in the contracts between the company and these cities. The only tribunal which can change these rates is the Legislature of Georgia, the latter having excepted from the grant of power to this commission the right to impair those contract rates or to repeal ordinances under which they were fixed."

A statement made by Mr. Arkwright, president of the Georgia Railway & Power Company, follows:

"The decision of the Railroad Commission vindicates in every particular the position taken by the company on the merits of all matters involved, including the absolute necessity of an increase in the railway fares to 6 cents in order to meet increased expenses and furnish efficient service. They were prevented from authorizing the increase in railway fares because of a law point involved which the special attorney to the commission decided prevented the commission from granting the relief found to be necessary.

"Pending the solution of the question by the courts or by the City Councils as recommended by the commission, the company will be deprived of the resources necessary to give increased wages to its employees."

The Mayor-elect was elected to office on the platform of municipal ownership of electric plants and street railways and came out strongly against any increase in the company's rates. On Aug. 19 the City Council voted twenty-five to one to restrain the company from putting the new rates into effect on Sept. 1 and decided to start legal proceedings with reference to the ordinance now in existence regarding the 5-cent fare. In some quarters the action of the Council is regarded as its dying gasp while in others it is taken to be the first gun in a determined war on the company.

Kansas Interurban Gets Increase

The Public Utilities Commission of Kansas on Aug. 15 granted the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., increased passenger and freight rates, which will go into effect late in September. In both cases, further investigation is announced, and the rates are explicitly called temporary, to meet the emergency of higher fuel, labor and supply costs due to war conditions. The statement is made that within a year, and anyway at the end of the war, a readjustment will be considered. The company had asked freight rates on a parity with the recent increases granted the steam roads. The advances granted were not to this extent, being only 10 per cent above the existing rates of the line, with the exception of rates on milk, which are not to be changed. Milk rates are now about those charged on Kansas railroads for express. The commission granted a 2½-cents-per-mile basis for passenger rates, as against 3 cents per mile asked.

An unasked-for feature of the commission's order is the schedule of commutation rates. The company has not had any commutation rates heretofore, though, such rates have been used on other interurbans operating in Kansas. The Kaw Valley line's new schedules, under the commission's order, will provide for coupon books for forty single rides in thirty days, on the basis of 2 cents a mile.

The company is permitted to make an excess charge of 10 cents, when passengers who board cars at stations where tickets are sold, do not supply themselves with tickets.

Increases on Interstate Line

Massachusetts Commission Authorizes Retention of Five-Cent Minimum, but Increases Zones

In a decision dated Aug. 14 the Public Service Commission of Massachusetts authorized various fare increases on the Interstate Consolidated Street Railway, substantially approving the recently filed tariff of these lines. The company proposes to retain the 5-cent minimum fare, but to increase the number of zones in which this fare is to be charged. The results of this change may be tabulated as follows:

	Present Charge Cents	New Charge Cents
Plainville to Attleboro.....	5	10
Plainville to Pawtucket, R. I., north line	10	20
No. Attleboro to Attleboro..	5	5
No. Attleboro to So. Attleboro	5	5
No. Attleboro to Pawtucket, R. I., north line.........	10	15
Attleboro to Pawtucket, east line	10	15
Attleboro to Pawtucket, south line	10	15
Attleboro to So. Attleboro..	5	5
So. Attleboro to Pawtucket..	5	10

The entire benefit of this increase will not in all cases go to the Interstate Consolidated Company, as the Rhode Island Company has recently been permitted by the Rhode Island authorities to charge 5 cents between Pawtucket and the State boundary, and to discontinue the present joint fare with the Interstate company. Temporarily this arrangement has been continued, but it would cease to exist under the proposed new tariff. Between North Attleboro and Pawtucket the present fare is 10 cents, but the Interstate company's portion of this averages only 7.5 cents. Under the new tariff the fare would be 15 cents, 10 cents going to the Interstate company. The situation between Attleboro and Pawtucket is similar. The company proposes to eliminate all overlaps and transfer privileges, with the result that in Attleboro and North Attleboro 10 cents would be charged for any ride, however short, passing the railroad station in one case and Wamsutta Corner in the other. The company estimates that the proposed new fares would produce a gain in revenue of about $46,500 a year.

ALTERNATIVE PLAN REJECTED

The Mayor of Attleboro offered an alternative plan, which, if adopted on all lines, was estimated to yield about $25,000 additional revenue. Upon consideration the commission was of the opinion that the company's plan should be adopted, with some minor modifications.

One defect in the company's proposed tariff, the commission holds, lies in the fact that the fare zones in no case overlap and that transfer privileges are entirely eliminated. The result would be that 10 cents would be charged for a very short ride in the thickly settled portion of Attleboro, North and South Attleboro. In the judgment of the board the tariff should be modified to correct this defect, the detailed method being left to the company.

A further and more serious defect, which, however, is beyond the jurisdiction of the Massachusetts commission, relates to the charge between Orr's Corner in South Attleboro and adjacent points, and Pawtucket. Under the new tariff this fare would be 10 cents for a ride of about 3.5 miles, since the traffic center of Pawtucket is less than 1 mile from the State boundary line.

If there were only one company and no State boundary, the commission believes that a lower fare than this would be deemed reasonable even by the management, and it is hoped that the Rhode Island and Interstate companies will be able to agree upon some joint ticket arrangement which would offer a fare of say 7 cents to regular riders. South Attleboro is closely associated in a business way with Pawtucket, and the proposed 10-cent fare would, in the opinion of the commission, be an unreasonable hardship for many workingmen.

If no agreement can be reached upon this point, the Public Service Commission is prepared to lend its aid in an appeal to the Interstate Commerce Commission. If a joint ticket is provided, it should, in the opinion of the commission, be available for use in connection with through traffic from points north of South Attleboro.

Accountants Oppose Rochester Increase

The Rochester lines of the New York State Railways have an annual return on capital invested sufficient to make a 6-cent fare unwarranted in Rochester, according to the report filed with the municipal authorities by Marvyn Scudder and L. M. Scudder, accountants employed by the city to investigate the financial conditions of the company. The net income from the Rochester city lines in 1917 was $608,595 and the experts state in their report that this year's net income will exceed $300,000. The report will be discussed at a special meeting of the Council to be held soon. At that time the Council will decide whether or not favorable action will be taken on the application of the company for an increased fare.

The report comes as a result of a request made by the New York State Railways for permission to charge a fare higher than 5 cents. The Council then ordered an investigation of the company's books. The report shows that the New York State Railways makes no separation of any operating expenses between the city lines and lines outside of the city. The Scudder report shows that the total wage increases granted by the company in July amounted to $19,922 and that the net increase for the entire year will be about $94,000.

New Jersey Case Reappealed

Increase in Fare by Two Cents Not Enough to Meet New Requirements of Railway

T. N. McCarter, president of the Public Service Corporation of New Jersey, Newark, N. J., made it known on Aug. 29 at the hearing before the State Board of Public Utility Commissioners on the new application for permission to increase the fares to 7 cents that the company was ready to recede from its original attitude of seeking the increase during the period of the war and ask that the increase be permitted from Sept. 1 to Jan. 1 to make up the expected deficit due to the increase in wages ordered by the Federal War Labor Board. Mr. McCarter said that to meet the new obligations the company must secure $860,000, and the only way to obtain it was to increase the fares 2 cents, and even with that increase the revenue would fall short of the sum needed.

At the close of the hearing, which lasted three hours, the Utility Board granted a postponement to Sept. 5 to give counsel for the municipalities time to verify the figures submitted by Mr. McCarter, who was the only witness.

Petitions were presented from each of the federal boards. After outlining the purpose of the law creating the Bureau of Industrial Housing and Transportation of the United States Department of Labor of the United States, the petition from that board was concluded as follows:

"That in the judgment of the United States Housing Corporation and the Bureau of Industrial Housing and Transportation of the Department of Labor, the maintenance of the financial stability of the existing lines of Public Service Railway is essential to the continuance of adequate service during the war and the acquisition of capital for the construction of extensions and improvements made necessary by the war."

Urged to Hasten Fare Matter

There was an adjourned hearing recently of the petition of the New York State Railways for permission to increase its rate of fare from 5 cents to 6 cents before the Public Service Commission for the Second District. W. J. Kernan, Utica, represented the railway and Mayor James D. Smith and Corporation Counsel Merrill represented Utica and Corporation Counsel Hancock the city of Syracuse.

William McClellan testified concerning an appraisal of the property which had been made and which was incorporated in the report of the investigation made by Price, Waterhouse & Company of the railway company's financial condition. Mr. McClellan detailed items which were included in the appraisal which had been carried down to June 30, 1917. He said he would continue the appraisal down to Jan. 1, 1918, and this will be introduced later.

Representatives of Utica and Syracuse contended that the appraisal should not be binding upon any future rate applications by the company.

Mr. Kernan asked that action on the company's petition be expedited as much as possible because of the increase in wages which the company had recently put into effect.

The presentation of the report of Price, Waterhouse & Company was referred to in the issue of the ELECTRIC RAILWAY JOURNAL of Aug. 10, page 261.

Detroit Interurban Increases

An order establishing a passenger rate of fare of 2 cents a mile on the interurban lines of the Detroit (Mich.) United Lines has been handed down by the Interstate Commerce Commission at Washington. The order affects the Rapid Railway, including the Shore line; the Detroit, Monroe & Toledo Short Line Railway, between Detroit and Toledo; the Detroit, Jackson & Chicago Railway; the Orchard Lake, Pontiac, Flint and Imlay City divisions of the Detroit United Railway. The order will not affect city fares on the various lines named.

In its petition for an increase the railways pointed out the necessity of increasing revenues so that the increased cost of business be met and operation of the lines be not curtailed.

It is not likely that the new rate will be put into effect much before Oct. 1 due to the fact that it will not become effective until thirty days after new tariffs are filed with the commission and also the fact that it wlil take considerable time to prepare and print the new fare schedules.

The 2-cent-a-mile rate means from 25 to 50 per cent increases, the average per cent of increase being about 30. The lines mentioned serve 159 cities and villages within a radius of 75 miles of Detroit and have 894 miles of track.

Transfer Protection at Fare Zones

Misuse of transfers issued on the Springfield (Mass.) Street Railway in connection with different fare zone tickets has led the company to require conductors to punch all transfers given out on an 8⅓-cent ticket once and all given out with 6⅔-cent tickets twice. By this means the collecting conductor will learn the kind of ticket originally used and how far the passenger holding the transfer is authorized to ride. If the passenger rides beyond the transfer limit associated with the particular ticket originally purchased, the conductor will then collect an additional fare. The tickets will be collected for the first fare on the second car and the transfer will be lifted for the second fare.

The company found soon after instituting the present system of zone fares that passengers who boarded cars near the boundary of the first and second zones discovered that one stub of a two-ticket string was good for a ride in one zone alone if they requested a transfer. This reduced the cost of the ride to 3⅓ cents. The stubs used in the other zone were of no use to the original holders, but were exchanged with friends living in other zone limits. The new plan of transfer punching is expected to do away with the opportunities that existed previously for abusing the system.

Transportation News Notes

Women for Binghamton Cars.—The Binghamton (N. Y.) Railway has engaged twenty-five women for use as conductorettes on its lines in that city. The women are now undergoing instruction. Several of the women have sons engaged in war service.

Wants Seven Cents in East Chicago.—The Hammond, Whiting & East Chicago Railway, Chicago, Ill., has filed a petition with the Public Service Commission of Indiana asking authority to increase its railway fares in Hammond, East Chicago and Whiting from 5 cents to 7 cents for adults and to establish a 2½-cent fare for school children.

Change in Gorge Route Fares.—The Niagara Gorge Railroad, Niagara Falls, N. Y., on Aug. 2 filed with the Public Service Commission for the Second District a new tariff schedule relative to commutation fares which it proposes as effective on Sept. 1. Ten-trip, individual, twenty-trip, family or firm, forty-six-trip monthly school, and sixty-trip monthly individual between Niagara Falls, Lewiston and Youngstown and local points are advanced approximately 10 per cent. This is the gorge scenic route.

Further Suspension of Elmira Tariff—The Public Service Commission for the Second District of New York on Aug. 15 ordered the operation of the Elmira Water, Light & Railroad Company's rates applying to passenger traffic between points other than Horseheads and Watkins and intermediate points further deferred until Sept. 17. This action was taken to permit Commissioner Fennell to complete the investigation. A prior suspension was until Aug. 19.

New Trailers in Seattle.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., has recently put into service ten new trailers, built in the East for the company, with a carrying capacity of sixty-five passengers each. From 3 to 5 o'clock, the trailers are used on the shipyard lines, carrying thousands of workers to and from the tideflats; from 5 to 6:30, they are transferred to long local lines. The company now has a total of fifteen trailers in service.

Durham Views Fare Increase Kindly.—The increased fares at Durham, N. C., seem to be acceptable to the public, according to R. L. Lindsey, general manager of the Durham Traction Company. The 7-cent fare went into effect on Aug. 3, and, says Mr. Lindsey, "the public has taken to the increase very kindly, and we have been unable to discover, through our men, a single kick of consequence. We credit this to our publicity educational campaign during the preceding months."

Emergency War Plant Service.—The officials of the Singer Manufacturing Company, Elizabeth, N. J., and the Public Service Railway have entered into an agreement under which the employees of the Singer Company will operate cars and take the workers to and from work. This will relieve conditions caused by the lack of motormen and conductors. The railway will pay the men for the time they are on the cars. The Standard Aircraft Corporation, Elizabeth, recently put a similar plan into effect.

Youngstown Retains Peter Witt.—At an informal meeting on Aug. 22, the City Council of Youngstown, Ohio, approved the employment of Peter Witt, Cleveland, Ohio, to make a survey of the railway situation there with a view to the adoption of a system of municipally controlled operation similar to the Tayler plan in Cleveland. Four members opposed the employment of Mr. Witt, but favored the service-at-cost plan. Formal action was expected at the regular meeting during the week ended Aug. 31. A motion to increase the fare to 6 cents, pending the adoption of the service-at-cost plan, failed.

Cleveland Training Women.—The Cleveland (Ohio) Railway, during the week ended Aug. 24, began to employ and train women to take positions as conductors on its cars. At that time it was said that there were 600 vacancies. It is not the intention to replace men who wish to hold their positions, but the idea is to keep the force as nearly up to normal as possible. The women will be paid the same wages as the men and no difference will be made in their duties because they are women. Matrons will be employed at the carhouses on the lines where they are running. The women will be clad in khaki in summer and blue serge in winter.

Ice Cream Containers and Bread Baskets Undesirables.—The Indianapolis & Louisville Traction Company, Scottsburg, Ind., has filed a petition with the Indiana Public Service Commission asking for permission to increase rates on certain classes of freight with the idea of eliminating these freight items from the company's cars. A charge of 10 cents each is asked on empty ice cream containers and bread baskets and an increase in carrying charges for newspapers to 50 cents a 100 lb. The Louisville & Northern Railway & Lighting Company and the Louisville & Southern Indiana Traction Company are concerned in the petition.

Wants Interurban Fare Increase.—The International Railway, Buffalo, N. Y., has applied to the Common Councils of Tonawanda and North Tonawanda for permission to charge passengers 3 cents a mile on its lines between Tonawanda, North Tonawanda, and Buffalo and Niagara Falls. Representatives of the company told the Councils that unless the company was permitted to increase the interurban fares, schedules would have to be curtailed. Attention was called to the fact that the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., and the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., are now charging 3 cents a mile on their interurban divisions.

Wheeling Fare Hearing.—The Public Service Commission of West Virginia has concluded its hearing on the application of the City Railway, Wheeling, W. Va., for permission to cut out existing reduced rates of fare and to increase the straight cash fare within city limits to 6 cents, with free transfers to and from all connecting lines. Rates now in effect are: 5 cents cash fare to all points within the city limits, tickets six for 25 cents, free transfers to and from all connecting lines. In its application the company sets forth that the existing rates are unjust and confiscatory in that they do not enable the company to make a reasonable profit on the business done, owing to increased expenses of operation. A similar application of the Wheeling Traction Company has not been set for hearing.

Oakland Takes Six-Cent Fare Gracefully.—The 6-cent fare went into effect on the San Francisco-Oakland Terminal Railways, Oakland, Cal., without a hitch. A good deal of advertising was devoted to "selling the ideal" of the need for a 6-cent fare before it was actually put into effect. The *Key System News*, published by the railway, was of considerable aid in this. It is estimated that the majority of passengers board the cars with the exact change ready. This speaks well for the public relations of the company. The company had slides run in a number of moving picture theaters, briefly announcing the 6-cent fare, the reasons that made it necessary, and requesting that passengers have exact change ready. The decision in this fare case was reviewed in the ELECTRIC RAILWAY JOURNAL for Aug. 24, page 351.

Act Against Two-Cent Law.—The Illinois Traction System, Peoria, Ill., has filed a bill for an injunction in the Federal Court of the eastern district at Danville to restrain the operation of the 2-cent law. Attorney-General Brundage, members of the commission and state's attorneys of counties in which the company operates are made defendants. The company sets forth that the 2-cent law restrains any increase of its passenger fare and that the present fare is insufficient to pay for the operation of its line under prevailing conditions. Similar injunction proceedings to prevent the State of Illinois from enforcing the 2-cent passenger law have been instituted in the Belleville Circuit Court by the Alton, Granite City & St. Louis Railway. The petition states that the company operates at a loss when compelled to carry passengers at 2 cents a mile.

Truck-Interurban Haulage.—Highway transport committees in both Kansas and Missouri have begun active organization work, towards stimulating truck travel on rural roads. Ostensibly the truck service is supposed to benefit communities without railroad service. In fact, however, both States have numerous instances of frequent truck service between towns having railroad connections, though such connections provide poor service. An attempt is being made to work out a program of truck-line development, under which the interurban railways will be used to the best advantage. For instance, it has been suggested that instead of planning truck service in lines radiating from Kansas City to a distance of 30 or 40 miles, the lines be laid out with reference to shortest hauls to interurban railways, where such planning is feasible. Thus, the dirt roads, not usable in wet weather, would not be depended on for the major part of the hauling.

Another Seven-Cent Road.—The New Jersey & Pennsylvania Traction Company, Trenton, N. J., announces that it will increase its rates from 6 cent to 7 cents in the several zones on all its Pennsylvania divisions. The new schedule of fares will become operative on Sept. 26. An increase in freight rates is also announced. The company says that commutation zone tickets for the use of school pupils under fifteen years of age and valid on regular school days only will be sold at the rate of $1.60 per book of forty tickets each, upon application at the offices of the company at Trenton, N. J., and Newtown, Pa. The new schedule of freight rates affects all commodities. The minimum charge on any single shipment will be 25 cents The company was recently authorized by the Board of Public Utility Commissioners of New Jersey to charge 6 cents on the four zones on the Princeton and Lawrenceville divisions, and by the Public Service Commission of Pennsylvania to charge a like amount on the Pennsylvania divisions.

Higher Rates on Strang Lines.—Higher passenger and freight rates went into effect on Aug. 15 on the Missouri & Kansas Interurban Railway, operating between Kansas City, Mo., and Olathe, Kan., as a result of orders of the Public Utilities Commission of Kansas. The railway had asked readjustment of rates, in some items requesting specific rates, in others asking only for relief, and to be put on parity with new railroad freight rates. The advances granted are about 10 per cent on freight except milk, on which the company was already receiving about the same rate as the railroads. The new passenger schedule is based nominally on 2¾ cents a mile; specific rates are mentioned for each station, in the commission's report, exact distances being figured between the stops at the basic rate. Commutation rates are retained between a few of the stations, with an advance of 25 per cent in such rates to school children. The previous rate to pupils was extremely low.

Skip Stops in Chicago.—Skip-stop operation of cars began on the Chicago Surface Lines on Aug. 25, without any noticeable change in the routine of daily transportation. The new system had been fully advertised in the cars and the newspapers as a government fuel conservation measure. Temporary signs had been posted on trolley poles at the near side of new stopping places several days in advance. There were no charges of discrimination in favor of particular streets because the new system was based on the house numbering system, stops being required outside of the loop district at streets nearest the number 100 or multiples thereof. Steam railroad crossing and other safety stops are to be continued, so that in certain districts there are more than eight stops to the mile. Some of the motormen on the first day made stops which were no longer required. This was from force of habit. In general, however, the new system worked without a hitch and there was a noticeable saving in time on many runs. Schedules for all routes will have to be re-written when the operating officials have had an opportunity to check up on the new running time.

278 Additional Trips in Washihgton.—Revised routes and complete new schedules for all the lines of the Capital Traction Company, Washington, D. C., calling for 278 additional trips daily and four new services, one of which will be operated between Potomac Park and the Eighth and F Streets Northeast, were announced on Aug. 19 by the Public Utilities Commission. They represent the efforts of the commission and the company to capitalize into better service the running time saved through the installation of skip stops on the company's lines several weeks ago. John A. Beeler, traffic expert for the commission, and officials of the company co-operated in framing the new schedules, which are expected to lead to a considerable improvement in service during both rush and non-rush periods. In framing the new schedules Mr. Beeler and the company officials determined the volume and character of traffic on each line and have sought to equalize the loading throughout the system and utilize the equipment to the best possible advantage. Service has been increased where it is needed most. The principal improvement will be noticed in the non-rush periods, where there is greater possibility of expansion. The changes went into effect on Aug. 25.

Personal Me ion

Mr. Shaw a Firm Member

Former Railway Man and A. E. R. A. President Partner in Banking House of Knauth, Nachod & Kuhne

James F. Shaw, who has for more than one and a half years past been associated with the firm of Knauth, Nachod & Kuhne, bankers, of New York City, has become a general partner in that firm. His duties will be materially as before, consisting of the developing of new business, general underwriting, etc. This firm is one of the oldest private banking houses in New York, having been established in 1852. It has correspondents all over the world and does a large international banking business and deals in investment securities as well.

Although but forty-five years of age Mr. Shaw has had a remarkable career and at an early age achieved distinction in politics and in electric railway administration. He served for two terms as president of the American Electric Railway Association and its predecessor, the American Street & Interurban Railway Association, and during this period succeeded notably in strengthening that organization and expanding the field of its activities. Under his guidance the company and individual membership of the association was greatly increased and all of the members, both company and individual, were brought into closer touch with the administration and encouraged to take a more active part in the proceedings. Mr. Shaw saw the potential value of the experience of past presidents to the association and through his efforts the past presidents were induced to contribute time and energy much more effectively than before to the work of the association. He must also be credited with the inauguration of the mid-year meetings of the association, the first of which was held early in 1910, during his second term.

While president of the association Mr. Shaw advocated certain electric railway policies which are now generally received, although at the time they were somewhat novel. He believed that the basis for equitable rates of fare should be a scientific study of all of the costs involved, and that fares, taxes and standards of service should be adjusted with respect to each other and with justice to all parties concerned. He felt that the only way in which the proper public relations could be brought about was through frank publicity, and he therefore advocated the use of all means by which exact information regarding electric railways could be given to the public.

Mr. Shaw's electric railway career dates back to 1891, when at the age of eighteen he became superintendent of the Black cks & Salisbury Beach Street Rail after a few months' experience w the Newport Car Company. Thi d was operated only in the summe nths, and between seasons he eng in the electric railway supply busi . His genius for organization ght him many opportunities in th ectric railway business in Massachu and by the time he was twenty-f years of age he was president and eral manager of some thirteen differ electric railways. He was the prim ver in the construction and oper of more than 600 miles of electr ailway involving an investment of $25,000,00 He was also actively identified with er lines of business.

J. F. SHA

Mr. Shaw served for e terms in the Massachusetts Senat aving been elected in 1907, 1908 and 9. He was thus a Senator while pr ent of the railway association, whi he served in this capacity from 1 to 1910. While in the Senate he wa the committees on rules, ways an eans and military affairs, being chai n of the last named for three year d of the ways and means committee ring the 1909 term. He exerted a stro influence in the Senate and was one e original income tax men of Mas husetts. While his affiliations were turally with corporations, yet he w able to reconcile the labor and corpo on elements in the solution of pr ms in which their interests seemed t nflict. Although always a strong Re lican, Mr. Shaw had the support of ny of the Democratic members.

Changes in Personnel

Syracuse Suburban Road Announcements—C. Loomis Allen Re-enters Management Field

Important changes have been announced in the personnel of the Auburn & Syracuse Electric Railroad, the Syracuse & Suburban Railroad and in the firm of Peck-Shannahan-Cherry Inc., Syracuse, N. Y.

By the change Peck-Shannahan-Cherry, Inc., retire from the management of the Syracuse & Suburban road, William J. Harvie retires as general manager and director, Milford Badgero retires as assistant treasurer and C. Loomis Allen becomes general manager of the road.

R. W. Palmer, now general manager of the Auburn & Syracuse Electric road, has resigned to take up a position in Philadelphia and Mr. Harvie has been named as general manager in his place.

These changes were announced by T C. Cherry, vice-president of Peck-Shannahan-Cherry, Inc., and by C. Loomis Allen. Mr. Cherry said:

"R. W. Palmer, general manager of the Auburn & Syracuse Electric Railroad, has resigned, effective on Sept. 1, to accept a position with an operating company controlled by Philadelphia interests. Peck-Shannahan-Cherry, Inc., announce the appointment, effective on Sept. 1, of W. J. Harvie as general manager of the Auburn & Syracuse Electric Railroad, with headquarters in Auburn. Mr. Harvie is a member of the firm of Peck-Shannahan-Cherry, Inc., and will move his family to Auburn in the near future."

Mr. Allen's announcement reads:

"With the retirement of Peck-Shannahan-Cherry, Inc., from the management of the Syracuse & Suburban Railroad there will occur changes in the personnel of its officers. The resignations of W. J. Harvie as general manager and director, Milford Badgero as assistant treasurer and Harry A. Abbe as superintendent have been accepted, effective on Sept. 1. On that date C. Loomis Allen will assume the management of the railroad. The offices of assistant treasurer and superintendent are abolished."

Since May 1 Mr. Allen has devoted some time to the railroad's finances, and has prepared the plan of refinancing which was approved by the Public Service Commission on Aug. 8, 1918. The order of the Public Service Commission authorizes the issuance of securities, sufficient to pay off the floating debt, to provide the cash for future improvements and to furnish the treasury with cash for working capital.

Mr. Allen, on Sept. 1, will take offices 500-506 Vinney Building, adjacent to the present office of the Suburban Railroad, and will resume his practice in engineering and management of public utilities.

Peck-Shannahan-Cherry, Inc., have moved their offices to the Syracuse Savings Bank Building. Milford Badgero is a member of the firm.

M. J. Powers has been appointed master mechanic of the Cripple Creek & Colorado Springs Railroad, Colorado Springs, Col., to succeed C. A. McCarthy.

J. J. Cogan, formerly general manager of the Cripple Creek & Colorado Springs Railroad, Colorado Springs, Col., has been elected vice-president of the company.

E. K. H. D'Acth has been appointed secretary of the Trinidad Electric Transmission, Railway & Gas Company, with headquarters in New York, to succeed A. R. Marshall.

Ralph H. Rice, principal assistant engineer of the Board of Supervising Engineers, Chicago Traction, has been commissioned as captain in the construction division of the army.

Joseph R. Wood has been appointed auditor of the Urbana & Champaign Railway, Gas & Electric Company, to succeed Charles E. Cox, who resigned to enter the automobile business.

L. A. Magraw, general manager and chief engineer of the Macon Railway & Light Company, Macon, Ga., has also been appointed treasurer of the company to succeed J. J. Thames, Jr.

Walter A. Neely, former superintendent of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., is now a first lieutenant with the 111th machine gun company in France.

C. D. Green has been appointed auditor of the Aurora, Elgin & Chicago Railroad, Aurora, Ill., to succeed H. A. Nevans, who retired to accept a position with an insurance company in Chicago.

Frederick J. Pratt, who for the last sixteen years has been storekeeper for the Winnipeg (Man.) Electric Railway, has been made purchasing agent of the company to succeed Mr. J. S. Mackenzie.

U. S. Patillo has been appointed electrical engineer and engineer of overhead construction of the St. Johns Electric Company, St. Augustine, Fla., to succeed W. M. Bidlake and Henry Taylor.

Richard Elliott has been appointed treasurer of the Waterbury & Milldale Tramway, Waterbury, Conn., to succeed R. A. Clark. Mr. Elliott has also been elected first vice-president of the company.

E. J. Knight has been appointed assistant secretary of the Middle West Utilities Company, Chicago, Ill., to succeed O. E. McCormick, who has been appointed assistant treasurer of the company.

W. E. Miller has been appointed general manager of the Cripple Creek & Colorado Springs Railroad, Colorado Springs, Col., to succeed J. J. Cogan, who has been elected vice-president of the company.

C. D. Purkiser, formerly auditor, superintendent and general freight and passenger agent of the Caldwell (Idaho) Traction Company, Ltd., has been appointed assistant manager of the company to succeed J. L. Magee.

E. O. Rugliss has been appointed auditor of the Bloomington & Normal Railway & Light Company, Bloomington, Ill., to succeed F. J. Larsh, who is now auditor of the Atchison Railway, Light & Power Company, Topeka, Kan.

T. B. MacRae has been appointed auditor of the Chicago, North Shore & Milwaukee Railroad, Highland, Ill., to succeed A. G. Moore, who is now auditor of the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, South Bend, Ind.

R. H. Howell has been appointed claim agent of the Sterling, Dixon & Eastern Electric Railway and the Illinois Northern Utilities Company, Dixon, Ill., to succeed F. M. Smith, who is now connected with the bureau of safety of the Middle West Utilities Company, Chicago, Ill.

Lawrence Polk, assistant to the general manager of the Winnipeg (Man.) Electric Railway, has been appointed secretary of the Winnipeg, Selkirk & Lake Winnipeg Railway, and assistant secretary of the Winnipeg Electric Railway. Mr. Polk has been connected with the Winnipeg Electric Railway for the last fourteen years.

Richard J. Higgins has been appointed general solicitor for the Kansas City (Mo.) Railways. In such position he will have under his immediate direction and supervision all litigation in which the company is concerned. Judge Higgins has been counsel for the company in Kansas. Clyde Taylor will continue his duties as general counsel.

Thomas J. Connolly has been appointed traffic superintendent of the Trenton & Mercer County Traction Corporation, Trenton, N. J., by Edward J. Peartree, acting general manager. Mr. Connolly has assumed his new duties and will devote his time to directing traffic on the various divisions. He has had thirteen years' experience with the United Traction Company at Troy, N. Y.

Leopoldo Marcenco, chief engineer of the Anglo-Argentine Tramways Company, Buenos Aires, Argentina, is in this country on a short trip of inspection of its electric railway facilities. The Anglo-Argentine Tramways Company is a consolidation of some eight former operating tramways companies in the Argentine capital, and includes a subway as well. Extensions are under consideration, but actual construction will be delayed until the market for materials becomes better.

J. S. Mackenzie, for the last twelve years purchasing agent for the Winnipeg (Man.) Electric Railway, has been appointed assistant treasurer of the company to succeed G. A. Henson. Mr. Mackenzie was formerly with the Toronto (Ont.) Railway. He became connected with the Winnipeg General Power Company in 1902 and remained with that company until 1906, when it was amalgamated with the Winnipeg Electric Railway. Since that time Mr. Mackenzie has been purchasing agent of the company.

O. J. Gilcreest, assistant to the general superintendent of the Twin City Transit Company, Minneapolis, Minn., in July received a commission as a second lieutenant in the motor truck transportation corps of the marines, attached to the Naval Air Service and was sent to France on very short notice. While studying at the Massachusetts Institute of Technology Mr. Gilcreest specialized on gas engines and it was this special training, along with his general experience, that secured him the position in government service in which he is now engaged.

G. A. Henson, assistant treasurer, has resigned after eighteen years' service with the Winnipeg (Man.) Electric Railway, to take a well-earned holiday. Mr. Henson has been connected with street railway transportation practically all his life. He was first employed by the old horse railway in Winnipeg in 1890. He remained with that company for five years. When the horse cars were superceded by electric cars Mr. Henson went into the insurance business. He became connected with the Winnipeg Electric Railway in 1900 as accountant and three years ago was made assistant treasurer.

James Blaine Walker, secretary of the Public Service Commission for the First District of New York, is the author of "Fifty Years of Rapid Transit," recently published. Mr. Walker has been connected with the commission since its creation more than ten years ago and in the records of that body and its predecessor, the Rapid Transit Commission, has had unusual opportunities open to him for the study of the subject about which he has written. According to Mr. Walker the father of the subway idea was Hugh B. Willson, a Michigan Railway man, who had been in London during the construction of the underground road. Impressed with the workings of the London subway, he conceived the idea of applying the scheme to New York. This attempt failed, but it marked the beginning.

Obituary

Charles H. Killam, who assisted in promoting the Hanover (N. H.) Street Railway, is dead. Mr. Killam was president of the company for some years before the property was taken over by the Bay State Street Railway.

Thomas S. Morris, the first general manager of the old Trenton Horse Railroad, now included in the system of the Trenton & Mercer County Traction Corporation, Trenton, N. J., died on Aug. 13 at his home in the city of Trenton. He was eighty-three years old.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Franchises

Norfolk, Va.—The Norfolk Railway & Light Company, which is leased by the Virginia Railway & Power Company, has received a franchise from the Board of Aldermen of Norfolk to construct an extension from the intersection of Granby and York Streets, along York Street to Boush Street, connecting with the present line at Granby and York Streets.

Track and Roadway

***Mena, Ark.**—Plans are being proposed for the construction of an interurban electric line from Mena to Hot Springs. H. W. Knight, Chicago, and the Mena Commercial Club are interested in the project.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—Operation has been begun on the Chestnut Street branch of the West Eighth Street car line, constructed for the purpose of providing adequate transportation accommodations for the employees of the Moore Shipbuilding Company. A fan-shaped terminal has been constructed at the foot of Chestnut and Adeline Streets. The line cost approximately $25,000 to build and is partially under under the control of the federal government through the organization of the Emergency Transportation Company. Similar terminals will be built at the Alameda plant of the Bethlehem Steel Corporation and the new Liberty shipyards.

Municipal Railway of San Francisco, San Francisco, Cal.—Traffic congestion at the foot of Market Street will be relieved by the installation of a third loop for the cars of the Municipal Railway and the United Railroads, instead of by the construction of a subway, according to a tentative agreement reached recently by state, municipal and railway officials at a meeting of the State Board of Harbor Commissioners. The proposed loop which would be constructed outside the present loops, would cost approximately $12,000. It is planned to divide the cost between the Municipal Railway and the United Railroads.

Central of Florida Railway, Daytona, Fla.—Service will be discontinued early in September by the Central of Florida Railway, which operates a line between Daytona, Daytona Beach and Sea Breeze. The tracks will be torn up and the system dismantled.

***Hilo (Hawaii) Traction Company.**—A contract has been placed by the Hilo Traction Company with the Honolulu Iron Works for $20,000 worth of equipment for its proposed electric railway system in Hilo. J. W. Russell, president.

Detroit (Mich.) United Railway.—Owing to reduced receipts, the Detroit United Railway has discontinued all construction work under way, including the building of the new Ferndale line to the Ford Eagle plant on River Rouge.

Michigan Railway, Kalamazoo, Mich.—An extension will be built by the Michigan Railway from Morrice to Flint.

Emergency Fleet Railroad, Trenton, N. J.—The Board of Public Utility Commissioners of New Jersey has approved the proposition of the Emergency Fleet Railroad, a part of the United States Emergency Fleet Corporation, to lease a war emergency trolley line from Gloucester City to Newton Creek in Camden, N. J., to the Public Service Railway for the period of the war and six months after the war. The line will be built and operated by the Public Service Railway, and the Public Service Railway will pay annually 5 per cent of the cost of the road as rental to the leasing company. At the close of the war the Public Service Railway will lease the line for 75 per cent of its cost. The line will provide transportation facilities for workers in the shipyards of the New York Shipbuilding Company at Camden and the Pussey & Jones yards in Gloucester City. The cost of the road will be about $215,947. [July 20, '18.]

North Carolina Public Service Company, Greensboro, N. C.—The North Carolina Public Service Company purposes double-tracking its line from the O. Henry Hotel to the passenger station in connection with the improvement of Elm Street, during the next two or three months. Only a part of this line is now double-tracked. The whole line will be rebuilt.

Portland Railway, Light & Power Company, Portland, Ore.—Plans for additional transportation facilities for the shipworkers on the west side of the Willamette are outlined in a report submitted to Acting Mayor Bigelow by F. I. Fuller, vice-president of the Portland Railway, Light & Power Company. These plans are extensive and to carry them out the company will receive assistance from the federal government. Loops for switching cars are planned in connection with the North and South Portland lines at points nearest the South Portland shipyard center and also adjacent to the industrial center in North Portland, so that the armies of workers may be handled with greater facility. A loop to relieve the congestion on the standard-gage lines on First and Second Streets is planned on Yamhill Street, so that cars may be looped from Second to First Street.

Lehigh Valley Transit Company, Allentown, Pa.—Improvements are being made by the Lehigh Valley Transit Company on its line from Slatington to Slatedale.

Harrisburg (Pa.) Railways.—Construction has been completed by the Harrisburg Railways of a new extension to its traction system west of Harrisburg.

Quebec Railway, Light & Power Company, Quebec, Que.—It is reported that as soon as estimates are completed showing the materials required, construction will be begun on the proposed extension of the line of the Quebec Railway, Light & Power Company along the Beauport Road, from Limoilou to the city limits. It is also reported that the company will take over the spur line from Mastai Station to Beauport Asylum and operate it in conjunction with its system.

Dallas (Tex.) Railway.—Work has been begun by the Dallas Railway on the rehabilitation of its line which serves Highland Park and the Southern Methodist University.

Shops and Buildings

Pacific Electric Railway, Los Angeles, Cal.—A new waiting station will be built by the Pacific Electric Railway at Glendale Avenue and Broadway, Glendale.

Piedmont & Northern Railway, Charlotte, N. C.—The passenger station of the Piedmont & Northern Railway at Paris, S. C., was recently destroyed by fire.

Power Houses and Substations

Potomac Electric Power Company, Washington, D. C.—The Potomac Electric Power Company, which is controlled by the Washington Railway & Electric Company, has recently offered through bankers $2,100,000 in bonds to provide funds for the extension of improvement of its electric generating and transmitting facilities.

Rutland Railway, Light & Power Company, Rutland, Vt.—Negotiations have been completed by the Rutland Railway, Light & Power Company with the War Industries Board for the use of the waters of Bomoseen Lake, amounting to approximately 700,000,000 cu.ft. for power purposes.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

No Rails for Electric Lines

Further Curtailment of Iron and Steel Supplies for Electric Railway Uses Is Expected

The continued reduction in the quantity of steel available for electric railway uses renders the shortage more acute as the requirements of the government for this material increase. The government recently announced that it would require the entire capacity of the steel and iron mills for the next eight months in order to meet its own and the Allies' needs. General Pershing has now called for additional quantities of equipment which will involve a large tonnage of steel beyond the estimates then given.

GOVERNMENT TAKING ALL RAILS

This increased demand has changed the operating schedules of the mills greatly. Urgent calls have been received from overseas for rails, rolling stock and shell steel and as a result some of these intended for home use may have to be shipped abroad.

Steel mills are rolling some T-rails, but these are mostly 80-lb. and larger sizes, and are rails all being taken by the government. The manufacturers report that they have unfilled orders on their books, some of which are two years old and they still cannot tell when they can fill these orders. Government demands for rolled steel and forged and cast steel products over the second half of this year now amount to 23,000,000 tons, according to Washington reports, and the possibility is that with the additional tonnage needs of the Allies 25,000,000 tons will be wanted. Such a tonnage, however, is entirely beyond the ability of the steel mills to roll this year, but an effort is to be made further to increase the output of crude steel in the next few months and this means also an increase in the output of pig iron. It is hoped to remedy the situation and reduce the shortage of steel somewhat by shutting off all further steel shipments to industries other than those engaged in meeting war needs.

FEW SPECIAL WORK ORDERS

Special-work manufacturers report that no orders are being received from electric railways except for repair parts, and from properties on which track extensions to government plants, shipyards, camps, etc., are being made or where changes in track are necessary in rerouting cars to accommodate government traffic. These are being filled where the manufacturers have the necessary rail in stock and the roads have to take what the manufacturers have on hand or else supply the rail themselves. Where roads previously insisted on a particular design of special work they now must take what can be supplied.

Prices are high, but they correspond with the present material and labor costs.

Car Shortage Decreases Coal Output

Output for the Week of August 17 the Lowest That Has Occurred Since June 22 of This Year

According to the weekly report of the United States Geological Survey dated Aug. 24, the decrease in the total production of bituminous coal, including coal coked which began after the record week of July 13, not only continued during the week of Aug. 17 but the output during that week also fell below 12,000,000 net tons for the first time since June 22. Preliminary estimates place production (including lignite and coal coke) during the current week at 11,910,000 net tons, a decrease compared with the week of Aug. 10 of 379,000 net tons, or approximately 3 per cent, but an increase over the corresponding week of 1917 of 1,597,000 net tons, or 15.4 per cent. The production necessary during the balance of the summer weeks to make up for the past deficit now amounts to 14,275,000 net tons or approximately 21 per cent in excess of the average weekly production during the coal year to date.

Shipments decreased during the week from all districts with the exception of western Pennsylvania, Tennessee, Kentucky, Alabama and the Rocky Mountain and Pacific Coast States. Compared with last year, however, all districts show improvement. The limiting factor during the week was car shortage, the operators reporting a loss of 9.8 per cent of full time from this cause as against 7.7 per cent during the week preceding. Slight improvement is reported in labor conditions and slightly less mine disability existed during the week, while lack of market in the Rocky Mountain district caused slightly greater loss of time than during the preceding week. The mines are reported as being operated at 79.7 per cent of full time as against 82.3 per cent during the week preceding. Operating conditions in the by-product industry and gas plants generally show a slight shortage of by-product coal, causing the plants to be operated at 90 per cent of their present capacity as against 91.5 per cent during the week of Aug. 3.

New Draft Law and Industry

Manufacturers and Railway Companies Want to Know How Its Application Will Affect Their Staffs

Probably before this note is published the new draft law will have been passed and signed by the President. Under it all men between the ages of eighteen and forty-five not now in military service will be subject to call. The selective principle is retained, but the law itself says nothing about classes to be exempted.

The prospective passage of the law has stirred industry as has nothing since the war began. How will the selective principle be applied? Evidently the line will be drawn tighter than ever between the essential and non-essential industries. In other words, the "Work or fight" principle will apply, but in the electric railway and the allied manufacturing industries, which have been recognized as "essential," what effort will the government make to protect itself by retaining in the industries the men who are carrying the burdens of those industries—who furnish the executive brains, the energy and the enthusiasm? A great many of these men are between thirty-five and forty-five. At the same time their abilities have enabled them to accumulate enough to have an independent income if they have no dependents. Needless to say, the withdrawal of these men would be a calamity if it should mean any serious impairment of the industrial or war efficiency of the properties in their charge. This is especially the case if a group of prominent executives should be taken from any one property, either railway or manufacturing.

Certain it is that our industrial structure, under the easiest conditions, must suffer a very considerable alteration; this is to be expected. But the country would be better off if business men can be informed quickly of the government's policy. Certainty should succeed uncertainty as quickly as possible. Only so can preparations be made for taking care of our industrial enterprises. The time for adjustment is all too short in any event.

A general policy needs to be declared. If interpretation is left to the local draft boards, the results to the industries and the government may be serious.

So far the government has applied the selective draft principle intelligently. The confidence created in the government and in the Secretary of War should be retained by a frank declaration from the Secretary to the business men of the country at once.

Inquiries for Rolling Stock Increase

Roads Need Additional Equipment and with Reasonable Delivery Many Orders Would Be Placed

Inquiries made of car builders regarding the car situation in the West indicate that inquiries for additional cars have been quite numerous recently and have increased decidedly as compared with the latter part of last year and the first four months of this year. Manufacturers report that the present demand exceeds the supply. This, of course, is not due to the large number of cars being purchased, but can be directly attributed to the large amount of government work now going through the various plants. Judging from the number of inquiries received for new equipment, it appears that the purchase of electric traction rolling stock will increase from now on. Many roads need additional equipment and owing to the increased fare which has been allowed some will buy that otherwise could not afford to do so.

It is interesting to note the almost spontaneous recognition of the "one-man" car in the Middle West, West and Southwest. One manufacturer states that fully 90 per cent of this year's inquiries for city cars has been for the "one-man" unit. Car builders feel that the merit of the one-man unit is now absolutely proven and generally admitted. After the war the demands on the car builder are sure to be very heavy and it would not be surprising to see several thousand one-man cars purchased within a very short time after the conclusion of the war.

The impression conveyed by these inquiries indicates that the outlook is exceedingly bright, and if material could be obtained promptly the car builder with the necessary man-power and capacity would be kept very busy.

Locomotive Manufacturing Facilities to Be Increased

At a meeting of representative locomotive builders this week with Bernard M. Baruch, chairman of the War Industries Board, and other officials of the board, the Railroad Administration and the government departments, plans were worked out whereby the output of the American locomotive manufacturing plants will be doubled. The increase is from more than 3000 on a pre-war basis to more than 6000 completed machines. An equable distribution of the output to meet the military needs in France and the needs of the Railroad Administration for the steam roads of the United States has been provided by the chairman which has met the approval of the officials.

Among those attending the meeting were Samuel Vauclain, of the Baldwin Locomotive Company; Mr. Fletcher, president of the American Locomotive Company; Mr. Lassiter, general manager of the American Locomotive Company; Colonels Tyler and Wright, of the Army Engineers Corps; Assistant General Manager Hines, Director of Operations Gray and Director of Railroad Equipment J. R. Flannery, of the Railroad Administration, and Henry Rea, of the Committee on Munitions and Plants.

Sawdust-Bricks for Fuel

Sawdust bricks for fuel are just now receiving close attention at the Forest Products Laboratory of the State University. The shortage-of-coal problem, which threatens to inflict itself upon the country next winter, has caused a revival of interest in the possibilities of successfully briquetting sawdust and shavings so they will compete commercially with other fuels, and thus aid in the relief work which may become necessary.

In the past such processes have been successful so far as heating qualities were concerned, but have been rather too expensive, so that there is no established industry of the sort in the United States at the present time.

The usual method of compressing sawdust into briquettes is by the aid of pitch or tar as a binder in suitable machines. At one time machines were used in the West in which, instead of a pitch binder, string was wrapped around the briquette, and held the sawdust in shape until it was used for fuel.

Jobbers in Electrical Goods on Preferential List

The War Industries Board authorizes the following:

At a hearing before the Priorities Commissioner and other representatives of the War Industries Board, the war service committee representing electrical jobbers presented their claims for preferred treatment to maintain their stocks for general distribution.

As a result of the hearing the Priorities Commissioner announced that manufacturers of electrical apparatus and supplies will be accorded a degree of preference for their materials to enable them to operate, conditioned upon their pledging themselves to limit their output to essential products and undertake to see that such products are devoted solely to essential uses as that term may be defined from time to time by the Priorities Division. The manufacturers must be relied upon to police their own industry and also in a measure to police jobbers.

It is believed to be in the public interest that jobbers should be permitted to maintain reasonable stocks from which government agencies, war industries and the civilian population may draw for their necessary essential requirements, provided that the jobbers will pledge themselves rigidly to restrict the use of all stocks to solely essential uses and to reduce to an absolute minimum both jobbing and retail stocks. The jobbers will be relied upon to police their own industry and that of the retailers. Any jobber or retailer violating the pledge will be cut off from procuring further supplies.

Packing Goods for Export Needs Attention

The Large Amount of Handling Necessary Makes It Imperative to Use Stout Shipping Cases

Special Agent S. W. Rosenthal, in an article published in *Commerce Reports*, says that too much care cannot be used in packing goods for some interior points in South America as revealed by a brief description of the handling they undergo in a trip from New York to La Paz, Bolivia. As an illustration, twenty-five cases of envelopes were loaded on a truck in New York and unloaded at the steamship pier. They were then placed on board the steamship and unloaded at Colon, Panama. They were re-embarked on a steamer at Colon and transferred to a launch at Mollendo, since there are no piers at this port. They were taken on shore from the launch, transferred to handcarts, and taken to the railroad station. They were placed on a freight car and unloaded at Guaci, Lake Titicaca. At Guaci they were placed aboard a steamer and taken to Puno; here they were unloaded from the steamer and placed on the railroad cars, which transferred them to La Paz. At La Paz they were carried by Indians to the customer's warehouse.

It is obvious that if merchandise is to be received in La Paz in satisfactory condition the packing must be done with special care. Both merchants and custom-house brokers report that the best preventive for damage and rifling is to pack the merchandise in a stout shipping case, nail metal edging around the ends and finally paint the edging so that it will show marks if tampered with. This, they report, makes a foolproof shipping case.

The marking of cases must also be plain and large enough to be easily made out in the hold of a ship.

Rolling Stock

Rock Island Southern Railroad, Monmouth, Ill., is reported to have lost several cars in a fire which destroyed the company's power house and shops at Cameron, Ill.

Laconia (N. H.) Street Railway has ordered two one-man safety cars from the American Car Company, St. Louis, Mo. These cars are of the standard double-end Birney type.

The City of Seattle, Wash., has purchased from the Twin City Rapid Transit Company, Minneapolis, the twenty-five second-hand double-truck cars for which it was in the market.

Hammond, Whiting & East Chicago Railway, Chicago, Ill., is in the market for ten new cars. The order is before the United States Housing Corporation for approval. The corporation will finance improvements of approximately $325,000, including cars and 2 miles of new track for the transportation of munitions workers.

Kansas City (Mo.) Railways has secured fifteen cars for one-man operation from the American Car Company. They are to be delivered in ninety days. The cars are part of a lot ordered by an Eastern company which has released them. The total cost is about $100,000.

The Connecticut Company, New Haven, Conn., has been granted permission by the Public Utilities Commission to operate twenty-one one-man cars. These will be used on one or more "jigger" lines and, according to the local papers, the street carmen's union will interpose no objection to their use.

Washington-Virginia Railway, Washington, D. C., has applied to the Capital Issues Committee at Washington for authority to issue and market $420,000 of short-term equipment notes to provide fifty new cars for the Mt. Vernon & Camp Humphries Railway, an extension of 4 miles which is being completed from Mt. Vernon to Camp Humphries, Va. The roadbed and track are nearing completion, and it is expected that the new line will be ready for use some time in September. Anticipating approval of the application, the contract for the cars has been awarded.

Trade Notes

Metal & Thermit Corporation, New York, N. Y., announces that the Toronto office of the company has been moved to 15 Emily Street, Toronto, Ont.

H. L. Lewrabey, estimating and efficiency engineer, St. Louis Car Company, has become a member of the central bureau staff, Division of Planning and Statistics, War Industries Board, with headquarters at Washington.

Walter A. Zelnicker Supply Company, St. Louis, Mo., has recently added to its sales force Henry Stroh. For the last ten years Mr. Stroh has been connected with the Elliot Frog & Switch Company. Prior to that he was associated with the Republic Iron & Steel Company, East St. Louis. The Zelnicker Company has also recently secured the services of Merle G. Peterson, who is now connected with the company's Chicago sales force at 428 First National Bank Building. Mr. Peterson was formerly associated with the Niles-Bement-Pond Company and Pratt & Whitney Company.

New Advertising Literature

Wheeler Condenser & Engineering Company, Carteret, N. J.: Bulletin 112A, entitled "Condensers, Pumps, Cooling-Towers, etc.", 32 pages, descriptive of the products along these lines of the manufacturers.

Pittsburgh (Pa.) Glove Manufacturing Company: A catalog describing and illustrating its high-tension glove. These gloves consist of a tough extra-flexible rubber of great strength, of high dielectric properties, protected by genuine horsehide gloves, according to this bulletin. The two permit free and unrestricted use of the hands.

Mica Insulator Company, New York, with works at Schenectady, N. Y.: A bulletin entitled "The Insulation of Commutators," containing facts relative to this subject and a discussion of insulation in general. Early methods of insulation are also discussed and a résumé of the invention of "Micanite" is given. Mica films, cement content of Micanite and the different kinds of mica plate are also treated of. The characteristics of "Micamite," including its uniform thickness and density, high specific weight, extremely low compressibility, very small cement content and large area of individual mica films, are also outlined.

St. Louis Frog & Switch Company, St. Louis, Mo.: A 280-page indexed catalog, 5 in. x 7 in., with semi-flexible cover, containing much valuable information for electric railway maintenance of way engineers. The first part of the volume is devoted to general information, diagrams, definitions and dimensions pertaining to switches, crossings frogs, switch stands, track elevation, standard rail sections, ties, bolts, spikes, curving of rails, decimal equivalents, etc. The remainder of the book includes a chapter treating extensively by the aid of many diagrams each of the following subjects: Frogs, Switches, Crossings, Special Track Work, Switch Stands, and Track Work for Industrial Railways.

NEW YORK METAL MARKET PRICES

	Aug. 21	Aug. 28
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.12½	9.00 to 9.25
Tin, Chinese*, cents per lb	90 to 90.5	90 to 90.5
Aluminum, 98 to 99 per cent., cents per lb	†33.00	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Aug. 21	Aug. 28
Heavy copper, cents per lb	24.00	23.50 to 24.50
Light copper, cents per lb	20.50	20 to 21.50
Red brass, cents per lb	21 to 22	22 to 23
Yellow brass, cents per lb	13¾ to 14½	13¾ to 14.50
Lead, heavy, cents per lb	7.00	7.50 to 7.75
Zinc, cents per lb	6.00	6.75 to 7.00
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton.	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton.	$16.25	$16 25

ELECTRIC RAILWAY MATERIAL PRICES

	Aug. 21	Aug. 28
Rubber-covered wire base, New York. cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40	32.40
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35 00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62 50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, rdger (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, centr per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	80%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	80%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	82 & 3%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste cotton (100 lb. bale), cents per lb	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.86	$1.86
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.88	$1.88
White lead (100 lb. keg), New York, cents per lb	10½	10½
Turpentine (bbl. lots), New York, cents per gal	63	63

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, September 7, 1918 *Number 10*

A New Plan for the Liberty Loan Campaign

THE national Liberty Loan Bureau has approved a plan, which appeals to us as an excellent one, for stimulating the "win-the-war" spirit of employees of utilities and industrial concerns. Primarily it consists in the holding of win-the-war meetings prior to the opening of the Fourth Liberty Loan campaign, with programs designed to impress upon employees the urgency of bending every effort to put the country upon an actual war basis. While the success of the Fourth Liberty Loan is the goal immediately in sight, this is only an incident in the race for the ultimate goal—Victory! The details of this plan are announced by the Liberty Loan Committee in a statement in the advertising pages of the issue. Any company which wishes to take advantage of the offer by the committee of the booklet mentioned has only to fill in the coupon on the page and mail it to us. Electric railways and manufacturers of electric railway supplies have in this movement an excellent opportunity to join with patriotic employers in other industries everywhere in "putting over" the coming big loan.

Solid Manganese Versus Manganese-Insert Special Work

IN ANOTHER part of this issue we publish a short article by W. L. Whitlock relative to the comparative performance of the solid manganese and the manganese-insert types of construction as found in the same special work layout at given locations in Denver where the traffic conditions were similar. It will be noted that in the situation quoted the comparison seems to be unfavorable to the insert type. Nevertheless, we would not condemn the insert type of special work as a result of this performance, because it appears from a careful reading of the article that the insert type under consideration is that wherein the insert is set upon the ordinary or old-style spelter bed, presumably without any attempt at either partial or complete machined bearing. For this reason we should expect that the solid manganese type would give the better service under the same traffic, provided that there was good fortune in obtaining the solid pieces substantially free from hidden defects at the intersections.

It seems to us that the article in question tends to strengthen and confirm the opinion expressed in an editorial in the issue of this paper for Sept. 19, 1914, to the effect that bolted-down or keyed-down inserts on partially or completely machined bearings are believed to be necessary to meet present-day heavy traffic conditions, and it is our understanding that the manufacturers are now providing the machined bed in most of their orders unless definitely instructed to the contrary. Furthermore, the specifications of the American Electric Railway Engineering Association now call for partially or fully machined bearing for the iron-bound, hard-center insert type of special work construction.

Expenses Await No Laws—Revenues Should Be Increased Now

HOW strikingly illustrative of the tendency of the times is the fact that a petition for a higher rate of fare was presented at the same session of the Chicago City Council at which a service-at-cost ordinance was approved. This ordinance, reviewed previously in these columns, provides for a basic 5-cent fare and gives authority to the board of trustees to charge for transfers or raise the fare if necessary to meet the cost of service. The ordinance is not expected to go into effect for at least a year. Were it now effective there would be no question about the method of solving the problem raised by the recent awards of the War Labor Board. Unfortunately, however, that relief cannot come too quickly if the Chicago surface and elevated companies are to be saved from financial disaster.

When the aldermen of a city approve a service-at-cost measure in the public behalf, it would seem a logical sequence that financial relief be given to the company if necessary pending a public vote on the ordinance. If there is equity in a franchise based on service at cost, prompt and fair judgment should be given to the appeal of the Chicago Surface Lines for city co-operation in securing higher fares. Similarly, the State Utility Commission should be influenced by the ordinance vote of the aldermen when considering the petition of the elevated lines, which is referred to on another page of this issue. A fair-minded public will expect to pay for service when the cost is high, just as it expects to get the benefits of low fares when costs have been reduced.

Can the Local Public Always Be Trusted?

WILL the car riders of Buffalo insist on having their pound of flesh? Their intention to do so might fairly be presumed from the recent action of the people of that city in voting against the City Council resolution which would have authorized the Public Service Commission to fix higher street car fares. Thus complete failure marks the end of the first attempt to cross the barrier raised by Rochester decision of the Court of Appeals. This decision, it will be recalled, denied that the regulatory law had conferred upon the commission any power to alter franchise rates without municipal consent.

At the time of the decision we made the comment that New York had been turned back to the Stone Age of regulation. The result of the referendum in Buffalo has confirmed this opinion. The people of that city, having made a 5-cent fare bargain with the local company years ago, are evidently determined to insist that the agreement be carried out even though an essential utility be forced into bankruptcy. The people had the right to make this choice under the court's interpretation of the Buffalo charter. Time will prove, however, that they have used their worst judgment in their own interest.

The electric railway companies in Buffalo and other New York municipalities, however, cannot subsist merely on the educative influence of time—they must have money now. Unless many companies secure relief at once from their franchise obligations as to rates of fare, bankruptcy is inevitable. Surely there must be a way out of this crisis. If the authorities feel that the companies' interests must be safeguarded, they should disregard the senseless opposition of short-sighted agitators and have the commission law amended so that justice can be done. Action is needed, and at once.

Mail Carriers Should Pay Their Cost of Transportation

DISCUSSION of the terms of a new traction ordinance in Chicago recently brought out the fact that the United States government is paying only about $25,000 for the transportation of postal employees in that city, whereas the actual cost at the regular rate of 5 cents a ride would come approximately to $145,000. The mail carriers were trying to persuade the aldermen that the old arrangement should continue. Under the 1907 franchise this compensation was satisfactory for a while because it covered practically the number of men whose routes were a considerable distance from the mail stations. This time, however, the aldermen had under consideration a different kind of ordinance—one in which the people would pay the actual cost of service. The aldermen were now bargaining for their constituents, and they did not want the cost of service burdened with an item which they thought should be carried by the federal government. They left the appeal of the mail carriers for adjustment by a subsequent City Council.

Aside from any interest in the charges which the car riders of Chicago may be asked to carry, the equity of this situation would appear to call for action by the Post Office Department. It may be true that the mail carriers can ill afford to pay for the numerous rides they must make on their daily rounds in the public service. In most cities the Post Office Department provides them with tickets for transportation. The Postmaster General may be anxious to keep down operating costs in his department, but this should not be done at the expense either of the mail carrier or of the passenger who is paying for the entire service. Our government has a heavy burden to carry these days, but this does not justify the evasion of any positive responsibility. Let the Post Office Department pay for its cost of service, and let the car rider pay for his share.

Developing an "Industry Consciousness" Among Electric Railways

THE most important point made at the recent New York conference of electric railway executives, held under the auspices of the Electric Railway War Board, was that electric railways must for their own preservation give up their purely local characters and demand recognition as a national institution. This is absolutely essential if the nation is to be brought to a realization of what this great utility has been and now is, in the national life. It is essential also if the public is to be convinced that the electric railway business is actually at this minute in a critical condition. For the latter purpose, as several speakers at the conference said with semi-ironical humor, it may be necessary for one or more "sacrificial offerings" to be made.

One of the principal stumbling-blocks in the path of the railways is the belief of the public that the utility is not in as serious a condition as it claims.

In an editorial last week entitled "Federal Government Increasingly Powerful in Electric Railway Affairs" we pointed out a number of ways in which war conditions had forced electric railways to come within the national purview. In order that the federal government may have something tangible with which to deal, it is obviously necessary that there be recognized such an entity as the electric railway industry. This was what speakers at the New York conference meant when they urged the development of an "industry consciousness."

The practical question in all of this discussion is how an industry consciousness is to be developed. It seems to us that the first step is to agree upon certain principles regarding which there can be no dispute; and the second step is to see that the public understands exactly how these principles work out when applied to the present and future conditions of the electric railway business.

The fundamentals as outlined by Britton I. Budd, in last week's issue of this paper, will be excellent to start with. First, it must be agreed that the utility is a partnership of employees, public and owners, working together to supply a vital economic necessity, good transportation. Second, the cost of this service will be determined by the market price of labor of the necessary quality, the market price of the necessary funds, and the service which the public desires. Third, the selling price of the commodity is determined by its cost.

Now it is self-evident that transportation cannot be sold for long at less than cost, and the temper of Americans is such that they are not asking for charity here or elsewhere. Let them, therefore, be convinced, from facts, that the transportation service which is prescribed for them by their public service commissions is being sold below cost and that the companies cannot continue it, and then justice will be done.

But entirely aside from justice to the property, a larger task just now is to keep the properties going; to maintain even present standards, let alone improving them. This requires increased income—to get it seems to mean for the moment federal aid. To secure this, in turn, involves a united front, in other words, an "industry consciousness."

Three Men Thought Necessary to Operate a Car!

HOW times do change! Looking back over our files, we find a report made in 1903 to the Merchants' Association of New York by its committee on engineering and sanitation. There is much of merit in this report on the passenger transportation service in New York City. The men who wrote it had the co-operation of practical transportation men in their study of the local problem. We find, however, a recommendation "that upon the congested lines, on all cars having a length of car body of 28 feet or over, two men in addition to the motorman should be employed, at least during the rush hours." The committee thought this would expedite the movement of cars, minimize accidents and, in general, add to the convenience of the traveling public.

Of course, this was before the day of the prepayment car, which adequately took care of the situation the committee intended to meet. The point in this recommendation which appeals to us now, however, is the thought that electric railways were ever considered financially able to sustain such a luxury as a third man on the platform. Here in 1918 we find the average company barely able to make a living. Economies have been adopted in every department, and there is a growing tendency to operate with one man rather than three per car. What a strange exhibit of extravagance would be offered by the management which should now attempt to put two conductors on the rear platform and then go to a public utility commission seeking a higher rate of fare! Truly we are justified in saying: "It can't be done."

Bringing Out and Developing Latent Talent

EVERY aggregation of individuals is the repository of some talent, much of which is latent or potential because there has not been the occasion for bringing it out and training it. The talents which many men possess and which are not required in the ordinary routine of their every-day work are often more characteristic of the men than the qualities which they exhibit from day to day.

In other words, it is possible that the real man may be manifest in the doing of things entirely outside the routine of the office, shop, track or power house. That this is so is illustrated in the company section notes which appear on our Association News pages from week to week. These show that the section members can entertain acceptably with music, recitations, boxing, etc. Moreover, they can write instructive and uplifting papers on subjects of railway and other interests. Further, they can conduct campaigns for patriotic loans, war gardens, food conservation, better public relations and many other worthy causes.

Obviously employees' organizations, such as the company sections, afford a splendid means for training along such lines. Success in this direction is twofold; first it is necessary to find out what the men are now able to do in the way of assisting, instructing or entertaining their fellows. In the second place, success consists in affording them the opportunity and means for developing their talent. This should be the dominant idea in planning programs and committee activities, as well as in the organization of the section as a whole. No section can possibly fail if behind it are a recognition of the principle outlined above and an intelligent plan for applying it.

Protecting Our Property from Fires in War Times

JUDGING from the large number of disastrous carhouse fires which have occurred within the past year, the matter of fire protection is a pertinent one. Undoubtedly war conditions tend to increase the ordinary fire hazard, and in some instances enemy agents may have had something to do with the fires, which, by crippling local transportation, hampered our war activities. As was pointed out, however, in a symposium on the subject at the last convention of the American Society of Mechanical Engineers, the essentials of the fire protection problem are the same now as in normal times, and the methods of combating the fire hazard developed in times of peace are still the most efficacious. In this connection United States Attorney General Thomas W. Gregory is quoted as saying: "Statistics show as the chief dangers menacing private manufacturing plants those which originate or are developed within their own boundaries. The real protection needed is protection within the plant itself, and the prime responsibility for the internal protection of workshops and factories rests, as it always has rested before, upon owners and managers."

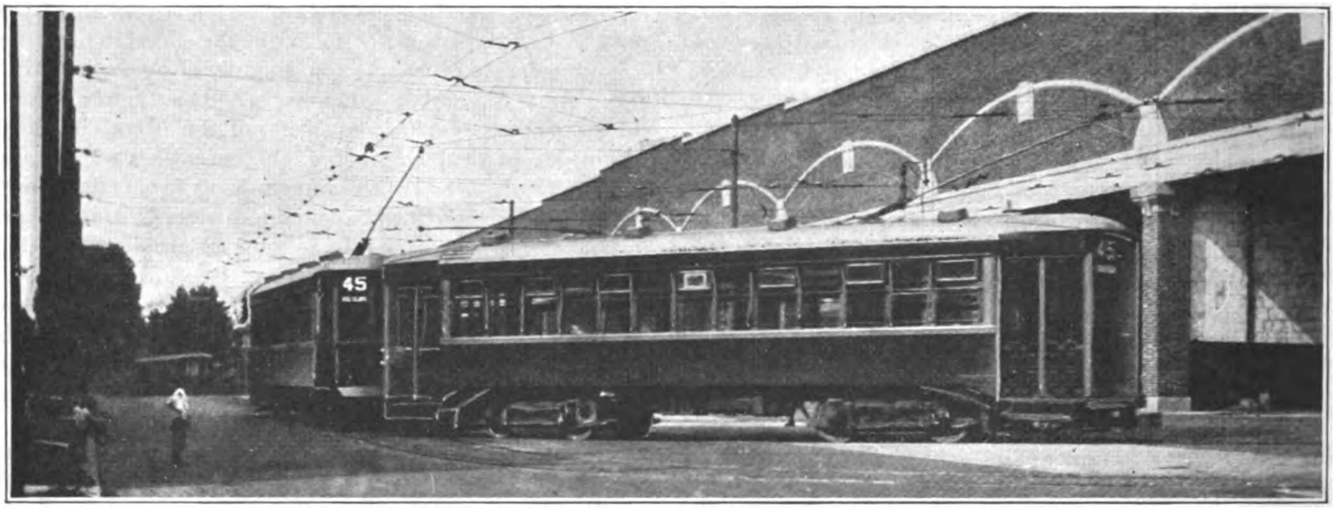
In all probability these remarks apply to the electric railway industry quite as well as to the manufacturing industries concerning which they were made. Oils, paints, oily waste, wood and the other inflammable materials used in car construction are found in electric railway shops and carhouses. These, taken together with grounded circuits, form a not altogether happy combination from the standpoint of the fire hazard. It may well be that the large labor turnover and the lack of trained employees also had something to do with last year's fire losses.

But how can the fire evil be combated? The insurance rates may be regarded as the truest measure of fire danger, and a study of such rates leads to the conclusion that those buildings which have automatic sprinklers and other auxiliary protection are about as safe from the ordinary fire as it is humanly possible to make them. Where fires have occurred in sprinkler protected buildings disastrous results have occurred only where the sprinkler system has been inoperative because of shutting off or inadequacy of the water supply due to defects in the equipment, or to the presence of a number of unsprinklered sections.

But fire-fighting equipment provides at best only a "remedial" type of protection. It seems logical to put at least as much stress on "preventive" protection. Such "protection means the segregation and isolation of all" inflammables and explosives, scrupulously clean premises and adequate supervision. There is much that can be done in a construction way, even with old buildings. What is everybody's business is usually nobody's business, and the entire matter of fire hazard and fire protection must be handled in a businesslike manner by officials vested with sufficient authority to get decisive results.

High Passenger Density the Outstanding Feature of New Service to Hog Island

The Philadelphia Rapid Transit Uses Train-Operated Surface Cars of Large Standing Capacity to Carry the Shipbuilders—The Heavy Rush-Hour Traffic Imposes Severe Service Requirements Upon the Rolling Stock—New Features Are Incorporated in the Door Control and Interlocking System



GOING AFTER THE HOG ISLANDERS

THE heavy passenger traffic suddenly thrown on one corner, as it were, of Philadelphia's transportation system by the development of Uncle Sam's big shipyard at Hog Island, necessitated a considerable increase in the available equipment of the Philadelphia Rapid Transit Company. As was noted in the news columns of the ELECTRIC RAILWAY JOURNAL for March 16, 1918, 100 new cars were purchased from the J. G. Brill Company, specifically to take care of the service to this shipyard. The funds necessary to cover the cost of these cars were provided by the Emergency Fleet Corporation under an agreement the general terms of which were published in the ELECTRIC RAILWAY JOURNAL for Aug. 3, page 186.

The transportation of the 30,000 shipbuilders to and from the scene of their daily labors is, of course, rush-hour traffic of the most severe type. This and the isolated location of the shipyard, taken together, result in a very high passenger density per mile of track. The passenger interchange movement is practically always unidirectional. In the morning the load is gathered up in the housing districts and at the transfer points, and as the cars are used exclusively in the shipyard service, few stops are made to discharge passengers until the Hog Island terminal is reached. In the evening the traffic flow is, of course, just the reverse, that is, the cars are loaded to capacity at the shipyard and discharge their loads in small groups at the transfer points while passing through the housing districts.

The cars purchased to take care of this service were selected with particular reference to their ability to load large groups of passengers quickly and safely and to provide ample standing room. Their principal dimensions and other features are given in the table on page 408.

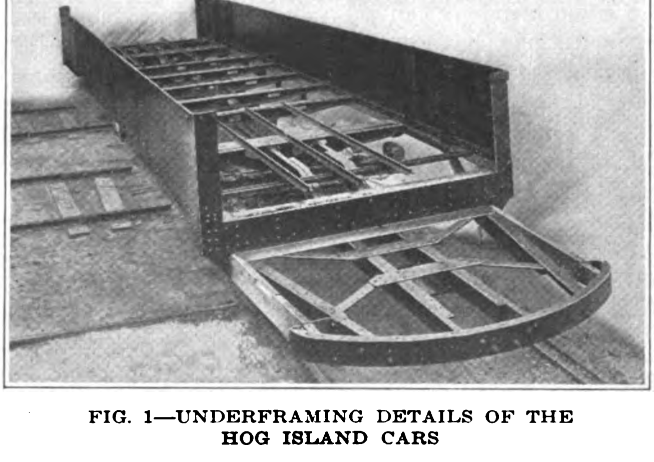


FIG. 1—UNDERFRAMING DETAILS OF THE HOG ISLAND CARS

SEMI-STEEL BODY CONSTRUCTION IS USED

The framing is of the straight-sided type, the sheathing being made up of steel sheets $\frac{3}{32}$ in. thick, securely bolted to the posts, and riveted to the angle sills at the bottom and to the belt rail, 3 in. x $\frac{1}{2}$ in. in cross-section, at the top. The top plates into which the side posts are mortised are of yellow pine. The letter panels are of poplar, securely glued together before machining, and held in position with flattened iron screws. Angle bars 5 in. x $3\frac{1}{2}$ in. x $\frac{5}{16}$ in. in size are used for side sills, and at the bolsters the sills are reinforced with angle bars of the same size. The end sills are of $\frac{3}{16}$-in. plate bent to Z-shape, and they are securely attached to the side sills by means of gussets. The bolsters are of cast steel bolted to the side sills and provided with suitable openings for the brake rod and cable conduit. The bumpers are of 6-in., 13-lb. channels, and each end of the car is equipped with a Rico anti-climber extending the full width of the bumper. The details of the underframing are well shown in Fig. 1.

In order to provide for low step heights, the flooring at each end of the car body, starting at a point about 5½ in. back of the bolster, is laid with a ramp so that it is 2 in. lower at the vestibule door than elsewhere in the car. The flooring between the aisle and the sides of the car is in two layers, laid lengthwise with building felt between. The top layer is of ⅝-in. hard maple and the bottom of 13/16-in. yellow pine. Floor mat strips extend the full width of the aisle and are of hard maple spaced about ⅜ in. apart at the bottom and secured to the floor with countersunk iron wood screws. The roof is of the plain arched type, extending the full length of the body and supported by a continuous steel carline at each post. The carlines are forged into a single piece the shape of the roof from ⅜-in. x 1½-in. steel. The hoods are detachable and have wood carlines. The roof covering is of No. 8 cotton duck. One trolley board of yellow pine extends the full length of the body.

Special Provision Is Made for Train Operation

Each end of the car is provided with a round-end vestibule having three window openings in the front. The inside paneling of the vestibules is reinforced at the top with ⅜-in. x 3-in. iron braces, to which are bolted the brackets for the controller, engineer's valve, brake shaft, and other apparatus. Bulkheads without doors are provided at each end of the car. Each side of each platform is provided with doors, four in all, hinged in pairs to fold outwardly. The lower portions of the doors are paneled with cherry and the upper portions glazed with double-strength glass. The doors are equipped with National Pneumatic door-operating mechanism, and are so arranged that when the cars are operated in trains the conductor on the rear platform of one car can open the door on the front platform of the trailing car.

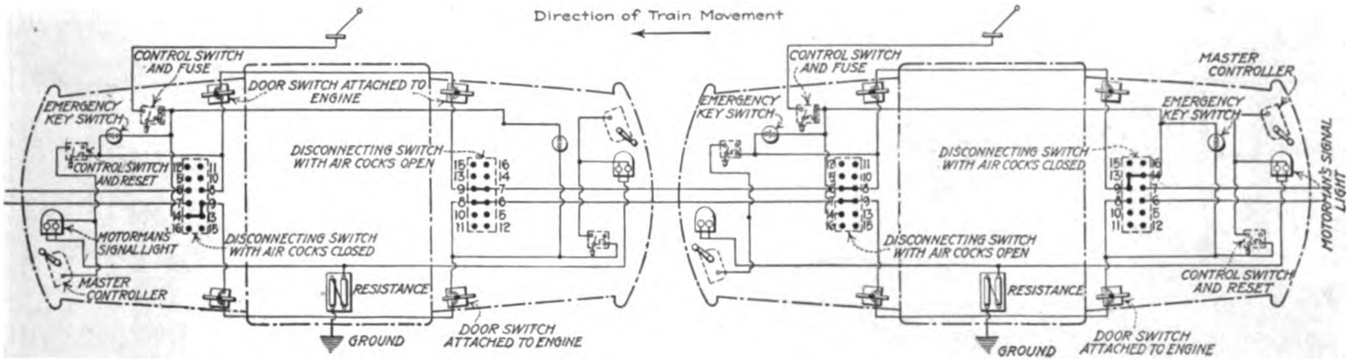

Direction of Train Movement
CONTROL SWITCH AND FUSE
EMERGENCY KEY SWITCH
DOOR SWITCH ATTACHED TO ENGINE
DISCONNECTING SWITCH WITH AIR COCKS OPEN
CONTROL SWITCH AND RESET
MOTORMAN'S SIGNAL LIGHT
DISCONNECTING SWITCH WITH AIR COCKS CLOSED
MASTER CONTROLLER
RESISTANCE
GROUND
DOOR SWITCH ATTACHED TO ENGINE
CONTROL SWITCH AND FUSE
EMERGENCY KEY SWITCH
DISCONNECTING SWITCH WITH AIR COCKS CLOSED
DISCONNECTING SWITCH WITH AIR COCKS OPEN
MASTER CONTROLLER
EMERGENCY KEY SWITCH
MOTORMAN'S SIGNAL LIGHT
CONTROL SWITCH AND RESET
RESISTANCE
GROUND
DOOR SWITCH ATTACHED TO ENGINE

FIG. 2—DOOR AND CONTROL INTERLOCKING CIRCUITS

In order to secure this operating feature and to render the interlocking between the doors and motor control system more nearly "foolproof" a number of innovations have been introduced in the interlocking and door-operating apparatus.

A sketch of the interlocking circuits is given in Fig. 2. The apparatus consists of the usual door switches in series with the energizing circuit of the master controller and some additional contacts and lines in the disconnecting switch and circuits of the Tomlinson automatic air and electric couplers. The fundamental purpose of this disconnecting switch is to de-energize the motor-control circuit contacts on a coupler when it is not connected to the coupler of another car. The switch is of the drum type and is interlocked with the cocks in the airbrake lines so that the act of operating them also operates the switch. It is located back of the coupler under the end of the car body. The shaft of the drum is connected by means of bell cranks and a

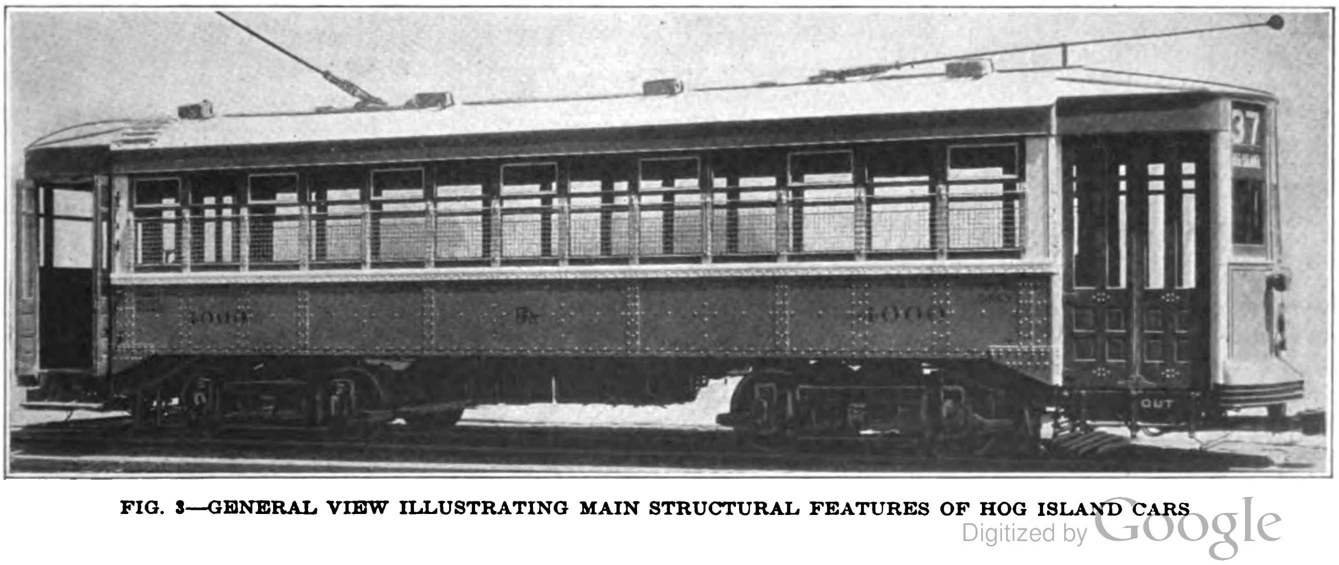

37
1000
1000
OUT

FIG. 3—GENERAL VIEW ILLUSTRATING MAIN STRUCTURAL FEATURES OF HOG ISLAND CARS

connecting link to a horizontal rod or shaft which ends under the car sills. The end of this rod is squared off so that the handle of the master controller can be used to operate the switch and air-cock combination.

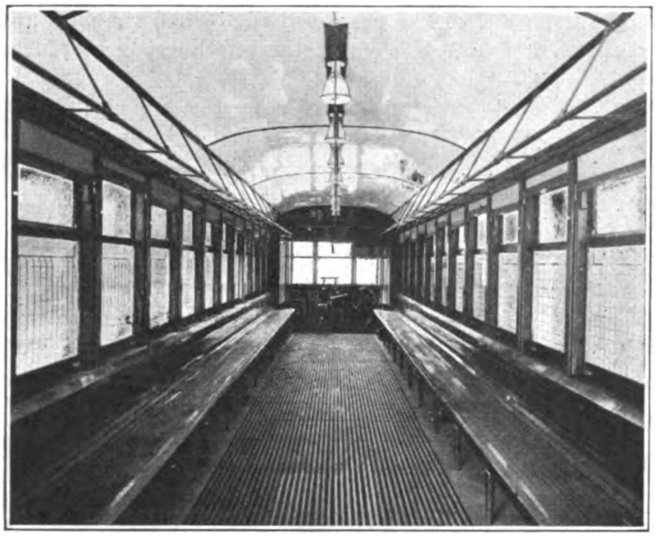


FIG. 4—INTERIOR VIEW SHOWING SEATING ARRANGEMENTS AND OTHER INTERIOR DETAILS

The operation of the interlocking circuits can be understood best by actually tracing the circuit through. With a two-car train the coupler disconnect switch contacts will be connected as shown in Fig. 2. From the trolley on the trailing car the circuit can be traced to the control switch and fuse, to contacts 14, 13 and 9 on the rear disconnect switch of the trailer, to the right-hand door switches of the trailing car through the couplers and right-hand door switches of the leading car to the control and reset switch and thence to the master controller and through the control circuits to ground. With any one of the four sets of doors on the right-hand side of the train open, the train cannot be started since the control circuit would be open at the open door. The doors of the left-hand side of the train are not involved in this circuit since, as will be seen later, they are automatically locked with the direction of train movement indicated in the sketch.

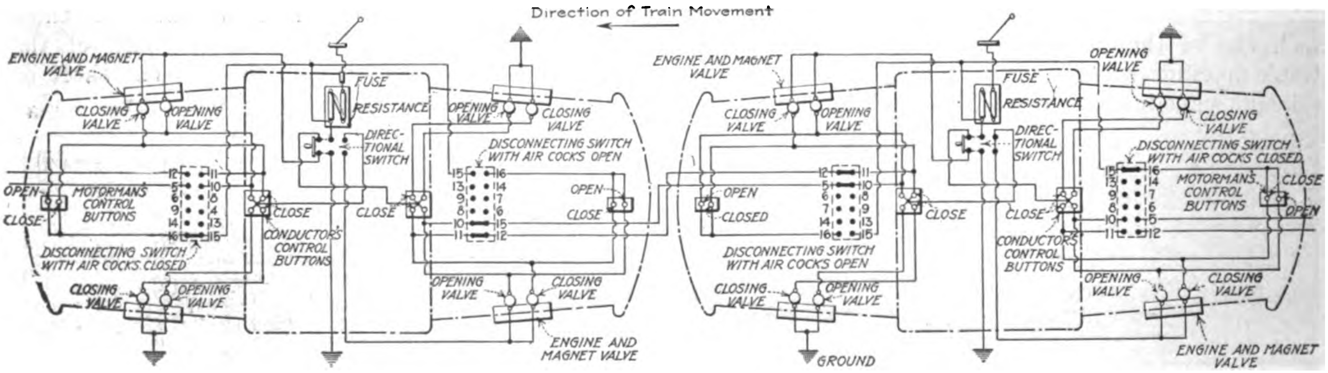

Direction of Train Movement
ENGINE AND MAGNET VALVE
CLOSING VALVE
OPENING VALVE
FUSE
RESISTANCE
DIRECTIONAL SWITCH
OPENING VALVE
CLOSING VALVE
DISCONNECTING SWITCH WITH AIR COCKS OPEN
OPEN
CLOSE
MOTORMANS CONTROL BUTTONS
CLOSE
CLOSE
OPEN
CLOSE
CONDUCTOR'S CONTROL BUTTONS
DISCONNECTING SWITCH WITH AIR COCKS CLOSED
CLOSING VALVE
OPENING VALVE
OPENING VALVE
CLOSING VALVE
ENGINE AND MAGNET VALVE
ENGINE AND MAGNET VALVE
CLOSING VALVE
OPENING VALVE
FUSE
RESISTANCE
DIRECTIONAL SWITCH
OPENING VALVE
CLOSING VALVE
DISCONNECTING SWITCH WITH AIR COCKS CLOSED
OPEN
CLOSED
CLOSE
CLOSE
MOTORMANS CONTROL BUTTONS
CLOSE
OPEN
CONDUCTORS CONTROL BUTTONS
DISCONNECTING SWITCH WITH AIR COCKS OPEN
CLOSING VALVE
OPENING VALVE
OPENING VALVE
CLOSING VALVE
GROUND
ENGINE AND MAGNET VALVE

FIG. 5—DOOR OPERATING AND LOCKING CIRCUITS

In the circuit traced, energy was considered as coming from the trailing car. As a matter of fact, the cars are actually operated with only the leading trolley pole in working position. They are connected with a train-bus jumper, however, so that the circuits are the same as those traced out except that the energy comes from the train bus instead of the trolley on the trailing car.

For single-car operation the coupler disconnect switches are in the positions marked "Disconnecting switch with air cocks closed." The interlocking with the air cocks, of course, eliminates the possibility of moving the cars with the disconnect switch in the wrong position. The innovation in the interlocking circuit is that with the arrangement described the operation is entirely automatic and a crew, in making up a train, perform only the operations necessary with any airbrake equipment. In case of failure of any of the door switches, a car can be operated back to the carhouse by closing the emergency switch which short circuits the door switches. This switch is located on the vestibule side of the end of the car body near the ceiling. Its position near the heater switches is shown in Fig. 7. It can be operated only by means of a special key.

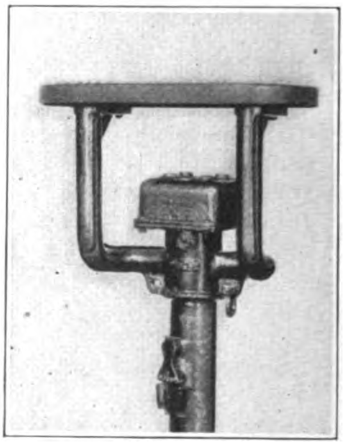


FIG. 6—DETAILS OF CONDUCTORS CONTROL STAND

As will be seen in the figure, lamp signals are used to give the starting signal. They are located on the dashes just to the left of the air gage, Fig. 4. To provide against the hazard of a lamp failure two lamps, connected in parallel, are used. The resistance in series with these lamps is such as to give a lamp voltage of 110.

MANY NEW FEATURES IN THE DOOR CONTROL

The requirements of double-end train operation, of the operation of the front door of the trailing car from the conductor's position in the leading car, the locking of all doors except those on the operated side and the locking-out of all door-control stands except those at which members of the train crew are stationed involved a number of interesting and complicated problems. The solutions of these problems are shown in the sketch in Fig. 5. Two push buttons, one marked "open," the other "close," are located at each motorman's position and four, as shown in the diagram, at each conductor's position. The motorman's buttons are mounted at the top of the dash between the master controller and the brake valve and those for the conductor at the top of the conductor's control pedestal under the wooden change tray which is provided on these cars. The button housing appears as a cap on the pedestal in Fig. 4 and is shown in greater detail in Fig. 6.

The door engines employed are of the usual type but their operation from another car has necessitated other contacts in the coupler disconnect switch in addition to those employed by the door interlocking circuits already described. A directional switch, which is mounted in one of the vestibules just above the door engine, Fig. 7, is also required. This is a double-pole, double-throw switch so connected that the handle must always be thrown in the direction of train operation or the doors can not be opened from the control positions. The operating circuit is connected to the trolley through a resistance which reduces the electric pressure to about 32 volts. It is entirely independent of the door and motor-control interlocking circuit.

HOW THE DOORS ARE OPERATED

To illustrate the operation of the system, the circuit can be traced from the resistance to points 15 and 16 on the coupler disconnect switch, and thence to the motorman's buttons and the door-engine magnet coils to ground. By means of a circuit through the directional switch, the conductor at the rear of the leading car can operate both the doors at his side and, through a circuit in the coupler, the doors in the front end of the trailing cars. All of the buttons, except the three groups at which crew members are stationed, are locked out by being placed on dead circuits. It will also be noted that the left-hand doors are all inoperative because with the directional switch thrown as indicated their operating coils can not be energized. For operation in the reverse direction, it is of course necessary to throw the switches in the corresponding direction. To provide for the emergency of opening the doors with no power available, a small lever attached to the magnet valve of the opening cylinder projects from the closet in which the engines are housed. Pulling on this lever will admit air to the cylinder and thus open the doors. The engines are mounted on a steel plate which also holds the bearing of the doorshaft, thus maintaining a fixed relation between the engine pistons and the door shaft.

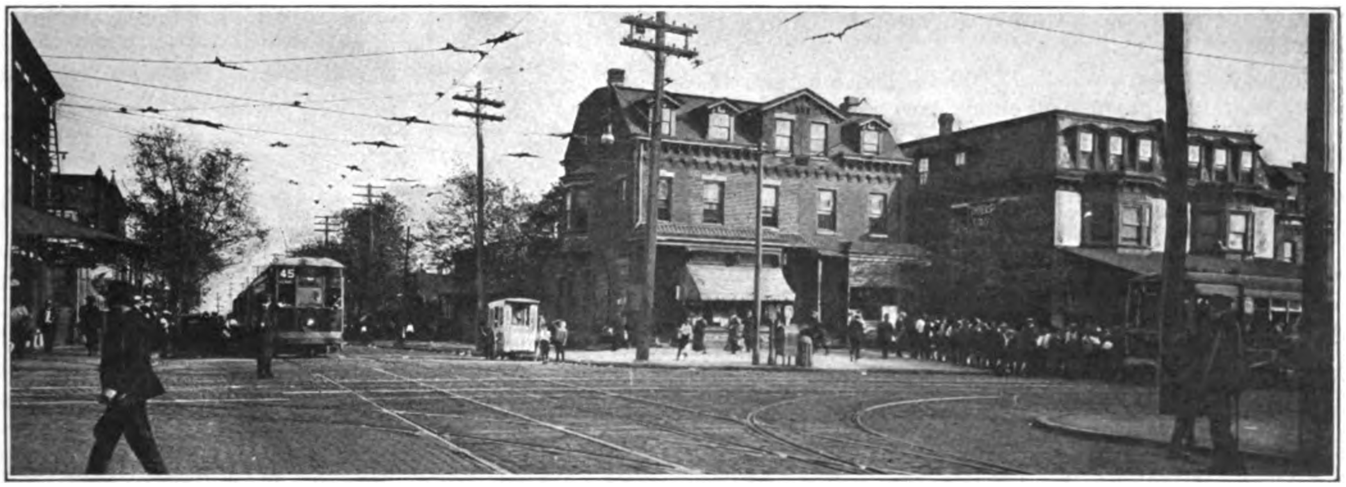


FIG. 8—WOODLAND AVENUE AND FORTY-NINTH STREET—A HEAVY TRANSFER POINT ON THE HOG ISLAND LINE

The engines are lubricated with a sort of splash system in which the central chamber between the two pistons is filled approximately half full of lubricant. Provision is made for reclaiming the lubricant emitted in the exhaust and returning it to the central chamber.

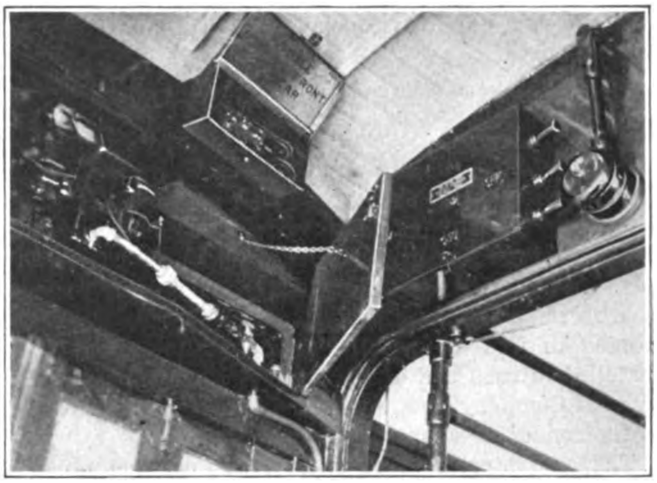


FIG. 7—VIEW OF VESTIBULE HOOD SHOWING DOOR CONTROL SWITCHES

With this system the engines can be operated in ordinary service for about two years without relubrication.

FOUR-MOTOR EQUIPMENT WAS CHOSEN

The motive power consists of four General Electric 247-C motors with type-PC multiple-unit control. Each car has two Ohio Brass type-Z headlights and the necessary circuit arrangements to permit the application of a portable headlight. Interior illumination is secured from ten 23-watt Mazda lamps spaced along the center of the car ceiling, and one light on each platform. Safety car-lighting fixtures with heavy density opal reflectors constitute the accessory equipment. Each car is also equipped with Nichols-Lintern automatic tail lights, of which a complete description was published in the ELECTRIC RAILWAY JOURNAL for Aug. 3, 1918. page 203. These lights permit the safe and economical operation of the cars on the necessarily congested tracks.

Brill 77-E-1 trucks carry the car bodies. These trucks have a 5-ft. 9-in. wheelbase and are equipped with 33-in. rolled steel wheels. The wheels are mounted on Valley steel, heat-treated, standard E-5 axles. The trucks are provided with standard Brill center bearings, Perry side bearings, Anderson slack adjusters, Brill cast-steel bolsters, the Brill graduated spring arrangement, the Brill bolster guide arrangement, and Brill semi-steel journal boxes.

INTERIOR ARRANGEMENT PROVIDES AMPLE STANDING ROOM

As illustrated, the cars are equipped with longitudinal seats of the wooden slat type. This arrangement gives a seating capacity of fifty-two persons and provides for large standing capacity. As many as 200 passengers have been carried per car during the rush-hour periods. A motorman's folding seat of the Keystone type, arranged to fold against the inside vestibule lining, is installed in each end of the car. A Philadelphia Rapid Transit Company's standard conductor's seat is attached to the conductor's control stand.

The car interior is of cherry, stained and finished dull. All moldings are of plain design so as not to catch dust. The ceiling is of Nevasplit, painted white, and is held in place by a suitable molding which is secured with bronze oval-head brass screws. Moldings for advertising cards run the full length of the side decks. Twenty-six pushbuttons are provided for the convenience of the passengers in signaling stops, Consolidated equipment of the high-voltage type being used for the purpose.

General Electric emergency straight-air brakes arranged for train operation, and National staffless hand brakes constitute the braking equipment. A summary of other accessory equipment was published in the issue of the ELECTRIC RAILWAY JOURNAL for March 16, page 552.

The new cars are about 12,000 lb. heavier than the large, nearside, pay-as-you-enter cars now in service on a number of the surface lines of the company. Another point of difference is that the older cars are equipped with maximum-traction trucks and consequently carry only two motors.

DATA OF P. R. T. HOG ISLAND SHIPYARD CARS

Length of car body over anti-climbers	45 ft. 6 in.
Length of car body over corner posts	33 ft.
Width of car body over sills and posts	8 ft. 4 in.
Extreme width of car body, maximum limit	8 ft. 6 in.
Height from rail over trolley board	11 ft. 8 in.
Truck centers	21 ft.
Height from rail to top of first step	14 11/16 in.
Height from top of step to platform floor	13½ in.
Height from platform floor to car floor	10½ in.
Radius of shortest curve that can be rounded	35 ft.
Total weight, empty	44,000 lb.

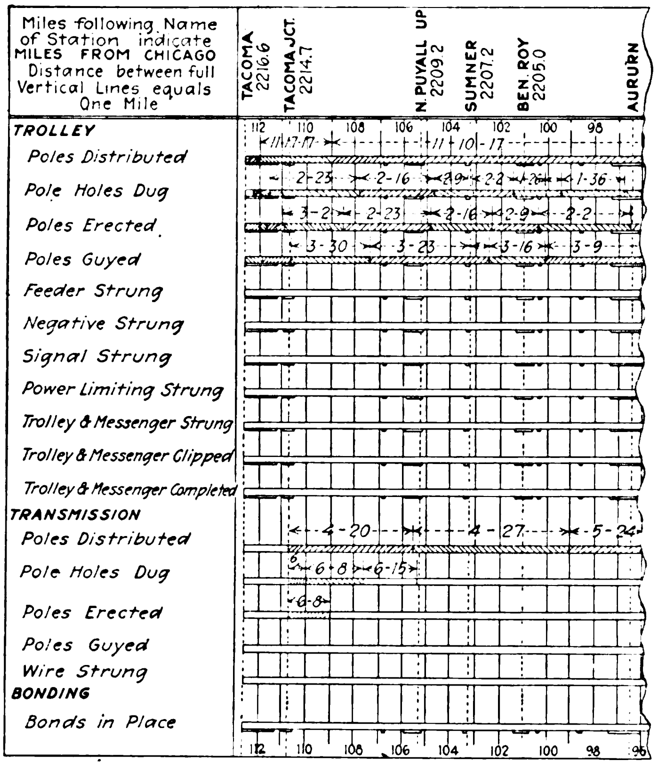
The War Industries Board, through its employment management division, has arranged courses of instruction in employment management at a number of educational institutions. The only cost is that incident to living expenses and about $15 for text-books and supplies. The idea is to train those who have to do with the "hiring and firing" of men so that the best results can be obtained with the available labor supply.

Progress of St. Paul Electrification Out of Seattle

All Buildings Have Been Erected Except at One Station—One 113-Mile Section Is Complete with Poles and Fixtures

DESPITE the nation-wide handicap of labor shortage, the electrification of the Seattle-Tacoma division of the Chicago, Milwaukee & St. Paul Electric Railway is making good progress. All of the substation buildings are up except Renton, which has just been started; and even some transformers are reported by the Westinghouse Electric & Manufacturing Company as ready for shipment. At each station three bungalows are built for the three shifts of operators.

Between Cle Elum and Tacoma, 113 miles, poles and fixtures are practically complete, and about one-third is done on the remaining section eastward for 98 miles to the Othello terminus of this division. The steel overhead structure for Renton is still to go up, while the unification of terminals at Tacoma is delaying work there until it is definitely determined what tracks shall or shall not be electrified. A sample chart used in checking progress on the work is given above.



PART OF PROGRESS CHART FOR LINE CONSTRUCTION ON THE ST. PAUL ELECTRIFICATION

Separate schedule progress charts are made covering signals, individual substations and the Tacoma-Cle Elum and Cle Elum Othello sections. The line progress report reproduced in part relates to the first 16 miles out of Tacoma. The small additional horizontal lines denote extra tracks as sidings and yards. The top of the complete line chart shows in addition to "crews" and "average number of men," the items of "work trains," "week ending" and "weather conditions." Operation of the Othello-Tacoma (Seattle) division is expected to begin in July, 1919.

Railways Facing a Crisis

The Public and Public Authorities Must Recognize the Seriousness of the Present Emergency

BY W. W. HARRIS
Of Lee, Harris & Lee

TO THOSE who are willing to face the facts there can be no question that the electric railways face a crisis, and that the crisis is one apparently demanding federal legislation.

Notwithstanding the widespread efforts of electric railways to secure the permission of authorities to increase their fares, the general response has been neither immediate nor adequate. The opposition to increase of fares is still too wide-spread, and in many places too bitter to permit hope of a general settlement by local authorities. While Nero fiddles Rome burns. That this statement is not overdrawn is evidenced by the report just submitted to the government by J. A. Beeler. After investigation in the principal centers of war industry he asserts that electric railways the country over are running into bankruptcy and ultimate collapse. He declares it his belief that neither the government nor the communities realize the truth and urges the appointment of a federal administrator.

The President, the Secretary of the Treasury and other officials of our government have called the attention of local authorities throughout the nation to the imperative necessity of coming to the rescue of the embarrassed railways. While it is true about 250 companies have had various forms of increase in fare, there are still about 300 companies whose petitions remain to be acted upon, and more than 1000 companies whose business cannot help but have been seriously affected by war conditions. Possibly no other essential business has been so seriously affected by rising costs.

Nevertheless notwithstanding the appeal of the officials of the government, notwithstanding the appeals of the leading civic bodies in the large cities, certain interests—possibly to their political advantage, though in this I believe they are woefully mistaken—have opposed every move of the companies looking toward increased fares.

The government has announced that it is at present unable to exert its authority toward a definite settlement of this problem. This is why one is justified in saying that a crisis impends. Legislation by Congress looking toward federal action would meet this crisis. In New York or other states where public service commissions are without power to alter franchise rates, nothing less than speedy action by the legislatures—in special session if need be—will serve.

NOT A STRUGGLE FOR PROFIT

It does not seem to have been yet driven home into the consciousness of regulatory officials that higher fares are a war-time necessity and not a source of profit. Ex-President Taft and Frank P. Walsh, joint chairmen of the War Labor Board, in a report sent on Aug. 2 to President Wilson said:

> The increase in fare must be given because of the imminent pressure for money receipts now to keep the street railroads running so that they may meet the local and national demand for their service.
>
> Over-capitalization, corrupt methods, exorbitant dividends in the past are not relevant to the question of policy in the present exigency. In justice the public should pay an adequate war compensation for a service that cannot be rendered except for war prices.

At a meeting recently held in the City of New York about 150 men representing more than 500 railways discussed the general situation and especially the enormous wage awards of the National War Labor Board. Philip H. Gadsden for the War Board of the American Electric Railway Association made a statement in which he said:

> Statistics compiled by the Commissioner of Internal Revenue show that in 1916 the gross income of the electric railways of the country was $672,000,000 and that the net income was about $70,000,000. In 1917 the net had declined to $35,000,000, while the reports received from 154 companies, covering their operation for the first three months of 1918, showed a decline in net of 94½ per cent.
>
> This is for a period before the awards of the War Labor Board had become effective.
>
> The decision of the War Labor Board in the matter of wages will involve an addition of more than $100,000,000, and such an addition will wipe out every dollar of net income and leave only enough to meet about 50 per cent of the fixed charges, which in 1916 amounted to $160,000,000.

This is the situation in the United States. In the larger cities generally it is rendered even more acute by the persistent and mistaken—if not malicious—misrepresentation of the facts to the public.

MISREPRESENTATION HARD TO OVERCOME

The power of long years of misrepresentation of the affairs of the transportation companies cannot be quickly overcome, even by statements of the truth. Its effect has had notable examples within a short time.

Only a few days ago a referendum on an increased fare was taken in Buffalo. The members of the city government and some of the newspapers had for a long time opposed the company. It became perfectly apparent, however, that the company, without increase of fares, faced receivership, and the city government employed outside experts to make an examination. These experts reported that the increase in fares was a necessity. This report was endorsed by a representative of the National War Labor Board.

The City Government thereupon passed a resolution in favor of a temporary increase of fares, pending a permanent adjudication by the Public Service Commission. This finding, owing to a provision in the city charter, was then submitted to the referendum of the people. But the momentum of the long campaign of misrepresentation was too great, for although the Chamber of Commerce, the banks, the Central Labor body and all of the newspapers except one came out in favor of the temporarily increased fare, the voters rejected the proposition by an overwhelming balance.

What is the result? The city government of Buffalo has exhausted its power.. The Public Service Commission has exhausted its power. The federal government says, that—notwithstanding the enormous war work going on in Buffalo—with 65,000 war workers of its 100,000 dependent upon the street cars—it has no power. The company itself is helpless. It cannot pay higher wages. Its men are quitting. If they strike, the Mayor says he will urge receivership.

Clearly the answer is immediate federal legislation or a special session of the New York Legislature. And in any case the time demanded for these is such that Buffalo must suffer in its service in the interim. This loss will cost far more than the added fare would have cost, and in the end the fare must be higher anyway.

THE PROBLEM IS COUNTRY-WIDE

Similar results were recently attained in a referendum in Birmingham, Ala. Still another demonstration of the persistent force of a long period of misrepresentation is afforded by the situation in New Jersey. In that State the Public Service Railway, operating in 145 towns, demonstrated its absolute need for increased revenue. But a heated political campaign is in progress in that State, and it has been reflected in the decision of the regulatory board by which an increase in the cash fare was refused but 1 cent was allowed to be charged for transfers, under the express provision, however, that the company should submit a zone system plan to the board by Jan. 1, 1919. The company has now, owing to new increases of expense, been forced to renew the petition for increase in fare. But the same public feeling exists. Whatever be the reason, the affected cities of New Jersey will not accept the company's statement of its condition.

Results such as have been attained in Buffalo, Birmingham and in New Jersey cannot all be due to a peculiar public. They would seem inevitably to indicate that the public had not been persistently and correctly told of the company's story over a long period. For eleventh hour publicity will not suffice. The surgeon cannot save the patient already showing *rigor mortis*.

In Massachusetts, although the companies had been under regulation for more than thirty years, so that there could by no possibility be an argument that the securities had been watered, and although they had not paid dividends, or at least none comparable to the returns made to capital in other industries, there was, owing to certain loud and sinister influences, a strong public feeling against the transportation companies. Ultimately legislation was passed by which a service-at-cost plan under state regulation made possible for any company desiring it. Under another act a state board of trustees was put in charge of the operation of the Boston Elevated Railway. It was then found necessary to institute a 7-cent fare at once. Furthermore, the actual operation of the 7-cent fare has shown that it will by no means meet the increased expenses caused by war conditions.

In Cleveland four raises in the street car fare have been made since last autumn, and now the rate is 5 cents cash fare and 1 cent extra for transfers. According to the reports of Fielder Sanders, Street Railway Commissioner of the city, the present fare will not be sufficient to meet the expenses of the road.

In Tacoma a 3-mile extension had been made to the municipally-owned road, and the city government had to determine the rate of fare. It was found that the cost of operation and of the extension had been so great under war conditions that not even a 7-cent fare would meet the bill. The fare was placed at 10 cents. The municipally owned roads in Canada have met similar experiences.

Plainly the old order is passing. Service costs more, and more must be paid for it. Plainly, too, the taxpayer must share the burden. In the words of William L. Ransom, counsel of the Public Service Commission for the First District of New York, the public must realize "that whether the form of ownership and operation be public or private the public can have in transportation or public utility service, only what it is willing to pay for, and there is no way of getting something for nothing for the public from a public utility over any considerable period of time.

THE TIME IS CRITICAL

It is quite apparent that the situation is really a crisis, for the campaigns against increase of fares are most bitter in the larger cities where most of the war work is being done. The integrity of our war program is seriously affected.

It is interesting to note the recent action taken in London, as described in detail elsewhere in this issue. After a long discussion the House of Commons decided that utility companies are entitled not only to their operating expenses—which the companies in this country are vainly seeking at the hands of the authorities—but that they are entitled to three-fourths of the average dividends paid before the war.

It should be noted here that the legislation in Massachusetts recognizes the right of the investor to a return upon his investment. This indeed is a feature of the service-at-cost plan wherever it has been put in operation. It is a feature of the Tayler ordinance in Cleveland. It is a hopeful sign. But service-at-cost legislation takes time. It cannot meet the present crisis.

The point I wish to emphasize is the necessity of the public and the public authorities recognizing that an emergency of the most critical character faces the service. Without a recognition of this fact the future of electric railways is full of peril not only to present investors but to business generally and to an essential part of our war program.

College Training in War Time

As a result of the passing of the man-power bill by Congress, and the consequent lowering of the draft age, all higher education of men in this country will be greatly affected. In fact, standard college courses are wiped out, and no college will operate this year except as a military training school. Men prepared for college will register as usual and will, as soon as arrangements are completed, be inducted into the army as privates, with private's pay and subsistence. Boys of twenty will stay in school three months; those of nineteen, six months, and those of eighteen one year.

New Single-Phase Locomotives for the Swiss Bundesbahn

The Author Describes Four Sample Locomotives Ordered for the Swiss Bundesbahn and Several Types Developed by the Oerlikon Company in Connection with This Electrification

By PROF. HUGO STUDER
Zurich, Switzerland

IN MAY, 1917, the management of the Swiss Bundesbahn ordered four sample locomotives for the Gotthard electrification. These have now been received and placed in service. It was the original intention to test these locomotives by operating them on the line between Scheraligen and Brig, but when the electrification of the line connecting Scheraligen and Bern was begun it was decided to use them, together with fourteen Loetschberg locomotives, to take care of the entire line between Bern and Brig, which is 72 miles long. The management of the Swiss Bundesbahn has now decided to order twenty more locomotives from three Swiss locomotive builders to be delivered the latter part of the year 1919 for service on the Gotthard line.

SAMPLE LOCOMOTIVES NOW IN SERVICE ON SWISS BUNDESBAHN

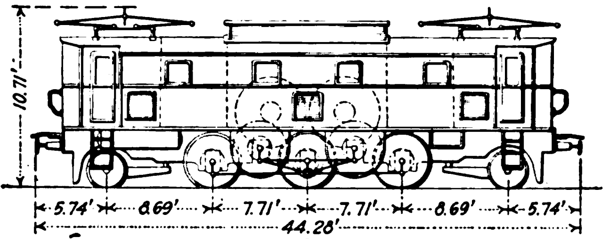


FIG. 1

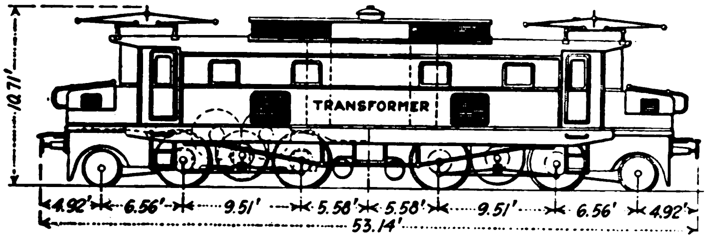


FIG. 2

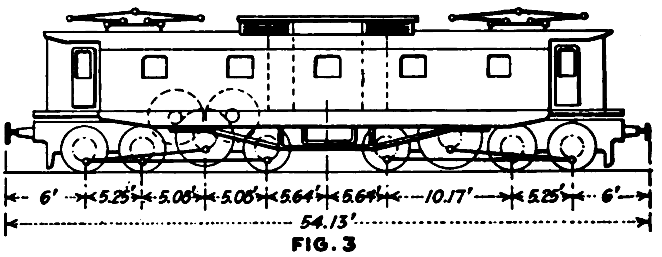


FIG. 3

Fig. 1—Small express locomotive type 1-C-1
Fig. 2—Large express locomotive type 1-BB-1
Fig. 3 — Freight locomotive type CC.

The four test locomotives are of three types: One small express type, two large express types and one freight type. Under certain conditions these may be interchanged one for the other. The large express locomotives were intended for service between Lucern and Chiasso with a small express locomotive assisting on all grades of over 2.1 per cent. The maximum speed is 46.5 m.p.h. The service specified for the freight locomotive required making two round trips between Golden and Chiasso in twenty-four hours, with a trucking load of 950 tons (1,900,000 lb.), a second freight locomotive to be used to push on grades of more than 2.1 per cent. The permissible load on the driving axles is set at 39,600 lb. and on other axles 26,400 lb. minimum and 35,200 maximum. The maximum speed is 40.3 m.p.h.

The electrical equipment for the small express locomotive was built by the Oerlikon Company and the remaining parts by the Winterthur Locomotive & Machine Works. The type of construction is shown in Fig. 1. The locomotive being 44.28 ft. long, symmetrically constructed and similar in design to the large Loetschberg locomotives described in the ELECTRIC RAILWAY JOURNAL of Nov. 15, 1913, except that this locomotive has but three driving axles instead of the five used in the Loetschberg locomotives. Two single-phase series-type motors are provided, each having twelve poles and being rated at 125 hp. They are mounted on the middle of the locomotive frame, and the power is transmitted from them through spring-equipped gears to two jackshafts which transmit the power to the three driving axles by means of cranks and side rods. The electro-pneumatic reversing switches are mounted over the motors in a manner similar to the mounting in the large Loetschberg locomotives. Air-cooled transformers, together with the controllers, main switches, compressors, etc., are located at each end of the motors. The driver's cabs are located at the end. The normal drawbar pull for this locomotive is 19,580 lb. The normal speed is 31 m.p.h. and the maximum speed 46.5 m.p.h. The total weight including electrical equipment is approximately 100 tons.

LARGE EXPRESS LOCOMOTIVES ARE COUPLED TYPE

The electrical equipment for one of the large express locomotives was built by the Oerlikon Company and A. G. Brown, Boveri & Company supplied the equipment for the other. The mechanical parts were built by the Winterthur Locomotive & Machine Works. This locomotive, type 1-BB-1, is shown in Fig. 2. It weighs 116.6 tons and 53.14 ft. long. The construction is similar to the type 1-C-1 locomotive just described, except that two trucks are provided and coupled together. Each part has two ten-pole motors of 560 hp. each. The motors are carried in the frame and are coupled together by means of spring-equipped gears and a jackshaft. The cab extends nearly the entire length of the locomotive, and the oil transformer, together with the control apparatus, is located in the center of the locomotive. The auxiliary apparatus, such as compressor and converter, is built into the ends, thus setting the driver's cabs back slightly from the front. The normal drawbar pull of this locomotive is 26,400 lb., with a maximum drawbar pull of 39,600 lb. The normal speed is 31 m.p.h. and maximum speed 46.5 m.p.h.

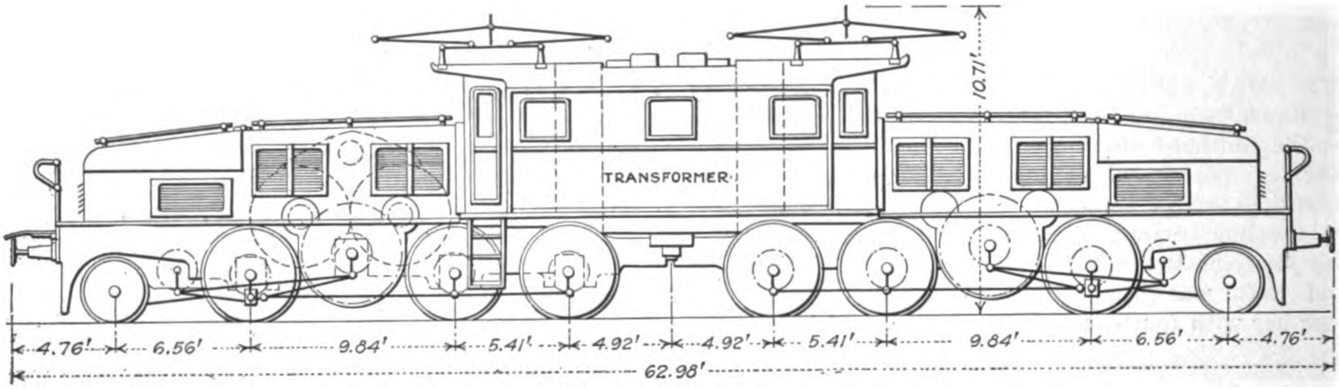


FIG. 4—NEW TYPE FREIGHT LOCOMOTIVE RECENTLY ORDERED FOR SERVICE ON THE GOTTHARD LINE

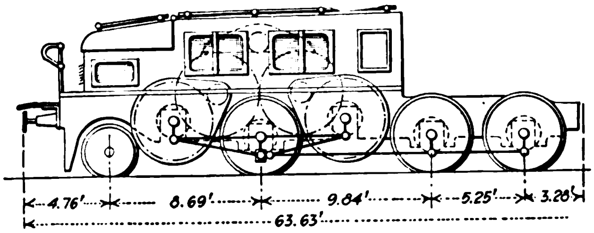


FIG.5

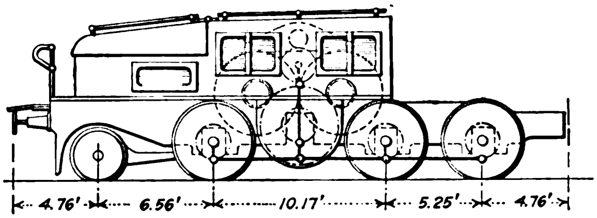


FIG.6

FIG. 5—LOETSCHBERG LOCOMOTIVE EQUIPPED WITH A TRIANGLE ARRANGEMENT OF SIDE RODS. FIG. 6—LOCOMOTIVE EQUIPPED WITH VERTICAL SIDE RODS

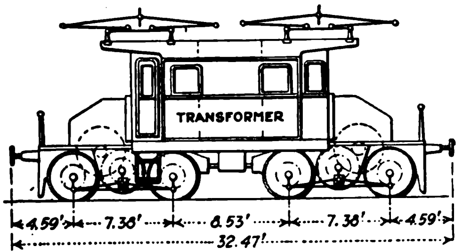


FIG. 7

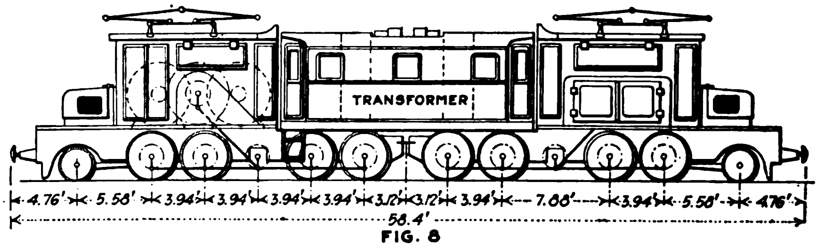


FIG. 8

FIG. 7—SMALL LOCOMOTIVE FOR LIGHT WORK ON BRANCH LINES. FIG. 8—LOCOMOTIVE WITH THREE PART CAB CONSTRUCTION ESPECIALLY ADAPTED TO NARROW GAUGE RAILROADS

The control equipment for both locomotives is electropneumatically operated with twenty-three steps, thus providing smooth acceleration and close adjustment for normal running. By interlocking the control connections the number of taps from the transformer is reduced. The use of a single transformer simplifies the electrical connections, but the body construction must be made heavier to carry the weight at one point.

As shown in Fig. 3 the freight locomotive is 54.13 ft. long. It was built by A. G. Brown, Boveri & Company and the Winterthur Locomotive Works. It has three axles and is of the coupled type. Each truck has two motors mounted between the second and third axles from the ends. These are coupled together by means of spring-equipped gears, and a jackshaft transmits the power to the wheels through side rods. The driving arrangement is similar to one of the first Loetschberg locomotives except that two motors are used for each part instead of one. The drawbar pull of this locomotive is approximately 35,200 lb., and the maximum 52,800 lb. The normal speed is 23.32 m.p.h. and the maximum speed 40.3 m.p.h. The weight is approximately 246,400 lb.

OERLIKON COMPANY'S NEW TYPE LOCOMOTIVES

The last order for twenty locomotives is to be made up of ten large express locomotives, as shown in Fig. 3, to be built by A. G. Brown, Boveri & Company and the Winterthur Locomotive Works, and ten freight locomotives of a new type developed by the Oerlikon Company and the Winterthur Locomotive Works, as shown in Fig. 4.

In designing the Loetschberg locomotives duplicate equipment was provided throughout so that the equipment could be operated in limited service with half of it disabled. This resulted in a comparatively long locomotive having a long wheelbase and being relatively heavy and expensive. This procedure was justified in the Loetschberg locomotives as they were more or less of an experiment, but practice has shown that the necessity for duplicating equipment does not exist. If only one transformer is to be used there is but one logical place to put it, and that is in the middle of the locomotive. This requires a heavy locomotive body since the main load is in the middle.

The development of such a type of locomotive by the Oerlikon Company has resulted in a machine with two trucks directly coupled together. The driving motors and other equipment are mounted on the outside of the central cab between the second and third axles. These parts in general are covered with low housings. Running boards are provided on either side of the housings for the use of the operators in getting into and out of the locomotives. The locomotive cab proper could thus be made very short, extending only one-third of the total length of the locomotive. The main circuit breaker and transformer are mounted in the middle of the cab with the control apparatus located on each side of the transformer so that the connections to the transformer are extremely short. The transformer and the cover of the main circuit breaker form a part of the cab roof, so that no special bushings or insulating devices are required to bring the high-tension leads inside the locomotive.

This arrangement has a further advantage in that the driver is not right at the front of the locomotive while operating. This gives him a feeling of safety which will tend to keep him at his post and in command of all safety devices when in danger, and the low construction at the ends insures non-interference with his view of the track ahead. This location also is near the control apparatus so that should multiple-unit operation fail for any reason a simple manual operation of the apparatus can be resorted to. A great advantage of this arrangement of apparatus is the facility provided for the removal of the motors and the relatively short and light central cab.

When the jackshaft cannot be located on the same level as the driving axles, various driving arrangements are possible. The lightest construction used is that of the first Loetschberg locomotive and in the CC test locomotive shown in Fig. 3, which is equipped with inclined side rods. The triangle arrangement shown in Fig. 5 was used on the large Loetschberg locomotives. Still another method of accomplishing the same purpose is shown in Fig. 6, where a vertical side rod is used.

On the recommendation of the Winterthur Locomotive Works an inclined side rod with auxiliary jackshaft was chosen for the ten freight locomotives being constructed. The gear ratio of these ten locomotives is 1 to 4. The normal rating of four motors is 2100 hp. at the driving wheels. The weight of the electrical equipment is 116,600 lb. and the mechanical parts 156,200 lb.

The locomotive shown in Fig. 7 is a smaller type having a rating of 660 hp. with from 13,200 lb. to 19,800 lb. drawbar pull and a maximum speed of 27.9 m.p.h. This locomotive is suitable for light work on branch lines, suburban traffic, etc.

Fig. 8 shows a three-part cab construction especially adapted to a narrow-gage railroad. In this case, on account of lack of room, the motors extend practically to the height of the roof and the front housings shut off some of the view of the engineer. However, he can see even better than on steam locomotives, due to the better arrangement of the equipment.

Houston Adopts Telephone Dispatching

How the Dispatchers in Texan City Control Car Movements and Receive Reports of Delays, Accidents and Defects

DURING the last week of May, the Houston (Tex.) Electric Company installed a telephone dispatching system with forty-two stations centering at the company's office. Among the results secured was the elimination of the hand-written check of car headways at Main and Congress Streets, one of the more important intersections.

During the course of the day three dispatchers handle the board under the direct control of the superintendent of transportation. He is the officer of the day responsible for all car movement. Road inspectors report directly to him for instructions.

Each of the three dispatchers has an eight-hour trick. The morning trick is 7 a.m. to 3 p.m.; the afternoon trick, from 3 p.m. to 11 p.m., and the night trick from 11 p.m. to 7 a.m. The night man checks cars into the carhouse, figures mileage, prepares the sheet for the following day, and books cars and crews for the following morning. The tricks are changed sufficiently to give one man a twelve-hour trick for two successive Sundays and then let him be off duty for a complete twenty-four hours.

As each starter sends out cars he gives the dispatcher the run number, the car number, the names of the crew and the leaving time. The crew telephones its car number to the dispatcher from each end of crosstown lines and from the suburban end of other lines. To get the dispatcher it is necessary only to take the receiver off the hook, the dispatcher answering by giving the time the car is due at the box. If the car is off-time he will give the necessary instructions. If because of rerouting or some other change the regular boxes are not available, the men use others designated by the dispatcher. When a crew pulls into a carhouse, it reports to the dispatcher as at the end of the line.

If a car is off schedule because of delay, the crew reports to the dispatcher the cause and the duration of such delay. At present the crew continues to make out a written delay card as heretofore. This card is turned in to the belt inspector at Main and Congress Streets or the interurban office as soon as the crew passes either point.

To order an ambulance or otherwise arrange to care for some case of personal injury, the crews use the nearest outside telephone. Minor accidents are reported at the nearest private station as follows: Line, car number, conductor, motorman, time, place, name and address of person injured or owner of property damaged, and nature of accident.

The belt inspector at Main and Congress Streets and the agent at the interurban station have an emergency supply of transfers. Only the belt inspector has an emergency supply of half-fare tickets. No change-making facilities, however, are supplied.

News of track, line and car defects, when reported to the dispatcher, is immediately passed on to the proper authorities. Crews are instructed to report on defective cars from the end of the line, whenever possible, so that the dispatcher will have the opportunity to order a change of cars.

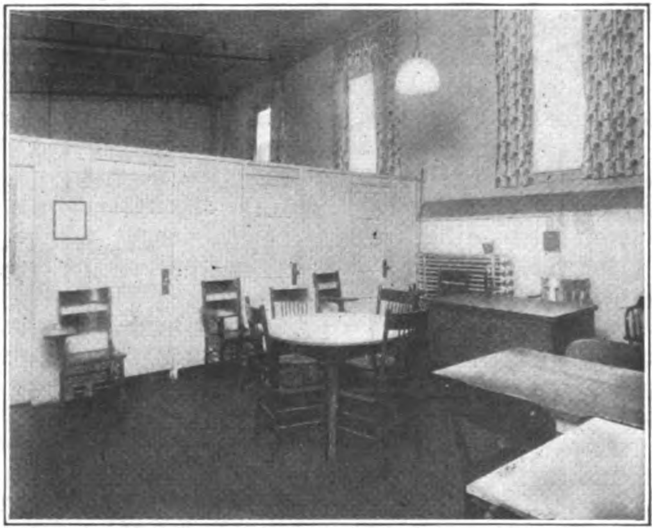
The dispatcher does not directly handle complaints and lost-article inquiries, but he refers the speaker to the number of another official who handles such matters.

Duluth Has Women Car and Shop Workers

Seventy-five Are Now Employed—Separate Restaurant and Carhouse Accommodations—Specifications for Uniform Are Published

IN ADDITION to thirteen women car cleaners the Duluth Street Railway now has seventy-five women conductors, the inevitable result of operation in a busy war-work community. Nothing could be more significant of the need than the fact that 90 per cent of the men who have left the company during the last year went to the shipyards and that forty men out of 300 left in the single month of June. At the end of the month the company was short fifty men.

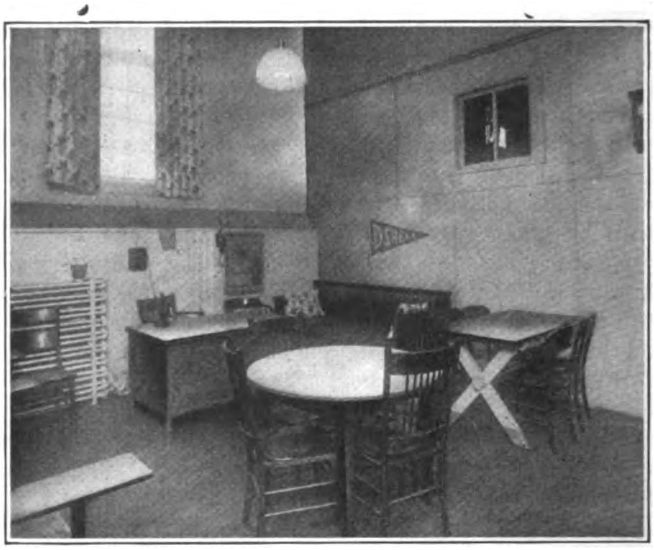
The women conductors are employed at exactly the same rates as the men, namely, 10 cents an hour while learning and 32 cents an hour from the time they are on regular duty. Their runs do not differ materially from those of the men, the common practice being one-piece runs with a fall-back or layover for lunch. Many prefer night runs.



DINING ROOM FOR WOMEN; DORMITORIES AT BACK

These women average a high order of intelligence. About one-third are former waitresses who are skilled in handling people politely and accustomed to standing; some have come from factories; four or five are the wives of motormen but do not work on the same cars, and quite a large number are school teachers who have entered the service since the close of the school term. It is expected that many of the teachers, for whom this means a neat increase in earnings, will stick to the car instead of returning to the schoolroom.

For trial uniforms, the company adopted a loose blue coat and cap similar to that worn by the men. It also considered khaki and puttees as used by the New York Railways, but concluded that khaki was too light for the severe Duluth winters. It felt that whatever uniform was adopted should be natty and striking, for the public would expect something out of the ordinary when women became conductors. Therefore, neither the original baggy outlines, nor a suit that would have to be covered up in winter, would serve.



A CORNER OF THE WOMEN'S REST ROOM IN EMPLOYEES' QUARTERS

The uniform adopted later is of blue cloth, close-fitting tailor-made, with face and side pockets. The cap is higher and the visor is shorter than before to secure a less masculine appearance. The specifications for the uniform also declare that the shoes must be at least 9 in. high and that shoe and skirt must meet. The complete uniform costs $26 to $27 and may be paid for within sixty days.

A matron is in charge of all women employees. A handsome rest room has been fitted up for them at the Superior Street headquarters in Duluth. In addition, there are three rooms with cots for which a charge of 10 cents is made if used over-night for sleeping, with change of linen; otherwise, as in the case of the men's rooms, the cots have a covering on which naps may be taken without any charge. Like the men, also, each woman has a private metal locker. A cut in a division wall has been made to give them service from the restaurant which has been maintained for years by an outside caterer. The company furnishes quarters and electricity free. The women preferred this arrangement rather than to go into the men's restaurant. Provision has been made at several private places for toilets for women conductors where the company could not install them itself.

For the men there has long been provided a separate clubroom with shower baths, pool tables and other comforts. This includes a reading room with weekly and monthly periodicals paid for by the company.

Selling Transportation on a Commercial Basis

The Rules Do Not Vary Greatly from Those in Other Lines of Business — Public Must Know What It Is Purchasing in Order to Be Satisfied

BY CLARENCE RENSHAW
General Engineer, Westinghouse Electric & Manufacturing Company

WHEN any commodity is sold by the pound, the yard, the dozen, etc., these units express the obligation of the seller and the rights of the buyer in a definite, quantitative way. The former in stating his price expresses his obligations toward his customer, while the latter, after hearing it, knows exactly what is coming to him for a given sum of money. What is perhaps of even more importance in such a transaction, the purchaser can readily assure himself that he has received full value, or that he is short by a concrete amount. In the latter case his complaint can be readily adjusted.

It is a comparatively easy matter for a merchant who deals with his customers on such a basis to be always on good terms with them. Conversely, it is essential that there should be some definite understanding of mutual obligations between seller and buyer, in order that such relations may prevail. One of the greatest weaknesses in the relations between the electric railways and the public has been that heretofore this fact has not been fully appreciated. The railways have made strenuous efforts to convince the people that the price of their product was too low, but seldom, if ever, has any company attempted to describe exactly what it was giving for the fare received. The people, on their part, have felt that the railway companies owed them good service, and in the absence of any definition as to what good service is, they have always claimed they were not getting it.

Everyone recognizes that in a store conditions must be right or the business cannot be profitable. The surroundings must be attractive and the clerks polite. The prospective customers must be told what goods are for sale and what the prices are. The goods must be of a quality commensurate with the price. The patrons must be made to feel that their trade is appreciated and that they receive fair value for their money. Unless these things are done, the people will go elsewhere to make their purchases. There are always other stores.

SALE METHODS APPLY TO ELECTRIC RAILWAYS

Although it is not generally recognized, these principles hold equally well with regard to electric railways. True, the conditions are apparently different. A railway has a monopoly. The people must have transportation and the railway affords the only means by which they can obtain it economically. There is no recourse. The store (*i.e.*, the cars) may be dirty and out of repair. The clerks (*i.e.*, the motormen and conductors) may be impolite and unobliging. No effort may be made to tell the people what is for sale (*i.e.*, where the cars go and when), or what the price is (*i.e.*, fare, transfer privileges, etc.). The quality of the goods may be poor (*i.e.*, cars slow, infrequent and crowded). Since there is no competitor to patronize, however, the people must continue to ride anyway and must be pleased with whatever the railway gives them. So why spend money on "commercial methods" or why commit one's self to any definite "standard of service"?

Here is the reason. We were wrong on one point. The people may have to take what the railway gives them, but they do not have to be *pleased* with it. Moreover, when one's customers are not pleased, monopoly, or no monopoly, it is only a matter of time until the business fails. There is another reason. An old proverb says, "Give a dog a bad name and you might as well hang him." For the same reason it isn't necessary for a railway company actually to be derelict in any or all of the above respects for the public to fail to be pleased. Its car service may be the best in the world, but if the public thinks it is poor the result will be practically the same as if the car service actually is poor.

The adoption of commercial methods by a railway company would not necessarily mean that any change would be made in the quality of the car service. What it would mean is that the public would be informed as to the service which the company believed was due it and was trying to give it. If a person gives you short change and you are convinced that it was not intentional, you do not hold the incident against him. If you have reason to feel that he was deliberately trying to cheat you, however, his reputation is gone. So, when a person or a corporation boldly announces that it believes a certain course is right and then proceeds to follow that course, there is usually little criticism. Let us consider a typical case.

DIFFERENCE BETWEEN RUNNING CARS AND GIVING SERVICE

In the absence of any information to the contrary, people usually expect to get a car within a few minutes of any time they get to the corner. If a man has to wait fifteen minutes, therefore, he naturally feels that the service is poor. If he knows, however, that the cars on that line are only supposed to run every twenty minutes, and if he also knows that he cannot expect one until such and such a definite time and if when the car comes he finds by his watch it is exactly on time, his attitude is then entirely different. Under these conditions instead of feeling, on account of his fifteen-minute wait, that the service is poor, he feels that it is good because the car is on time.

It is obvious, therefore, that two people waiting on the same corner for the same car may form exactly opposite ideas of the railway company. One, not knowing the basis on which the cars are supposed to operate and judging by an imaginary standard, may feel that the company is very lax. The other, knowing exactly what the company has obligated itself to do and finding that it is meeting this obligation to the letter, will feel that it is conscientious and business-like.

Nor is this example a mere hypothetical case. Several times in different cities, where I was studying the railway service and hence was provided with this information, I have been one of two such parties and I have heard the other party express himself. Moreover, the widely different opinions of the railway company which the two parties formulate in such cases are entirely justified, for although the *car* service given to each is exactly the same, the *service* (a much broader term) has been widely different. The one who knows when the car is due has been given good service; naturally he is pleased. The other, who has had no opportunity to learn this, has not been given the treatment to which I consider he is entitled. One manager told me that the people on his lines always found out from the crews what time the cars left. Fine!—but imagine a department store whose bargain sales were patronized only by the people who had learned the particulars by asking the clerks.

To my mind the above indicates the cause of the trouble from which most of our city railways are suffering. What they regard as their principal duty is to run cars, while what the people want is service. It is, of course, necessary to have cars and to run them, but in many cases I believe that comparatively little invested in the right kind of service would do more good with the public than many times the same sum devoted merely to increasing the number of cars.

SOME REQUISITES FOR GOOD SERVICE

One of the first requisites in selling transportation service is a suitable map of the system in the hands of each citizen. It is much easier to persuade a person to ride on the cars if he knows where they go than it is if he is always fearful of losing his way. Nor will any old map do. It must be sufficiently small for convenience and yet large enough to be clear and distinct and to allow one route to be distinguished from another. An enlarged view of the downtown district in the corner or on the back will often help solve the problem.

The map should be supplemented by a route sheet so that general locations obtained from the map can be followed in details as to streets, where desired. Both map and route sheet should describe the designation of the cars, so that one can easily find the car for any route or the route of any car.

Fares, reduced-rate tickets, transfer points, zone points, methods of fare collection, etc., should also be described. Anyone planning a trip on an unaccustomed line should be able to inform himself in advance as to all these points. Most people are more or less sensitive. They hate to show their ignorance of these matters by asking about them, especially as conductors are sometimes neither clear nor gracious in their replies. People especially hate to be penalized by paying single-fare rates when they might have purchased reduced-rate tickets, or by riding a block beyond a fare zone and having to pay a second fare, when they might have gotten out and walked. Night fares, if different, should also be covered with a clear statement of the hours during which they are in effect.

Time points, headways and running times are likewise important. One is a much better potential purchaser of transportation from the local railway of his city if he is properly informed on these subjects, because he is better prepared to use the commodity which the railway has to sell instead of employing an automobile or walking. I once knew of a salesman for a manufacturing company who hired an auto to call on the master mechanic of the railway company in a certain city, because of an exaggerated idea of the time required to get to the shops on the cars.

Finally, matters of policy should be dealt with. The number of cars operated on any given line at different times of the day is usually arranged so that in the rush hours no car need carry more than a certain maximum, and so that in non-rush hours the interval between cars will not be too great for reasonable convenience. These and other fundamental principles of railway operation are perfectly legitimate and straightforward, and if openly acknowledged in the right way would do much to prevent dissatisfaction.

"GOOD SERVICE" NEEDS DEFINITION

There are, of course, many other items which will suggest themselves, if the idea of doing business on a commercial basis and treating the people like customers is once established. The foregoing, however, should be sufficient for illustrative purposes. The point I wish to make is, that to my mind the fundamental reason why the public is so generally dissatisfied with the electric railways is not so much because of the car service which they give, as it is because of the usual lack of the broader service to which I have referred. The railways have always hesitated to define what they considered reasonable service or to formulate their obligations to the public in a definite way, for fear that some day this might embarrass them. The public, on the other hand, with no statement or standard to guide it, has always taken the stand that no matter what service the electric railway may be giving, it is not as good as it should be.

This, then, leads to the idea one hears expressed so frequently by the statement, "I wouldn't mind paying an increased fare if the railway company would only give the proper service." This statement is entirely honest and the railway companies should take advantage of it. In doing this, however, I believe they will surely find that while the speaker himself may not know it, the "proper service" for which he yearns consists not merely of more cars but of the application of the same commercial methods that are employed in selling other commodities.

Federal Registration of Engineers

The Division of Engineering, United States Employment Office, Department of Labor, has prepared a government classification form for engineers. The director of engineering, A. H. Krom, urges every engineer to fill in one of these forms, which can be secured from local United States Employment Service offices or from the office of the division, 29 South LaSalle Street, Chicago, Ill. With full information as to the resources of the country in the way of trained engineers, the division will be able to recommend qualified men for vacancies in the field.

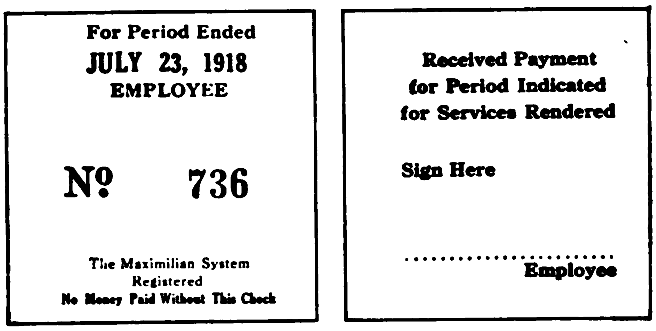
Employees' Pay Checks

Electric Railway Auditor Devises System for Financial Protection and Time-Saving

THE "Maximilian" system of pay checks for employees is said by the patentee, A. M. Lewis, auditor Elmira Water, Light & Railroad Company, Elmira, N. Y., to have distinct advantages over similar systems now in use. It prevents fraud, protects the employer, saves considerable time on the part of all concerned and acts as an identification of employees. The basis of the system is a 2-in. x 2-in. pay check, such as is shown in the accompanying illustration.

In the operation of the system, the timekeepers, the department heads or the superintendents place the names of employees on the payrolls in the proper numerical order, using the series numbers pertaining to the various departments. For instance, pay checks No. 1—300 might be for conductors and motormen, 301—400 for track employees, 401—450 for carhouse and shop employees, 451—500 for power-plant employees and so on.

The accounting department checks the payrolls and turns over pay checks corresponding to the numbers listed. When these checks are received by the superintendents or other officials, they are distributed to the men and presented by them at the paymaster's office. The number and the name signed by the employee on the pay check receipt must correspond with those on the payroll.



For Period Ended

JULY 23, 1918

EMPLOYEE

Nº 736

The Maximilian System

Registered

No Money Paid Without This Check

Received Payment

for Period Indicated

for Services Rendered

Sign Here

....

Employee

SPECIMEN OF EMPLOYEES' PAY CHECKS

The accounting department checks the payrolls with the pay checks three days after payment. This three-day period is allowed for stragglers or men temporarily away, and it reduces to a minimum the entries to the "Unclaimed Wages" account. For every number on the payroll for which there is no corresponding receipted pay check, the paymaster must produce the amount of money listed. It is obvious that the paymaster cannot withhold any money due to employees or convert any, even temporarily, to his own use.

The colors of the checks are changed weekly, so that the presentation of a check not having the current color indicates a claim upon the "Unclaimed Wages" account. If the check is properly listed therein, it is honored for payment. Lost pay checks must be reported to the accounting department, which will make a notation on the payroll affected and issue a duplicate check. The lost check, if later presented, is taken up by the paymaster and the general manager's attention drawn to the fact.

The employees are paid in cash, counted out in full sight by the paymaster. This procedure obviates the necessity of doing up the money in envelopes and avoids disputes over the correctness of the payment. It also eliminates the writing of bank checks and the balancing of bank accounts and outstanding checks. If there is any error in the amount due, the matter is referred to the accounting department for adjustment.

In Mr. Lewis' opinion, the system is particularly desirable by reason of its flexibility, as the series of numbers applying to any particular department can be increased or decreased at will according to the number of employees. The system will work out satisfactorily for hundreds or thousands of employees. The cost of printing, cutting and tying-up tickets by weeks is said to be nominal.

The system is at present used by the Elmira Water, Light & Railway Company, which employs approximately 750 people. It is also in use at the five factories of the Electric Hose & Rubber Company, Wilmington, Del.

Buses Abandoned in Havana

Operation of Electric Buses in Cuban Capital Not Profitable—Receipts for Ten-Month Period Show Deficit of $281

THE last report of the Havana Electric Railway, Light & Power Company gives an interesting account of the experiment made with electric omnibuses as auxiliaries by that company and their final abandonment after a trial of about ten months. The company has always operated a certain number of stage lines, but as the earnings of these lines became smaller and the cost of feeding the mules had increased greatly, it was decided early in 1916 to make a trial of electric motor omnibuses as auxiliaries to the railway. They were intended to serve districts where the railway could not operate because of the narrowness of the streets and others in which the population was not dense enough to warrant railway construction. An attempt to operate gasoline omnibuses of European type made in 1914 had failed because of the high cost of fuel and popular dislike, the vehicles being far from comfortable.

Twelve electric buses were purchased, six for twenty-two passengers and six for twelve passengers, and put on two routes. Each bus averaged about 90 miles a day which required three battery charges. The fare was 5 cents with no transfers. At the beginning the average receipts per bus-mile were a little more than 12 cents, but this fell slightly during the summer, and the average for the total period of operation, which ended Oct. 15, 1917, was 10.66 cents per bus-mile. The buses were finally abandoned owing to the high cost of maintenance. During the ten and a half months that the trial continued, 222,894 bus-miles were operated. The gross receipts were $24,185.20 and the total expense of operation and maintenance was $24,466.31.

The buses have been rebuilt for use in various departments of the company so that the investment in them has not been a loss.

Since the spring the Tacoma Railway & Power Company has been employing women as car washers and for grinding but not testing of air-brake valves, etc. The proportion of female clerks has also been increased.

British Fares to Be Raised

House of Commons Passes Bill Permitting Fares Sufficient to Pay Dividends at Three-Fourths of Pre-War Rates

DIVIDENDS at not to exceed three-quarters of the pre-war rates may be paid by British tramways during the war and for two years afterward. This is the result of the recent passage of a bill by the House of Commons providing for increases in the maximum charges under statutory regulation. The bill is the result of two years of petitioning on the part of the Tramways and Light Railways Association and the Municipal Tramways Association.

The bill is yet to be considered by the House of Lords. The relief will probably come so late that the tramways will derive little advantage from it this summer. In the meantime the various undertakings will have opportunities to prepare the individual cases for presentation to the Board of Trade, whose approval is required for increased fares. The proviso that in the case of municipal tramways there may be an increase in the statutory maxima, in order to avoid loss, of as much as 50 per cent should remove from many such lines the imminent danger of recourse to the taxing power.

In commenting upon the measure the *Tramway and Railway World* says:

"As originally proposed utilities were to be authorized to make such charges as would enable them to pay dividends not exceeding one-half of the pre-war rate. After a long discussion, which dealt mainly with the position of the gas companies, the bill was amended in committee, making the dividend rate three-quarters instead of one-half of the pre-war rate. Though the position of tramway owners under the bill is considerably less favorable than that of steam railroad shareholders, the new arrangement must be regarded as not unsatisfactory.

"Whatever may be the case in regard to the other statutory undertakings, there can be no question of the justice of the arrangements so far as tramways are concerned. These undertakings have been dealt with somewhat arbitrarily by the government; their services have been reduced, the wages of the employees have been repeatedly increased by awards by the committee of production, and it is no secret that these awards have been given in some cases not on the merits of the case but because the government stood committed to increases in other industries. If the tramway undertakings, which are essential to the manufacture of munitions, were to be carried on, it was necessary that they should be in a position to cover part at least of their increasing expenses."

The text of the new bill is as follows:

1. (i.) Where it appears to the appropriate government department that the financial position of any undertaking to which this act applies has been adversely affected by circumstances arising out of the present war, the department may, if they think fit, by order provide for the modification of any statutory provisions regulating the charges to be made by the undertakers, and of any statutory provisions consequential on or supplemental to any such provisions as aforesaid, for such period during the continuance of this act, in such manner, and subject to such conditions, as appear to the department to be just and reasonable:

Provided that—

(a) where the undertakers are a local authority no modification shall be authorized which will increase the statutory maximum charge by more than 50 per cent, or which is more than sufficient so far as can be estimated to enable the undertaking to be carried on without loss; and

(b) In any other case no modification shall be authorized which is more than sufficient to enable with due care and management a dividend on the ordinary stock or shares of the undertaking to be paid at three-quarters the standard or maximum rate of dividend, if any, prescribed for the undertaking, or at three-quarters the pre-war rate of dividend, whichever is lower.

(ii.) An application to a department for the purposes of this act shall be accompanied by such information, certified in such manner as the department may require with respect to the financial position of the undertaking in question, and before making an order the appropriate government department shall require the undertakers to give public notice of the application for an order under this act, and as to the manner in which and time within which representations may be made, and to give a similar notice to the council of each county, borough, or urban, or rural district within which any part of the undertaking or limits of supply of the undertaking is situate, and the department shall consider any representations which may be duly made.

(iii.) The undertakings to which this act applies are tramway undertakings, including light railways constructed wholly or mainly on public roads, and undertakings for the supply of gas, water and electricity, and in calculating the maximum charge which may be authorized under this act in respect of such tramway undertakings fractions of one halfpenny shall be calculated as one halfpenny.

(iv.) For the purposes of this act—

The expression "statutory provisions" includes the provisions of any order having the force of an act;

The expression "appropriate government department" means, in relation to gas and water undertakings carried on by local authorities, the Local Government Board, and in relation to other undertakings the Board of Trade;

The expression "local authority" includes any commissioners, trustees, or other public body of persons carrying on, otherwise than for purposes of private profit, any undertaking to which this act applies.

The expression "pre-war rate of dividend" means the average rate of dividend for the three financial years immediately preceding the war.

2. In the application of this act to Scotland the Secretary for Scotland, and in the application of this act to Ireland the Local Government Board for Ireland, shall be substituted for the Local Government Board.

3. (i.) This act may be cited as the statutory undertakings (temporary increase of charges) act, 1918.

(ii.) This act shall have effect during the continuance of the present war and for a period of two years thereafter and no longer.

Payrolls Jump High

Calculated Results of Several Recent Awards of War Labor Board Show 21 to 70 per Cent Increases

INCREASES in payroll of from 21 to 70 per cent seem to be the outcome of the recent wage awards by the National War Labor Board. While complete data are not yet available, statistics for some of the score and more of electric railways whose wage cases have been decided by the board are sufficient to indicate the serious nature of the added drain upon operating revenues.

The following table gives the total payroll of employees affected by the wage awards for the year ended June 30, 1918, together with the same payroll after the application of the new wage rates:

	Payroll for Year Ended June 30, 1918	Payroll Under New Wage Rates	Per Cent of Increase
Galesburg Railway, Lighting & Power Company	$49,392	$76,365	55
Joplin & Pittsburgh Railway	*	....	70
East St. Louis & Suburban Railway	580,000	780,000	35
New York State Railways	3,304,473	4,733,051	43
Pennsylvania-New Jersey Railway	155,460	214,674	38
Cleveland, Southwestern & Columbus Railway	†(a) 160,827	210,601	31
	†(b) 24,314	56,989	131
Omaha & Council Bluffs Street Railway	1,151,829	1,401,829	21
Cleveland & Eastern Traction Company	‡ 2,263	2,736	21

* Year ended June 30, 1917.
† Year ended April 30, 1918.
‡ Month of May, 1918.
(*a*) Payroll for train employees. (*b*) Payroll for substation attendants.

It should be observed, regarding the Cleveland & Eastern Traction Company, that the trainmen work from three to four and one-half hours out of nine on the lines of the Cleveland Railway at the latter's expense. When on their own line the men receive under the average hourly wage scale, 38 cents for the first three months, 40 cents for the balance of the first year and 42 cents thereafter, while on the city lines they receive for the first year 43 cents and 48 cents thereafter. Thus the increase in payroll for the Cleveland & Eastern Traction Company is not what it would be if this company had to pay its men for their entire day's work.

The figures given for the Omaha & Council Bluffs Street Railway do not represent the entire current increase in the payroll, for the reason that the company voluntarily increased the rates of all employees on Jan. 1, May 1 and June 1, 1918. The total payroll for all employees for the year ended June 30, 1918, was $1,247,829. The same payroll showing the new War Labor Board rates for the employees affected would total $1,820,673, an increase of 45.9 per cent.

HIGHER THAN STEAM RAILROAD WAGE RATES

The fact that the wage rates authorized for employees other than motormen and conductors are excessive in view of near-by steam railroad rates has been brought out in protests made by the Scranton and Chicago lines. Under the Scranton award track labor will be paid 42½ cents an hour, whereas track labor on the steam railroads operating in the same territory under orders of the Director General of Railroads receives 32½ cents an hour. Car cleaners will receive 42½ cents an hour as compared to a maximum of 37 cents an hour upon steam roads. Janitors will receive 42½ cents an hour as compared to 30 cents an hour on steam roads. Watchmen will receive $153 a month as compared to $71.50 a month on the steam roads—a greater compensation than track foremen. Ordinary labor will receive 42½ cents an hour as compared to 32½ cents an hour upon steam roads. Thus unskilled labor will receive practically the same wage as semi-skilled labor in the carhouses and shops.

The Chicago provision that all employees other than trainmen shall receive practically a minimum of 42 cents an hour will, it is said, produce an excessive wage resulting in confusion and discontent among the men and a great disparity with the near-by steam railroad wages. The Chicago electric railways have joint employees, for example, with the Baltimore & Ohio Railroad. The rate of the Director General of Railroads for gatemen is about $65 a month, but under the War Labor Board award the electric railway employees of this class will receive $150 a month. Similarly, steam railroad track men will receive 32½ cents an hour, but such electric railway employees 42 cents an hour. Electric railway colored porters, now getting about $65 a month will, because of building fires in the morning and banking them at night, be raised to about $150 a month by a twelve-hour shift. This wage is also that received by the most skillful employees, the motormen.

Owing to many changes in schedules and working force during the last year, and the difference in percentages of increase for old and for new men, the Evanston Railway has not determined the effect of its wage award upon the 1917 payroll figures. Taking its regular schedule and shoptime, however, it calculates an increase of $9,460 for twelve months and an increase of $426 for extra shopmen for four months during the winter painting season—a total of $9,886. This does not include others whose pay will have to be increased because of the award to trainmen and shop employees. The percentage of increase for individual classes of employees runs from 15½ to 77 per cent, the car washer with $55.50 additional getting the largest increase.

Skip Stops Will Save 1,500,000 Tons of Coal Annually

United States Fuel Administration This Week Issued Request for Widespread Co-operation in Reduction of Power Waste

AS A WAR measure the United States Fuel Administration anticipates that by Sept. 15 the skip-stop system will be in general use throughout the country, effecting a saving at the rate of 1,500,000 tons per annum. Suggestions and instructions have been sent to the Electric Railway War Board, councilmen, mayors, public service and city commissioners, and electric railway officials in all cities of 25,000 population and more. The administration desires that this plan be adopted through voluntary co-operation of the public, municipal authorities and electric railway officials.

Posters containing the lettering shown herewith will be issued by the administration.

SUPPORT THE SKIP STOP!

It will save* 1,500,000 *tons of coal per year.

More coal means more steel;
More steel means more guns and ammunition;
More guns and ammunition, a shorter war and fewer casualties.

SKIP-STOP POSTER OF UNITED STATES FUEL ADMINISTRATION

Before the skip-stop system is started in each city the administration suggests that a board consisting of five members be selected; two representing the city, two the railway and the fifth the Fuel Administration. The city members should obtain the views of the police and fire departments regarding dangerous points of traffic, providing they exist. The duty of this board is to select the car stops and see that instructions regarding the stop marking, advertising and general policy are carried out to the end that the public may be given the best service with maximum fuel economy.

The Fuel Administration has requested that there be not more than eight stops per mile (average 660 ft. apart) in business districts; six stops per mile (880 ft. apart) in residence districts; and four stops per mile (1320 ft. apart) in open country.

All mayors and others in authority are urged to have ordinances passed to keep vehicles off car tracks and keep the tracks clean of obstructions. In this way traffic will be accelerated, much time saved for the community, and power waste reduced. The administration asks also that the railways and the city authorities make every effort to eliminate stops of cars going up hill and around curves. Municipal authorities are urged to do everything they can to reduce the number of stops made by the interurban cars, especially within city limits.

The Fuel Administration states that, already in operation in Chicago, Detroit, Washington, Minneapolis, Brooklyn and many other leading cities, the skip stop is effecting an annual saving of 500,000 tons of coal.

Keeping the Men on the Job

The Houston Company, With Clubhouse, Cafe and Co-operative Association, Shows That the Best Is None Too Good for Employees

WHILE trainmen naturally want all the wages they can get, the size of their pay envelope is not the only or even the biggest inducement to keep them on the job. Human and humane interest in their personal comfort counts for a great deal if that interest is displayed whole-heartedly by the management and not perfunctorily by a clerk.

In the work done along these lines by the Houston (Tex.) Electric Company the first principle is that the best is none too good for the tired platform man. For example, the clubhouse built for the employees has the usual pool tables, games, shower baths, wrestling mat, punching bag, boxing ring, moving picture machine and the like. In the very essential matter of toilet facilities, however, it shows a significant improvement over other so-called clubhouses where the toilets would disgrace a sty. The Houston company believes that men are silently bettered by their environment and that they will take care of facilities when told that these are to be treated as their own personal property. Results speak for themselves; the first-class porcelain and metal fixtures, installed at considerable expense, are treated as if they were appreciated.

"AT-COST" CAFÉ A SUCCESS

More recently the company has further added to the comfort of the men by installing at the Milby clubhouse an "at-cost" café, open from 7 p.m. to 7 a.m. The café was opened on March 8. That it was a huge success is evident from the fact that a neighboring innkeeper, who had been supplying poor food at high prices, soon shut up shop.

The café is on the ground floor of the clubhouse, covering about 400 sq.ft. The men are served at a counter. The equipment consists of a gas stove, a refrigerator with 200-lb. ice capacity, a 3-gal. coffee urn, a 10-gal. water cooler, two metal sinks with hot and cold water, dishes and cooking utensils.

TRAINMEN'S CLUBHOUSE AT HOUSTON, TEXAS

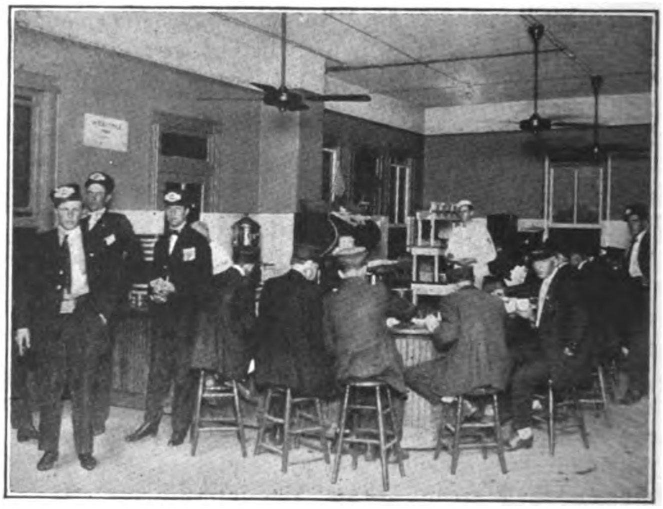
Flies are minimized by screening the entire clubhouse and by using three ceiling fans over the counter. The interior of the café is enameled in white up to a height of 5½ ft. The concrete floor of both café and lobby is flushed clean every day. The woodwork of the café counter is supported by metal legs 4 in. high to prevent dirt from accumulating underneath.

PRICES ARE ATTRACTIVE

These prices, combined with the cleanliness, explain why the men prefer their own restaurant:

Ham and eggs	$0.30
Two eggs, any style	.10
Ham sandwich	.10
Cheese sandwich	.05
Egg sandwich	.05
Grape nuts with a glass of milk	$0.10
Post toasties with glass of milk	.10
Coffee or milk	.05
Hot cakes	.10

Purchases may be made only through the use of tickets sold in strips of ten at 40 cents for a face value of 50 cents. As these tickets are good at their face value in buying, the discount from the foregoing prices is 20 per cent. Tickets are sold by the night cashier, whose office adjoins the café, from 7 p.m. to 7 a.m. The records of such sales are sent to the assistant treasurer, who as the *ex-officio* manager of the café department signs all checks monthly.



SANITARY CAFÉ OPERATED ON THE AT-COST PLAN

Supplies are bought through the purchasing agent upon requisitions made out by the transportation department. Groceries are bought at wholesale through a Houston jobber, and milk comes from a certified dairy. The company pays all overhead expenses, such as rent, light, water, gas and janitor service.

While doing a business of more than $500 a month, the restaurant for March and April did not quite clear operating expenses. The small loss incurred thus far, however, is of no moment when compared with the positive satisfaction of the men who use the café.

With the aid of David Daly, manager, the employees have just organized the Houston Electric Co-operative Association.

Representatives of the Victorian branches of the Australian Tramway Employees Association last month waited on the Minister for Public Works, and asked that airbrakes be installed on the Melbourne electric tramcars. The Minister agreed to place their views before the cabinet, and hoped that a provision to meet the case would be included in the forthcoming tramways bill.

LETTERS TO THE EDITORS

Classification for L.C.L. Freight Condemned

THE CONNECTICUT COMPANY
NEW HAVEN, Sept. 2, 1918.

To the Editors:

I notice a letter in your last issue, commenting on the recent electric freight rate decision of the Indiana Public Service Commission. The author of that letter seems to disapprove of some of the new electric freight rates because they are higher than the corresponding steam railroad rates. To my mind the striking feature of the decision of the Indiana Commission was that after explaining that electric railway freight transportation is more nearly akin to express service than the steam carrier freight service the commission proceeds to establish six classes of freight. The convictions of the commission seem at variance with its finding. I also do not agree with the commission that the terminal cost of handling package freight is less than that of the steam carriers. How anyone can justify six classes of discounts from first-class rate for merchandise classified under the official or C. F. A. classification, when the freight is received in less than carload lots and the various classes move in the same car, I am unable to understand.

The first and most vital thing for electric railway express departments to accomplish is to get away from the use of steam road classifications. The service of electric road was never considered in drawing up these classifications. They therefore have no place on an electric road. As regards less-than-carload shipments on steam roads, nothing should be accepted at less than first-class rate. On electric lines there should be one class, one rate, as there is but one service, although allowances in the classification should be made for unusual shipments. That is to say, light and bulky articles should take higher than first-class rate, while extremely heavy articles should be subjected to two or three times the first-class rate.

You may be interested in the fact that a committee of accounting officers appointed by the Eastern Presidents' Conference rendered a report Jan. 1, 1917, covering its investigation of less-than-carload freight. The committee was made up of the following:

Assistant comptroller, Pennsylvania Railroad, chairman.
General auditor, Baltimore & Ohio.
Auditor of revenue, Delaware & Hudson.
Auditor of freight accounts, Erie Railroad.
Auditor of freight receipts, N. Y., N. H. & H.
Auditor of revenue, New York Central.
Secretary of Eastern Presidents' Conference.

A total of 1358 cars carload freight and a total of 1949 cars less-carload freight were observed and tabulated as to mileage, gross revenue, agency, office and platform expense, gross weight of car and contents, etc. The agency, office and platform expense per car was as shown in the accompanying table.

		Total	Average per Car	Increase (Percentage)
B. & O.	179 carloads	$50.12	$0.17	
	304 l.c.l.	2,600.32	8.56	5,035
D. & H.	100 carloads	51.24	.51	
	112 l.c.l.	695.72	6.21	1,217
Erie	377 carloads	65.57	.17	
	399 l.c.l.	2,386.58	5.98	3,517
N. Y. Central	259 carloads	43.82	.17	
	455 l.c.l.	3,223.73	7.09	4,170
N. Y., N. H. & H	215 carloads	40.26	.19	
	286 l.c.l.	2,429.06	8.49	4,468
Pennsylvania	228 carloads	45.38	.20	
	393 l.c.l.	4,109.17	10.46	5,230
Totals	1,358 carloads	$276.39	$0.20	
	1,949 l.c.l.	$15,444.58	$7.92	3,960

The Connecticut Utilities Commission approved our change in classification, the Indiana Commission seems convinced of the same thing, and the recommendations of the Committee of Accounting Officers were:

First—That less-than-carload rates should be increased.

Second—That there should be an increase in the minimum charge per shipment.

Third—That there should be established a minimum charge per package.

Fourth—That there should be a revision of classification for package freight, looking to reduction in the number of classes and establishment of rules that will require shippers to consolidate small packages in one container.

Fifth—That steps be taken to increase the loading of less-than-carload cars.

The Connecticut Utilities Commission approved the Connecticut Company's change in classification from the official freight companies' basis to an "express" basis, and the Indiana Commission seems convinced that the idea is right.

There seems to be a general, if very slow movement, along these lines.

V. S. CURTIS,
General Traffic Agent.

Training Motormen for Emergencies

NEW YORK CITY, Sept. 4, 1918.

To the Editors:

Some time ago there appeared an article on psychological tests for motormen in your publication. This I read with interest. From my own experience and the study of others I believe that no great amount of dependence can be placed on that kind of test. The reason for this opinion is that a studious type of man can easily pass this test but make a complete failure at the controller.

All railway companies realize the danger of the weakness of the "human element," and great precautions are taken to protect against it. Nevertheless, accidents happen every day on some roads and motormen fail because "the correct thing to do in a severe emergency" has not been properly impressed upon their minds. At such a time the reasoning power of a motorman's brain is greatly handicapped by excitement, and he does just what has been impressed on his mind—no more, no less.

Mere rules never will prevent men from failing. Some companies have one rule to cover three or four types of cars in emergencies. This may be right or it may be wrong. Thus a rule for reversing which would work on a four-motor car would be practically worthless on a heavy two-motor car.

I have been in three electric railway wrecks and have seen old and tried motormen fail completely, causing death and destruction. Where was the judgment there? There was none. Excitement had entirely wiped it out, and as the motormen were running their cars automatically, they failed.

A motorman is expected to use judgment, but could a man become a great violin player without practice? The same principle applies to the motorman in an emergency. If he has practiced what to do, he will not fail unless he is a very poor man. That is why I strongly indorse the use of the dummy control stand in the instruction of motormen. What is emergency judgment? Briefly I believe it is at least 75 per cent previous instruction and the rest divided between common sense and steady nerves. The moral of this is, don't depend too much on a motorman's judgment. This is my advice to railway officers, and I know by experience.

Another bad feature of the "human element" in electric railway operation is forgetfulness. For this reason, verbal orders and long drawn-out red tape rules should be tabooed in single-track operation. They don't remind; written orders and signals do, and standard association rules do. For personal reasons I cannot sign my name to this but would like to do so.

A SUBSCRIBER.

AMERICAN ASSOCIATION NEWS

War Board Issues Bulletin in Skip-Stop Campaign

THE Electric Railway War Board has sent out Bulletin No. 29, containing a letter from the United States Fuel Administration, dated Aug. 29, on the subject of skip stops.

This is the communication referred to on page 419 of this issue of the ELECTRIC RAILWAY JOURNAL. The lettter in part is as follows:

> War's excessive coal demands, increasing from day to day, require us to conserve fuel in every possible way. Practically all of the industries of the country are saving fuel. Electric railway skip-stop operation presents one of the largest fields for fuel savings. The Fuel Administration urges that skip-stop service be adopted in the United States in cities having a population of 25,000 or above. The fuel savings effected by this system will be at least 1,500,000 tons annually. We therefore request all electric railways to co-operate fully with the Fuel Administration in its efforts to save coal through the skip-stop system.
>
> We are sending letters to the state fuel administrators, who will in turn communicate with the public service commissioners, mayors, city councilmen, and all others who regulate our public utilities, asking them to assist in putting the skip-stop system into effect on Sept. 15, 1918.
>
> Posters will be distributed to railway companies with instructions to insert them in prominent places in city cars. The posters contain a partriotic appeal to the public, asking it to support the skip-stop system, and explaining why it is an essential war measure.
>
> Using the skip-stop system generally enables cars to be operated at 10 to 12 per cent higher schedule speed. The power saving varies from 8 to 16 per cent. Inasmuch as the cars operate at the higher schedule speed, it can be seen that the same service can be given with a lesser number of cars; or, providing the service warrants it, more service can be given with the same cars.
>
> The importance of having the full co-operation of railway companies in making the skip-stop system a success in every city cannot be emphasized too strongly. This request from the United States Fuel Administration, to the state fuel administrators and all public officials concerned, is merely to have the skip-stop system operative during the period of the war. The continuance of this economic method will in all probability depend upon the way the plan is carried out by the individual railway companies.
>
> We are addressing this letter to you as the representative of the electric railway industry. We expect the American Electric Railway Association War Board to aid in every way possible in securing the maximum fuel savings that are consistent with proper railway service.
>
> We believe it is the patriotic duty of all railway men and of the individual members of the community to conserve fuel and man power by adopting the skip-stop system.

Appended to the letter is a summary of cities in which skip-stop operation has been adopted and an appeal from the War Board for its use wherever possible.

E. R. Hill for President of Engineering Association

AS REQUIRED by the constitution of the Engineering Association, its nominating committee has prepared the following list of nominations: For president, E. R. Hill, New York City; for first vice-president, W. G. Gove, Brooklyn, N. Y.; for second vice-president, C. L. Cadle, Rochester, N. Y.; for third vice-president, C. S. Kimball, Washington, D. C.; for secretary-treasurer, E. B. Burritt, New York City; for members of executive committee, F. C. Bedwell, Newark, N. J.; H. A. Johnson, Chicago, Ill.; L. C. Datz, New Orleans, La.; E. H. Scofield, Minneapolis, Minn.

Increasing Power Plant Efficiency

AT THE meeting of Manila joint company section No. 5, held on July 2, the discussion, which was largely along technical lines, was led by Miguel T. Borja, watch engineer power plant department Manila Electric Light & Railroad Corporation. He read a paper on the "Economical Production and Transmission of Electric Power," and in it enumerated the various pieces of power-plant apparatus essential for the conversion of the heat energy contained in coal into electrical energy. Mr. Borja laid stress on the necessity of keeping all apparatus clean and in good repair. In this connection he pointed out that the improper maintenance and operation of steam boilers results in from 6 to 20 per cent decrease in efficiency and that the condition of the condenser as to cleanliness and vacuum has much to do with the over-all efficiency of the steam turbine to which the condenser is connected. In the company's Morales power plant improved methods of operation in the boiler room have increased the boiler efficiency 10 per cent.

Relative to the efficiency of transmission lines Mr. Borja stated that while the power plant is much handicapped by machinery whose operation and efficiency is largely beyond control, the efficiency of a transmission line can remain as high as is practicable, the only limit being that of invested capital. The average loss in the lines of the company is about 15 per cent, although an additional 10 per cent is unaccounted for. This unaccounted-for loss is now being studied in an endeavor to eliminate it.

Pamphlet Describes Submarine Problems

The Naval Consulting Board and the War Committee of the Technical Societies have recently sent to the members of the technical societies a pamphlet entitled "The Enemy Submarine." It contains information already published of the construction of submarines, their methods of attack, an account of torpedoes used and their action, as well as the methods proposed for defensive and offensive protection.

Gasoline Motor Section Cars Decrease Labor and Cost of Track Maintenance

Maintenance of Way Department, Pacific Electric Railway, Uses Gasoline Motor Section Cars and Motor Velocipedes in Maintaining Signals and Tracks

BY CLIFFORD A. ELLIOTT
Cost Engineer Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.

SEVERAL years ago the Pacific Electric Railway was able to reduce the number of men necessary for maintaining its track by providing power-driven equipment for the men to travel to and from their work. Additional mileage was assigned to each section foreman for maintenance and with a view of enabling the section gangs to reach their work quickly and without unnecessary fatigue, the use of hand cars was done away with and gasoline motor section cars were used to transport the laborers, their tools and small quantities of track material for repairs over the lines. This company has some 1200 miles of interurban lines to be maintained and now uses fifteen cars of the Fairbanks-Morse type to care for track maintenance and for use in bridge inspection work. At times a push car is coupled to the Fairbanks-Morse No. 33 gasoline section car in order to carry a few ties, track bolts, spikes, joints, etc., for making quick repairs in emergency cases, or as supplies for ordinary track maintenance work.

The company has 216 automatic flagmen installed at various public highway crossings and the maintenance of the signal bells at these locations is consolidated with the work of caring for the switch lights. In order to handle this work efficiently Buda Company's No. 10 NH one-cylinder gasoline motor velocipedes (Fig. 3) were provided, together with Fairbanks-Morse No. 26 two-cylinder cars (Fig. 1) for the same class of work. This readjustment of the men's duties of maintaining the warning signals and switch lights resulted in a very great saving of time and money.

The operation of these various classes of gasoline driven equipment made it advisable to provide gasoline supply stations at various points. Up to date the company has constructed twelve such stations, locating these at section camps where store and tool houses are provided and where the various track gangs assemble before proceeding to their day's work.

A standard supply station consists of a 100-gal. iron-oil tank sunk about 3 ft. below the surface of the ground. A 2-in. feed pipe with the necessary cap and air vent is provided for filling. A ¾-in. galvanized iron pipe leads from this 2-in. pipe to a pump installed inside the tool house. Two check valves are installed in this pipe, which make it unnecessary to recharge the pump to start the oil flowing when pumping. The pump is fastened to the wall of the tool house by an iron bracket which steadies it during the operation.

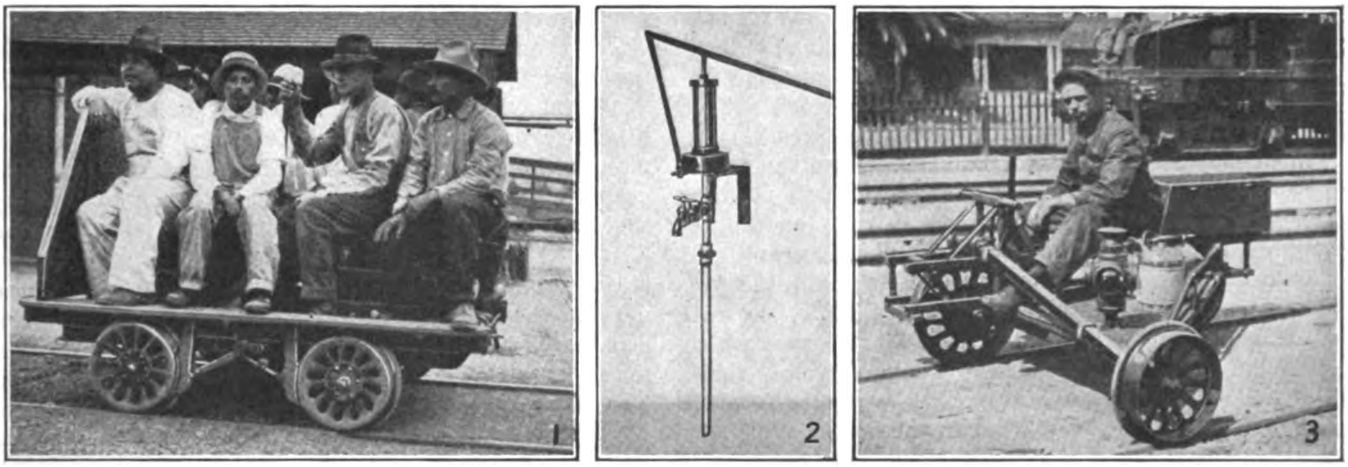


FIG. 1—GASOLINE MOTOR SECTION CAR; FIG. 2—GASOLINE PUMP IN TOOL HOUSE; FIG. 3—GASOLINE MOTOR VELOCIPEDE

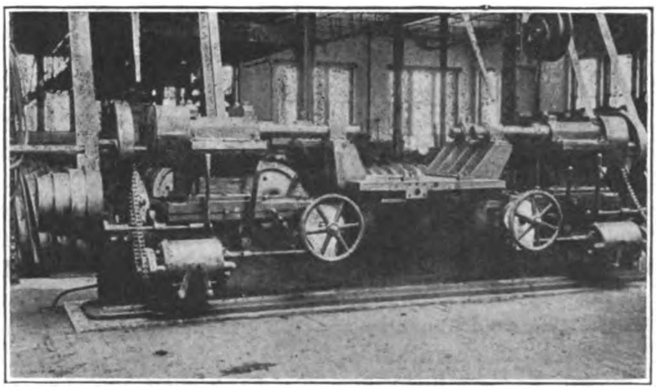
"Shooting Out" the Smokestack

A SIMPLE method of loosening soot in a chimney, which is recommended by E. I. du Pont de Nemours & Company, and said by them to cause no injury to the stack or lining, is as follows:

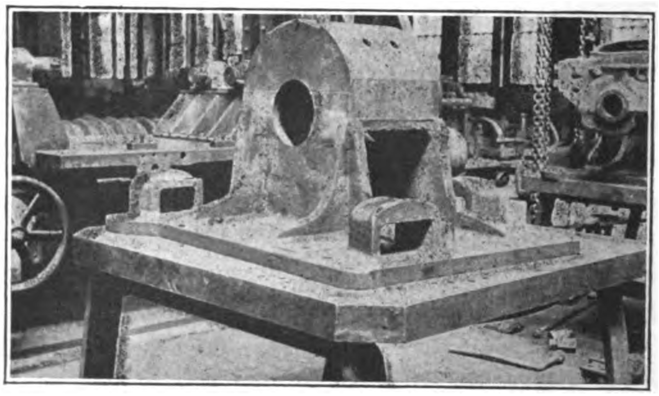
One or more charges of FFF blasting powder are discharged vertically in the stack from a cannon. This can be made of a piece of old 4-in. shafting, from 14 in. to 16 in. long, in the center of which a 1¾-in. hole 10 in. long is bored. A ¼-in. hole is bored through the piece to the bottom of the center bore to serve as a touch hole for inserting the fuse. The whole thing can be mounted on a pedestal about 6 in. in diameter so that it will stand in an upright position.

The method of operation is this: The powder is poured into the mouth of the cannon to about 2 in. from the top and it is tamped to the collar with dry clay. The fuse is inserted in the touch hole and in contact with the charge. The cannon is set at the bottom of the stack and the fuse ignited through the flue door, the latter then being closed. This charge is sufficient for a stack up to 100 ft. high and 4 ft. in diameter or more, the number of shots necessary thoroughly to clean a stack depending upon its condition. It is said that ordinarily three or four shots will clean a stack.

A coal-rationing scheme will shortly be introduced in Great Britain to compensate for the shortage in coal supply caused by the going into war service of a large number of miners.



FOUR-SPINDLE BORING MILL ARRANGED FOR BORING MOTOR SHELLS, CHICAGO SURFACE LINES



JIG AND ASSEMBLY TABLE MADE IN CHICAGO SURFACE LINES SHOPS TO HOLD MOTOR IN PLACE FOR REBORING

Utilizing a Four-Spindle Boring Mill to Rehabilitate 3000 Motors

Chicago Surface Lines Rebores Four GE-80 Motor-Bearing Seats Simultaneously, With a Record of Eleven Shells Per Day

ON THE Chicago Surface Lines it was for some time the practice to rebore motor shells on an ordinary engine lathe. Later a standard horizontal boring mill was used. With either of these machines it was necessary to reset the shell and change the boring bar each time a shell was bored. In 1917 it was decided to procure a machine which would handle this work more efficiently.

A four-spindle boring machine built by the Beaman & Smith Company was purchased, and after it had been remodeled in the Chicago shops it was fitted with Davis expansion boring bars made especially for this work. These bars run in special guides and have micrometer adjustment of the cutters. Two special jigs and two assembly tables were also built in the Chicago shops.

For the reboring process the motors, which are of the GE-80 split type, are taken from the trucks in the carhouses and brought into the shop. Here the armature and fields are taken out and the shell is cleaned. The shell is placed on the jig, which rests on the assembly table, by means of the shop traveling crane, and it is located by means of bolts passing through the pole pieces into corresponding holes in the jig. The final adjustment is made by setting the shell to a gage which gives its exact location relative to the assembly table. The axle and armature-bearing caps are bolted in place and the shell and jig are lifted to the boring mill table where the jig is located by dowel pins and clamped down by the cap screws tapped into the mill table.

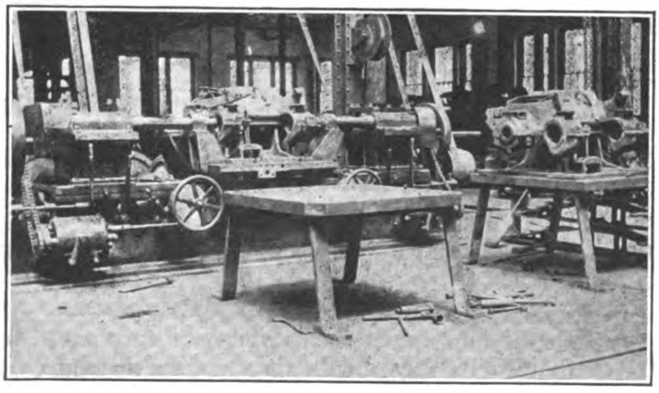
The work is handled by a machinist and two helpers, the helpers setting up a second shell while the first is being bored, thus keeping the machine working almost continuously. The mill operates at a cutting speed of 42 ft. per minute, and a $\frac{1}{32}$-in. feed per revolution, all four holes being bored simultaneously. The diameter of the axle and armature bearing seat is increased $\frac{1}{8}$ in., and new bearings are made to suit. Eleven shells have been bored in one day of nine and three-quarter hours, the average being nine to ten shells per day.

The armature bearings are made of brass and lined with $\frac{1}{16}$-in. babbitt. The axle bearings are also made of brass, but are not lined. The dowel pins for the armature bearing caps are being replaced by keys anchored in the caps. The axle caps and old dowel-pin holes are being filled by use of the oxyacetylene torch and redrilled and fitted with the case-hardened dowel pins.

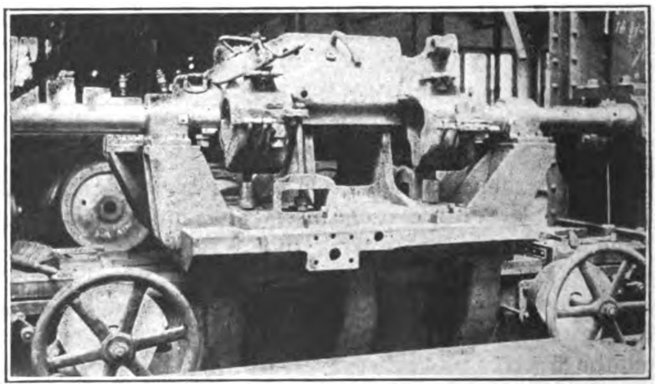
The commutator and armature bearings are made $\frac{1}{4}$ in. longer than they were originally, and a $\frac{3}{16}$-in. groove is turned on the outer end. A galvanized-iron cap is fitted over the end and is crimped into the groove, thus making the bearing practically dustproof.

In some cases it has been found necessary to build up the gear case seats on badly worn shells, also to plane off the axle and armature bearing caps to insure their truing up in the boring.

From the boring mill the shell is taken to the truck department, where it is cleaned and painted, and the motor is assembled. The motors which are being rebored have been in continuous service since 1905 without previous reboring. There are 3000 shells to be rebored.



ONE MOTOR SHELL ON BORING MILL TABLE WHILE SECOND IS BEING ASSEMBLED



MOTOR SHELL READY FOR SIMULTANEOUS REBORING OF FOUR BEARING SEATS

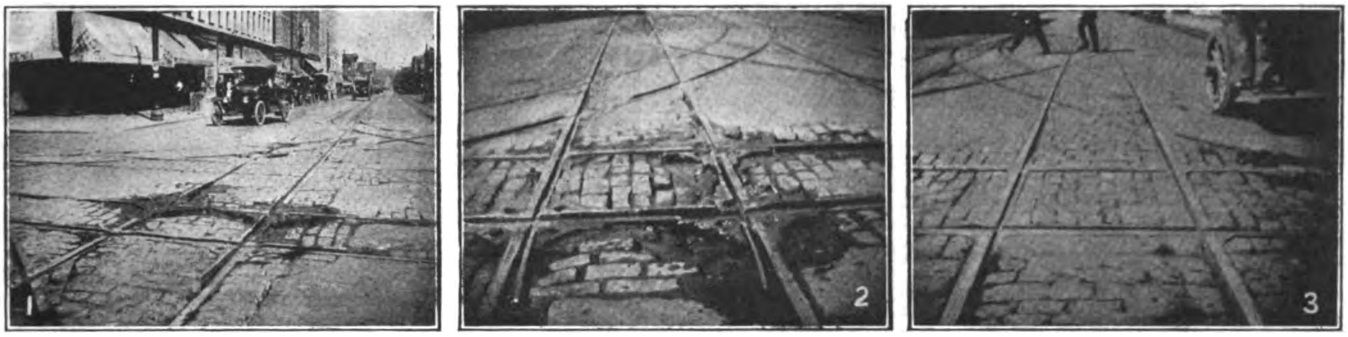
Solid Manganese vs. Manganese-Insert Special Work

Supplementing the Author's Article in the Oct. 13, 1917, Issue of This Paper—Conclusions Favor Solid Manganese

By W. L. Whitlock
Office Engineer the Denver (Col.) Tramway

IN JULY, 1910, this company placed a four-square 90-deg. crossing at the intersection of Fifteenth and Lawrence Streets, which was a portion of the grand union layout built for this location and exhibited at the electric railway convention in this city during that year.

Three of these crossings were manganese insert work while the fourth crossing was solid manganese. The manganese inserts were a source of continual maintenance while the solid manganese crossing has cost practically nothing to maintain, thus giving an actual comparison as to the relative value of the two different types of crossings, as both were subjected to the same amount of traffic.



DENVER SPECIAL WORK—FIG. 1—GENERAL VIEW OF SPECIAL WORK; FIG. 2—PRESENT APPEARANCE OF INSERT SPECIAL WORK; FIG. 3—PRESENT APPEARANCE OF SOLID MANGANESE CROSSING

To-day the manganese insert work is "shot to pieces," so to speak, and will be reconstructed at once, while the solid manganese crossing is apparently good for ten years more life.

The manganese insert was repaired time after time by the usual spelter process until such a condition was reached that the spelter did not hold long enough to warrant its further use. We then tried the experiment of thermit welding these inserts which was outlined in the ELECTRIC RAILWAY JOURNAL of Oct. 13, 1917, page 685. At the time when my 1917 article was written the substitution of thermit for the spelter was promising, but later it proved to be unsatisfactory in that it did not weld the manganese insert to the insert casting. In this experiment we had the co-operation of the manufacturers of thermit who were, however, not oversanguine as to the outcome.

One advantage of the use of thermit did show up in this experiment, namely, that, while the weld cracked around the edges of the insert and did not make a bond at this point, it did provide a solid foundation under the insert. Inasmuch as the bond was not complete between insert and the casting, a "rocking" motion or movement occurred under traffic and this resulted in the breaking up of the insert itself.

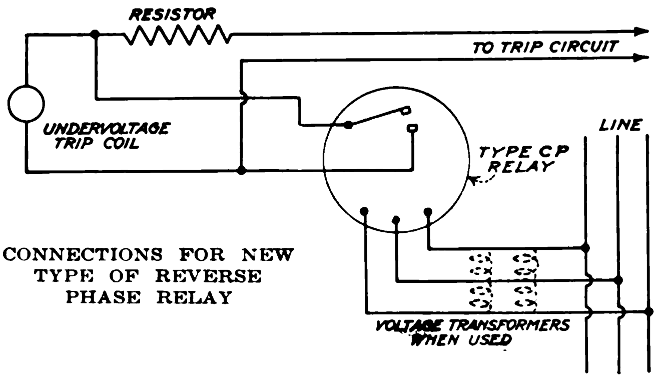
We had one case where a loose insert "jumped" out of the casting under a car and wedged in under the truck in such a manner as to cause a bad derailment, prior to the use of the thermit.

The accompanying photographs were taken of the crossings referred to. Fig. 1 shows a general view of the special work with the manganese insert crossing in the foreground with the solid manganese crossing back of it. The curve crossing in the background is a manganese insert layout also. Fig. 2 shows a close-up view of the insert special work as it appears to-day, while in Fig. 3 is the solid manganese crossing to-day. The only work done on the solid manganese crossing since its installation was the welding up of, and grinding off level of the frog points after seven years of service.

Relay to Protect Motors Against Phase Reversal

IF A three-phase motor is disconnected from a circuit and the phases reversed when it is reconnected, it will, naturally, run backward. Such a reversal may occur and has occurred when the motor is disconnected for repairs, through an error in reconnecting leads at the power house or substation, or from a number of other causes.

In many cases the reversal of rotation of a motor, aside from the inconvenience it causes, is not a serious matter as the error can be corrected at the motor terminals. In other cases, however, serious consequences may result. The reversal of an elevator motor, for instance, might result in wrecking the machinery and loss of life.



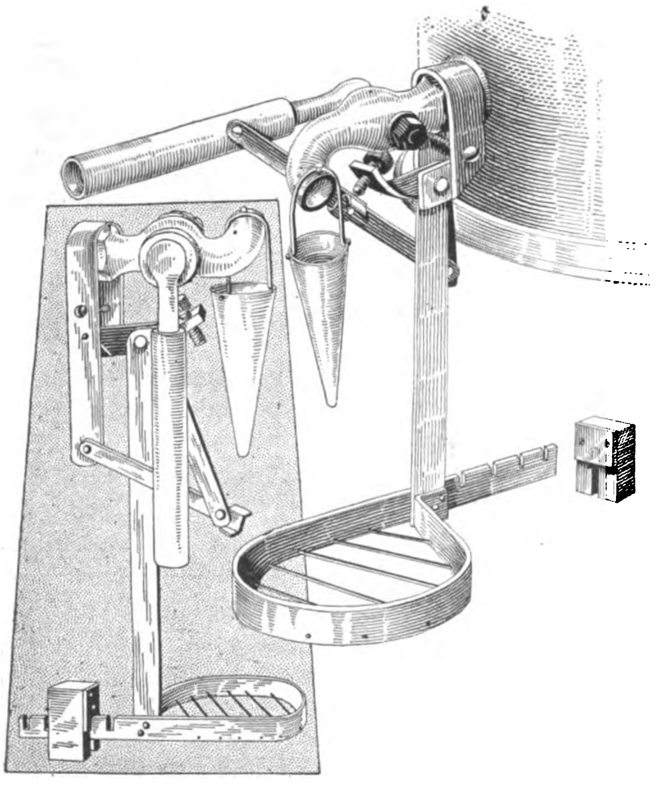
CONNECTIONS FOR NEW TYPE OF REVERSE PHASE RELAY

To protect motors against phase reversal the Westinghouse Electric & Manufacturing Company has developed a reverse-phase relay. If a phase is reversed, if a phase fails, or if the voltage drops below 75 per cent of normal, the relay contacts close and trip the circuit-breaker, either through a shunt-trip coil or by short-circuiting an undervoltage trip coil having a series reverse resistor.

The relay operates on the induction principle. When properly connected the torque holds the contacts open against the restraint of a spiral spring. On low voltage the torque diminishes and the spring closes the contacts. On reversal of phase connections the reversed torque assists the spring in closing the contacts.

Automatic Oil Can Filler Prevents Waste

TO PREVENT the overflowing of oil, through carelessness or misjudgment, while oil cans are being filled, the arrangement shown in the accompanying illustration has been devised to provide an automatic safeguard. The apparatus is constructed of strap iron $\frac{3}{4}$ in. x $\frac{3}{16}$ in. and is intended for attaching to the faucets of oil tanks or barrels used in shops. The can to be filled is placed in the tray of the apparatus and a small counterweight is placed on the end of the lever to balance the weight of the can. The opening of the faucet brings the two links, forming a toggle joint, into contact with the adjusting screw at the end of the lever supporting the can. As the can is filled its weight causes the lever to swing and the screw to press on the toggle joint. As soon as this is forced over dead center the faucet is closed by the action of the lever and weight attached to it. No springs are used. The set screw on the large swinging arm can be adjusted for any sized can and provides a definite closing point within very close range. The small swinging funnel shown in the illustration is merely a safety device for use when filling small cans.

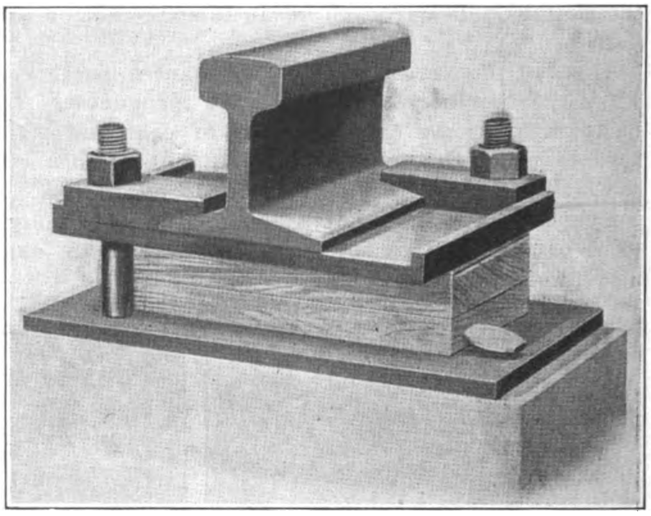


AUTOMATIC FAUCET CLOSING DEVICE FOR FILLING OIL CANS

Fittings for Shimming Tracks

Detailed Description of An Adjustable Track Shim That Can Be Easily and Cheaply Applied and Removed

THE freezing and thawing experienced during the winter season produces inequalities in the roadbeds of electric roads and makes it necessary to shim the rails in order to correct these rough conditions. The usual practice consists of inserting wooden wedges and slabs under the rails. These are spiked to the ties usually by the same spikes that hold the rails in position. Where the shimming is heavy the spikes do not penetrate the ties to sufficient depth to insure proper fastening.



ADJUSTABLE TRACK SHIM

The "Trasco" adjustable track shim has been placed on the market by the Track Specialties Company, New York, in an endeavor to provide a more substantial construction for shimming and at the same time to provide for adjustment as the track alignment changes. This device consists of two plates and two clips for clamping the rail. The bottom plate is securely spiked to the ties and the rail resting on the top plate is held by two clamps and fastened to the bottom plates by two carriage bolts. These bolts are inserted head down, the bottom plate being countersunk to receive the head and provided with a square hole to receive the square shank of the bolt. This keeps the bolt from turning in applying the nuts.

Wooden wedge-shaped shims are inserted between the two plates to give the alignment desired. The plates are provided with corrugations next to the wood to keep the shims from slipping when they are once clamped in position and in addition two small holes are provided in the top plate so that nails can be driven into the shims if desired.

The advantages claimed for this construction are these: (1) Adjustments as small as one-sixteenth inch are possible. (2) Adjustments can be easily and quickly made by loosening the nuts and driving in wedge shims to give the desired height. (3) Inequalities can be corrected as often as necessary and the shims applied year after year without the necessity of purchasing new parts. (4) The device provides a safer method for track shimming than that usually employed.

Recent Happenings in Great Britain

War Conservation Measures Largely Monopolize Attention of Managers of English Properties

(From Our Regular Correspondent)

In connection with the appointment of a select committee to investigate the question of the transport of goods, the highways committee has made a recommendation which has been adopted by the London County Council that an expenditure of £100 should be incurred in the conversion of two tramcars for an experiment in the carriage of goods on the Council's tramways. The highways committee has also reported that in view of representations from the Royal Commission on Paper, experiments have been made in the use of canvas bags on tramcars for the collection of used tickets. Only about 12 per cent of the tickets have been deposited in the bags, but it is believed that if an appeal were made to the public and all cars were fitted with bags a better result would be obtained, and the Council has adopted the committee's recommendation that £800 should be expended upon bags. It is stated that the Glasgow Corporation, which uses annually 272 tons of tickets, collects not more than 50 per cent of them.

London Saves 100 Tons a Year

The London County Council has saved 100 tons of pulp a year by simplifying its tickets, and the annual consumption is now only 270 tons, a much smaller quantity on the basis of the number of passengers carried than that consumed in Glasgow. If one-third of the tickets used were collected in the bags they would realize at present prices about £720 a year. The proposal has been made, however, not primarily on a commercial basis, but in view of the national need for saving paper.

Short Strike in Liverpool

A tramway strike occurred in Liverpool recently involving a considerably curtailed service for a day or two. The strike was the result of trouble between the National Tramways and Vehicle Workers' Union, which has headquarters in London and is affiliated with the Transport Workers' Federation and the tramway section of the Municipal Employees' Association, which claims 90 per cent of the tramway employees as members. The latter association called for a strike by the employees as a means of protest against the managerial methods.

Considerable Disorder at First

At its start the strike was marked by animated scenes. Early in the morning a crowd of women conductors stopped the munition workers' cars on one of the routes, and in the evening a number of strikers made for cars leaving a depot, pulled the women conductors off, threw mud at the drivers, smashed the windows of the cars, and cut the trolley ropes. At a meeting of the strikers it was agreed to submit the matter to arbitration, and the following statement, signed by Mr. Mallins, the general manager of the tramways, was read: "We desire to state that the tramways committee at a special meeting formally approved of the course adopted by the secretary of the Municipal Employees' Association in applying to the Chief Industrial Commissioner to arbitrate on the demands of the Liverpool Tramway workers, and agreed to abide by the result of such arbitration. They further agreed that the workers on returning to work forthwith should be reinstated, and that the general manager or his deputy would be pleased at all times to see the secretary or a duly accredited official of the Municipal Employees' Association with respect to any bona-fide complaints that may exist."

Mr. Spencer Resigns from Bradford

C. J. Spencer, the general manager of the Bradford Corporation Tramways, has tendered his resignation to take effect on Nov. 1, in consequence of having accepted a position with the Underground Electric Railways, London. Mr. Spencer has been general manager of the Bradford tramways for more than twenty years, during which time the receipts have risen from £8,000 in the first year to nearly £400,000 last year. It is estimated that the current year will result in revenue of about £500,000.

Coal Economy Necessary

A meeting of the Board of Trade advisory tramways committee of the Lancashire, Cheshire and North Wales districts was held recently in Liverpool, to consider the question of the economizing of coal in the generating of electricity, and it was decided that the present supply must be curtailed by 15 per cent. This departure will possibly result in a reduction of the tram services. Considering the large amount of work of national importance that is being done in Liverpool it is not expected that the service will be very much restricted, but an alteration will undoubtedly be made by the railways in the runs to the outside places in Lancashire and Cheshire.

The North-Eastern Railway has adopted an electrically-propelled luggage barrow, which in the near future will be brought into use at the Leeds and other important stations on the system. The new barrow is similar in size to the old four-wheeled luggage carrier still in general use, and is capable of carrying approximately 25 cwt. of luggage. The driver of the barrow stands on the front, and there manipulates the guiding and propelling apparatus. The present unusual shortage of labor has prompted the innovation by the railway.

The text of the statutory undertakings (temporary increase of charges) bill—the measure designed to confer on gas, water, tramway and electric undertakings, power to increase their charges—is published elsewhere in this issue.

Reports of Interest to Investors

When presiding at the recent general meeting of the British Electric Traction Company, Ltd., the chairman said that several reports had been issued by government departments during the year which deserved careful study by all who had invested in the electrical industry. He called the shareholders' attention to three reports. The first was by the Board of Trade electrical trades committee in regard to the position of the electrical trades after the war; the second by the coal conservation sub-committee of the Ministry of Reconstruction on Electrical Power Supply in Great Britain; and the third was that of the committee appointed by the Board of Trade to consider the question of electrical power supply. These three reports were a condemnation of the electrical legislation of the last thirty-six years, and a vindication of the men who had persistently opposed the legislation and its tendencies.

Power Distributing Centers Planned

Plans are in preparation for a scheme of far-reaching importance in relation to the generation and supply of electricity within a large portion of the Midland area. The project forms a leading factor in the national plan for the establishment of great power-distributing stations in various centers of the country. It is proposed to set up the new works on the banks of the Trent in the immediate vicinity of Nottingham, the area of distribution embracing on one side, within a 40 mile radius, Derby, Leicester, Burton-on-Trent, Stafford, and Lichfield, and many of the intervening places trending from Lichfield in the general direction of Coventry.

The Nottingham Corporation is assuming responsibility for the scheme, and the committee appointed to consider the matter has arrived at the unanimous conclusion that Nottinghamshire possesses all the essential factors required in any area for a scheme of this character, including (1) ample supply of water for condensing purposes, (2) proximity of collieries, (3) railway communication between collieries and suitable sites adjoining the River Trent, (4) large industries requiring electric power. Taking 40 miles as a radius over which electric power can be economically supplied, many important towns would, as indicated, be included, with smaller places and numerous works in the various counties. A. C. S.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Seattle Questions Unsettled

Company Rejects Proposal of City to Lease Railway Lines for Fixed Rental

The officials of the city of Seattle, Wash., and the Puget Sound Traction, Light & Power Company are apparently as far apart on the question of settling the transportation problem in Seattle as they were at the beginning of conferences weeks ago. The city's offer to the company to lease the lines in the city and pay the company a set rental has been unequivocally refused by the traction officials.

COMPANY MAKES SALE OFFER

A counter proposition has been presented to the city by the company offering to sell the system to the city, the difference in the earnings of the company under the proposed agreement and the earnings of the company for the five-year pre-war period to be deducted from the sale price. The company failed to set a definite price on its properties, or to announce the principles which would govern in the fixing of the price.

The situation has been further complicated by a possibility that unless some action is taken within a few days, the trainmen of the company will refuse to wait longer for payment of the wage schedule agreed upon, and will seek other employment.

Realizing that no progress is being made by the city and traction officials in relieving the impending seriousness of the transportation situation, the United States Shipping Board through its local representative, Capt. John F. Blain, district officer, and Edward A. West, Pacific Coast representative of the passenger transportation and hauling division of the board, on Aug. 30 issued an ultimatum to the city and traction officials, outlining an operating agreement which, it is insisted, must be adopted at once by the City Council.

COMPANY'S PROPOSAL REJECTED

At the same time that the letter from Captain Blain and Mr. West was sent out, Mayor Ole Hanson and Councilman T. H. Bolton, president of the Council, signed a letter addressed to the Puget Sound Traction, Light & Power Company, rejecting the company's counter proposal and reiterating the city's offer to lease the company's lines for a period up to six months after the end of the war.

Mr. West, in a recent conference with city officials, criticised the city and traction officials for not coming to some satisfactory operating agreement, and asserted that the period when the government seriously considered taking over the city railways and operating them as a part of its war program had passed.

Mr. West stated that the government was perfectly willing to help finance the transportation situation in Seattle, but that it would not be a party to building up competitive systems which were not devoting their whole energies to the winning of the war. He states that the sensible thing for the city to do is to build the proposed elevated municipal line (for which the government will extend the necessary loan) and then allow the traction company's equipment to be used over this line to take care of shipyard workers. Mr. West states that the government will not, on his recommendation, advance money for the traction company to build another line into the industrial district, but will do everything possible to aid the construction of the line on Avalon Way, which is needed for workers engaged in essential occupations in that section.

Mr. Walsh on Labor's Future

Frank P. Walsh, joint chairman of the National War Labor Board, sent a message to be read at the Labor Day celebrations. Mr. Walsh said in part:

"This world war has provided the beginning of a splendid education in democracy. In this re-examination the country has discovered one thing at least about democracy—that it must mean more than old-fashioned political democracy. The old idea that when everybody votes you have a democracy is pretty well exploded.

"This country, I promise you, is beginning to understand that we may have 100 per cent democracy in the form of our political government, and yet have autocracy of the most despotic type in industry. It is now clear to understanding men, and especially to those who work for a living, that to attempt to control the conditions of one's life through the roundabout way of political oratory and legislative action is futile, and that this old-fashioned attempted substitute for a direct and common-sense control through the workshop must be thrown into the scrap heap of pre-war absurdities. Political democracy is a delusion unless builded upon and guaranteed by a free and virile industrial democracy.

"I believe that the process of democratization will continue until there will remain not one wage worker in the country deprived of full voice in determining the conditions of his job and consequently his life."

Philadelphia Insurance Plan

$7,000,000 Blanket Policy Placed With Metropolitan Company Under Modified Co-operative Plan

Providing for life insurance for its employees under the amended co-operative plan, the Philadelphia Rapid Transit Company, by action of the board of directors on Aug. 26, arranged for a $7,000,000 insurance policy with the Metropolitan Life Insurance Company, New York, in the form of a blanket policy, effective on Sept. 1, 1918. Under this, each employee a year in the service may secure a $1,000 policy, in accordance with terms of the plan. This is in addition to the money received by virtue of the workmen's compensation act and, also, in addition to $1.50 a day sick benefits and $40 a month pension payable under the terms of the amended co-operative plan.

The terms of the life insurance policy are most favorable to the employees. Many of the older employees could not, except for this plan, secure insurance upon their lives at any price. An individual policy for $1,000 will be given into the personal custody of each member. In the event of the employee leaving the service, the insurance company undertakes to reinsure such employee without requiring a physical examination. Employees who leave the company to engage in military or naval service are not insured while absent; they are, however, assured of reinsurance as soon as they return to the employ of the company.

NEARLY ALL ELIGIBLES SIGN

Because of the great inroads made by the draft and other governmental activities, only about 7000 of the company's employees out of a total of 10,000 have as yet become eligible by being one year in service. Practically all of the eligibles have signed the cards approving the plan and the insurance becoming effective under this blanket policy as of Sept. 1 will approximate $7,000,000. This amount will increase as the newer men become eligible by being in service one year until a possible sum of $10,000,000 may be taken.

Some very interesting sidelights upon the question of insurance and sick benefit protection among the company's employees have developed. In one instance, a man who has been with the company for many years has been paying at the rate of $72 a year for a $1,000 policy. Under the co-operative plan, he will be enabled to obtain the same protection, plus sick benefits of $10.50 a week and a $40 monthly pension, for an annual outlay of $12.

Protests Wage Award

New Orleans Company Wants Award Suspended, but Will Pay Back Wages

The board of directors of the New Orleans Railway & Light Company, New Orleans, La., has decided to pay its employees the increased back pay resulting from the award of the War Labor Board, notwithstanding the fact that the company's application for a reconsideration of the case and a suspension of the award has been acknowledged and taken under consideration by the War Labor Board and no decision has been rendered thereon. Payment will be made without prejudice to the company's right to persist in its application for reconsideration and suspension.

The company says that in previous statements made to the public its reasons for applying for a reconsideration and suspension have been clearly set forth. The company feels in a general way that the award grants to certain classes of labor wages greatly in excess of what the steam railroads are paying similar labor, and in many instances common labor receives a higher wage than certain conductors and motormen.

Prior to the labor award, the company borrowed $1,000,000 from the War Finance Corporation to enable it to meet its obligations. The company has been holding out of this money a sum sufficient to pay its city taxes so as to protect itself against delinquency and not to embarrass the city of New Orleans in the collection of its necessary revenue for public purposes. In determining to pay the increased back wages, the company has been compelled to encroach upon the fund which it had reserved for taxes. In this way alone is it able to make the payment.

Interurban Terminal Plan Revived

The plan of building a new combined steam and interurban passenger station to face on the Public Square at Cleveland, Ohio, has been revived, but just what interests are behind it cannot be learned. Former Governor Myron T. Herrick will be chairman of a committee of five business men which will serve in the intiation of an ordinance providing for the relocation of the passenger traffic of the city, and it is supposed the Van Sweringen brothers are the backers. The Cleveland Union Terminals Company, with a capital stock of $10,000, was recently incorporated by Attorneys John L. Cannon and Charles W. Stage, and they have represented the Van Sweringens in the past.

O. P. and M. J. Van Sweringen control the Cleveland & Youngstown Railway and the Nickel Plate Railroad. They are also building a large freight terminal in what is known as "the flats." Many of the features of the proposed new depot fit into plans they have had in mind for several years, including a depot which was to be connected with the new Hotel Cleveland, now nearing completion.

Roads from the West and Southwest would come to the new location through Walworth Run from West Thirtieth Street over a new bridge to be built across the Cuyahoga River. Those from the east and southeast would come to the station through Kingsbury Run. The present tracks through the city would thus be turned over entirely to freight service.

Plans call for separate grades for steam roads and interurban lines. All of them can reach the point without much trouble. The building would face north at the southwest corner of the Public Square.

Chicago Corruption Charges Fail

Failing to find evidence on which to base indictments supporting the charges of bribery and corruption made by the State's Attorney in connection with the new Chicago traction ordinance, the Grand Jury on Aug. 31 resorted to the unusual procedure of indicting the ordinance itself. This was the outcome of charges of undue influence and counter charges of "politics" which have stirred the people of Chicago since the new franchise was approved by the City Council recently.

The State's Attorney did not encourage the suggestion that Special Counsel Fisher for the city be allowed to explain the ordinance to the jurors. The result was a lengthy report with an appendix prepared by the State's Attorney giving 168 reasons why the ordinance should not be indorsed by the people. The grand jury condemned the ordinance as a "vicious, ill-considered, hasty and one-sided bargain." The local newspapers refuse to take the charges seriously and it has been suggested that a special session of the City Council be called to demand an investigation by a special State's Attorney. Meanwhile much capital is being made of the adverse report in the pending political campaign.

During the inquiry by the Grand Jury many Aldermen were subpoenaed as witnesses.

Engineers and Draftsmen Wanted

The Division of Engineering, United States Employment Service, 29 South La Salle Street, Chicago, Ill., has received an urgent call from important industries for fourteen trained men. The call is a varied one and is indicative of the present need for experienced engineers and draftsmen of training and ability.

The Division of Engineering will not consider applicants who are already engaged in essential industries, as it is concerned only in filling war needs and not in creating them.

All technical men who wish to enter the service of the Division of Engineering should address A. H. Krom, Director of Engineering, 29 South La Salle Street, Chicago, Ill.

Women a Problem

The Eternal Question Has a New Phase Owing to Objections by Cleveland Men

After a day of discussion over the right of the Cleveland (Ohio) Railway to put women on the cars as conductors, the local union officials announced on Aug. 31 that all further movements would be delayed, pending the arrival of W. B. Fitzgerald, vice-president of the Amalgamated Association, to take part in the negotiations. He was expected in Cleveland early in the week.

MEN DEMAND INQUIRY

The men asked the company to cooperate in an investigation as to whether a sufficient number of men could be obtained to operate the cars, and that women conductors be removed from the cars pending the investigation. The company interposed no objection to an investigation, but could see no reason for its co-operation in making it.

The request to remove women conductors from the cars was refused and J. J. Stanley, president of the company, announced that the company would continue to employ both men and women, the men to take places as motormen. Mr. Stanley told the officials that the shortage of men was so serious that 400 daily trips have been discontinued. The union men insist that the contract between the company and the union provides that the latter shall be consulted in case of any intention to employ women, but Mr. Stanley denied that there was any provision of the kind in the contract.

An investigation was put under way the latter part of last week by Fielder Sanders, Street Railway Commissioner, to determine whether everything possible was being done to secure male help. Both he and Mayor Davis declared that adequate service was the first consideration. While they would prefer to see male help employed, the company must take any it can secure rather than allow the service to suffer.

WOMEN NOT TO REPLACE MEN

The union has been assured that no men will be discharged to make room for women. While many women have been put on the cars for training, only one has actually been put in charge of a car. A car on the Euclid Avenue line was operated by a woman on Aug. 31.

William Rea, secretary of the local branch of the Amalgamated Association, notified President Stanley on Sept. 3 that all the men would leave their cars at midnight on Sept. 4 unless the women conductors were withdrawn by 2 o'clock that day, pending the completion of an investigation into the need of employing women. Mr. Stanley said the company would not surrender its right to employ whomever it saw fit. The union officials claim that if an investigation shows that a sufficient number of men cannot be secured to operate the cars, no objection will be made to the employment of women.

News Notes

Full Service on New York Line.—Practically all of the men on the Third Avenue Railway, New York, N. Y., who left their positions through the suspension order of their union have since applied to be reinstated. The undesirables the company refused to reinstate. Cars on all lines were running on schedule on Aug. 28.

Cincinnati Employees Grow Impatient.—Officers of the local branch of the Amalgamated Association at Cincinnati, Ohio, state that the men will not wait for a referendum on the newly revised franchise ordinance recently passed by Council for an advance in wages. They will not strike, the officers say, but will seek other employment where better wages are paid.

Strike in Texarkana.—Service on the lines of the Southwestern Gas & Electric Company in Texarkana, Tex., was crippled on Aug. 20 by a strike of motormen. All but three of the regular motormen failed to report for duty, but cars were manned by other employees and a semblance of service was maintained. The grievance of the striking motormen is that the company refused to discharge an employee at their request.

Another Twin City Wage Advance.—After a conference with the Co-operative Association of Employees, Horace Lowry, president of the Twin City Lines, Minneapolis, Minn., announced an increase in wages effective on Sept. 1, not naming the per hour increase, but saying that with the increase in wages granted on Aug. 1, the expenses would be increased $900,000. The president said with the increased expense it will be necessary to rearrange schedules and decrease the service further, giving only the service absolutely necessary to carry the public. The wage advance is the fourth in a year.

Montgomery Employees Strike.—The employees of the Montgomery Light & Traction Company, Montgomery, Ala., went on strike on Aug. 17. The questions of unionization and wages are said to be involved. An agreement was reached between Colonel Clarke, commanding the division at Camp Sheridan, President Tillis of the company and the union for the operation of all cars to and from the camp. The union men volunteered to operate the cars on condition that Mr. Tillis would pay the regular wages and would not attempt to put non-union men on any of the camp lines. Mr. Tillis agreed to the proposition.

Atlantic City Men Want More.—The platform men of the Atlantic City & Shore Railroad, Atlantic City, N. J., want an additional 5 cents an hour for each conductor and motorman. The men are now receiving from 31 to 35 cents an hour on the Atlantic Avenue division and from 33 to 37 cents an hour on the Ocean City division for a day of ten hours to be completed within twelve hours. The men also demand recognition of the union. Another matter which the men want settled is the employment of Atlantic City firemen to operate cars when the firemen are not on duty for the city. The railway contends the employment of firemen is necessary if it is to keep all the needed cars running.

Wages and Fares Coupled in Louisville.—In the matter of the demand of the union on the Louisville (Ky.) Railway for an increase in wages, the company has offered the men a temporary advance of 7 cents an hour and asks the union to allow it three months' time in which to have the books of the company examined, to ascertain if the present earnings will allow the increase demanded. The union has refused to accept these terms and will place the matter in the hands of the War Labor Board for adjustment. The railway is making an effort to have fares raised so that it will be in position to meet the demands of the union and has asked that the Louisville Board of Trade cooperate with the company in securing the higher fares.

Buffalo Employees Stick by Company.—Union platform employees of the International Railway, Buffalo, N. Y., will continue to work for the wage increase granted them by the company on June 1. This provides for the sliding scale between 35 cents and 42 cents an hour. The scale of wages allowed by the War Labor Board, an increase of 6 cents an hour over this pay, was made contingent upon the company's right to collect a 6-cent fare. At a meeting of the company's employees it was agreed to remain at work on the old scale of wages until such time as the company is relieved from the obligation of charging a 5-cent fare and then a demand would be made that the company pay the scale recommended by the War Labor Board.

Spokane Men Want Increase.—Increases in wages for trainmen of the Spokane (Wash.) Traction Company to 50, 55 and 60 cents an hour have been asked by the union committee on wages. A conference on the new schedule was held with officers of the company. It is understood the proposal includes a request for an eight-and-half hour day. The increases are based as follows: For the first six months, 50 cents an hour; for the second six months, 55 cents an hour; after the first year, 60 cents an hour. The men are now being paid on a scale announced about two months ago, as follows: First year, 33 cents an hour; second year, 34 cents an hour; after third year, 36 cents an hour; fifth year, 37 cents an hour; and after that 39 cents an hour. Men on one-man cars are paid 4 cents an hour additional.

Wage Conference in New York.—Arrangements were made for a joint conference during the week ended Sept. 7 between the officials of the Interborough Rapid Transit Company, New York, N. Y., and representatives of its employees to readjust the wage scale. The present wage scale expired on Sept. 1, and in his frequent communications with the Mayor early in the year on the subject of an increase in fares, T. P. Shonts, president of the company, stated that it would be necessary to increase wages. Employees of the company have been endeavoring to agree upon the amount of increase which would be satisfactory to all, but the matter was left in abeyance until after it could be discussed with the company. Relations between the brotherhood of employees and the company officials have always been cordial, and no fear has been expressed that an amicable agreement would not be reached.

Ottawa Wage Award Announced.—The Ottawa (Ont.) Electric Railway has accepted the award of the Dominion Labor Board of Appeal, which recommended that the employees of the company should be granted a wage schedule providing a minimum rate of pay of 35 cents an hour and a maximum of 39 cents. The increase in wages which the employees have obtained in all branches, together with the overtime, will mean an additional annual expenditure to the company of more than $200,000. The company contends this means that practically the net earnings of the road this year will go to the employees, and that if the company is to survive, an increase in the passenger tariff is inevitable. The men struck recently following an award made by a conciliation board. Settlement of the matter was then referred to the Dominion Board. The men have also accepted the award.

Program of Meeting

American Bankers' Association

The forty-fourth annual convention of the American Bankers' Association will be held in Chicago the week of Sept. 23 to 28. It will be a war convention, and the various sessions will be devoted largely to addresses on topics of the day.

Among the speakers who will address the convention are W. H. Vandervoort of the Root & Vandervoort Engineering Company, East Moline, Ill., whose subject will be "Relations Between Employer and Employee."

The Savings Bank Section's program includes a discussion of "The Effect of the War on Railroad Securities," by Samuel Untermyer, counsel to the National Association of Railroad Security Owners, and Francis H. Sisson, vice-president of the Guarantee Trust Company, New York.

Samuel Insull, president of the Commonwealth Edison Company, Chicago, will discuss the situation in respect to public utility securities.

Financial and Corporate

Electric Railway Statistics

Situation in Eastern District More Alarming Than That in Either Southern or Western

The outstanding feature of the comparison of operating statistics for electric railways for May, 1917 and 1918, compiled by the information bureau of the American Electric Railway Association and presented herewith, is the increase in the operating ratio.

For the entire country this amounts to 2.72 per cent, the ratio for 1918 being 67.67, as against 64.95 in 1917. The worst situation is found in the Eastern district, where there has been an increase of 3.32 per cent, as against 2.30 for the Southern district and only 1.58 for the Western district.

The per cent of increase in operating expenses for the country is almost twice the per cent of increase in operating revenue, while for the Eastern district it is a little more than double. Thus, for the country, the operating revenues have increased 5.86 per cent, while operating expenses have increased 10.28. In the East the increase in revenue amounts to 5.41 per cent and the increase in expenses 10.91 per cent. The Southern district fares better, the increases being 11.99 and 16.37 per cent respectively. The West shows the best ratio between these two items, the figures being 5.66 per cent and 8.22 per cent respectively.

The net earnings for the railways show a decrease of 2.35 per cent and again the showing in the Eastern district is the worst, an actual decrease of 5.09 per cent being recorded. Both the South and West show increases, the figures being 5.69 and 0.87 per cent.

The returns from the city and interurban electric railway companies, as shown in detail in the appended tables, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Interborough Bonds Offered

A syndicate composed of J. P. Morgan & Company, First National Bank, National City Company, Harris, Forbes & Company, Lee, Higginson & Company, Halsey, Stuart & Company, and Kissel, Kinnicutt & Company has been formed to sell $33,400,000 of Interborough Rapid Transit Company's three-year 7 per cent secured convertible notes at 98½ to yield investors slightly more than 7½ per cent. The War Finance Corporation has agreed to take $12,500,000 of the notes, with the understanding that in the event that the syndicate succeeds in disposing of the entire issue of $33,400,000 it will be relieved of its obligation, the War Finance Corporation being compensated just as it was in the case of the recent Bethlehem Steel Corporation financing. The notes are to be secured by $52,187,000 of Interborough Rapid Transit Company first and refunding mortgage 5 per cent bonds, and will carry the privilege of conversion into such bonds at 87½ with adjustment of interest. The notes are to be redeemable at 103 and interest during the first year, 102 and interest during the second year, and during the third year they will be redeemed at 101 and interest.

Disaster Ahead

John A. Beeler Favors National Administrator and Remission of Onerous Franchise Terms

John A. Beeler, traffic engineer and adviser to the Public Utilities Commission of the District of Columbia, following his return on Aug. 30 from a trip through the East, where he gathered information first-hand as to conditions confronting the traction companies, declared the situation to be far more serious than is generally recognized. Mr. Beeler states that increased cost of labor and materials, taxation and jitney competition have all but put some companies out of business and are threatening the existence of others.

As an immediate measure of relief he urges favorable action by the government on the proposal, already submitted, that a national administrator or board be appointed with power of recommendation, advice or request to the state and municipal authorities which exercise control over this class of utilities. Mr. Beeler suggests that such official should put all economy measures possible into effect in the operation of lines and permit the charging of increased fares when other means of relief have failed. Mr. Beeler said:

"Many companies are now operating at a loss and face bankruptcy. Disaster confronts the industry unless something is done. Public service will be paralyzed. In many cases all possible economy measures have been introduced and still receipts are falling behind expenditures. In such cases authority to raise fares should be given.

"There should be a readjustment of all street railway taxes and some taxes should be abolished. Jitneys should not be allowed to compete with traction concerns where adequate service is furnished. Business concerns should stagger their hours for employment. Finally, efficient co-operation should be developed among employees.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS MAY, 1918 AND 1917

Account	United States				Eastern District				Southern District				Western District			
	Amount, May, 1918	Per Mile of Line			Amount, May, 1918	Per Mile of Line			Amount, May, 1918	Per Mile of Line			Amount, January, 1918	Per Mile of Line		
		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917
Operating revenues	$14,894,753	$2,060	$1,946	5.86	8,844,971	$1,869	$1,773	5.41	$1,364,887	$1,681	$1,501	11.99	$4,684,895	$2,780	$2,631	5.66
Operating expenses	10,075,107	1,394	1,264	10.28	6,109,555	1,291	1,164	10.91	837,499	1,031	886	16.37	3,128,053	1,856	1,715	8.22
Net earnings	4,819,646	666	682	†2.35	2,735,416	578	609	†5.09	527,388	650	615	5.69	1,556,842	924	916	0.87
Operating ratio, per cent	1918, 67.67; 1917, 64.95				1918, 69.07; 1917, 65.65				1918, 61.33; 1917, 59.03				1918 66.76; 1917, 65.18			
Average number of miles of line	1918, 7,229; 1917, 7,095				1918, 4,732; 1917, 4,672				1918, 812; 1917, 756				1918, 1,685; 1917, 1,667			

COMPANIES REPORTING TAXES

Account	United States				Eastern District				Southern District				Western District			
Operating revenues	$10,322,043	$1,983	$1,881	5.42	$5,391,527	$1,605	$1,520	5.59	$643,946	$1,945	$1.716	13.34	$4,286,570	$2,831	$2,712	4.39
Operating expenses	7,107,484	1,366	1,273	7.31	3,834,445	1,142	1,071	6.63	402,079	1,215	996	21.99	2,870,960	1,896	1,779	6.58
Net earnings	3,214,559	617	608	1.48	1,557,082	463	449	3.12	241,867	730	720	1.39	1,415,610	935	933	0.21
Taxes	716,423	138	128	7.81	368,647	110	101	8.91	50,747	153	141	8.51	297,029	196	182	7.69
Operating income	2,498,136	479	480	†0.21	1,188,435	353	348	1.44	191,120	577	579	†0.35	1,118,581	739	751	†1.60
Operating ratio, per cent	1918, 68.89; 1917, 67.68				1918, 71.15; 1917, 70.46				1918, 62.47; 1917, 58.04				1918, 66.97; 1917, 65.60			
Average number of miles of line	1918, 5,204; 1917, 5,122				1918, 3,359; 1917, 3,300				1918, 331; 1917, 326				1918, 1,514; 1917, 1,496			

† Decrease.

Best Year Ever

W., B. & A. Revenues Show Remarkable Gain of 65 per cent for 1917 From War Traffic

Unlike most interurban railways throughout the country, the Washington, Baltimore & Annapolis Railroad during the calendar year 1917 showed the best year in its history. The patronage between the terminal cities, as well as between local points, exhibited a decided increase. During the year 385,000 more passengers were carried between Baltimore and Washington than during the preceding year. This was an average increase of 1050 passengers per day.

COMPARATIVE INCOME STATEMENT OF WASHINGTON, BALTIMORE & ANNAPOLIS RAILROAD FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Railway operating revenues	$1,560,125	100.0	$946,202	100.0
Railway operating expenses	738,596	47.3	511,616	54.1
Net revenue from railway operations	$821,529	52.7	$434,586	45.9
Net revenue from auxiliary operations	25,574	1.6	12,680	1.3
Net operating revenue	847,103	54.3	447,266	47.2
Taxes assignable to railway operations*	129,052	8.3	50,934	5.4
Operating income	718,051	46.0	396,332	41.8
Non-operating income	12,893	0.8	13,340	1.4
Gross income	730,944	46.8	409,672	43.2
Deductions from gross income	268,293	17.2	262,578	27.6
Net income	462,651	29.6	147,094	15.6

*This includes income and excess profit taxes.

The company's gross revenues at $1,560,125 represented a gain of $613,922 or 64.9 per cent over those for 1916. The largest preceding increases had been around 11 per cent in 1912 and 1916. Since 1909 the revenues have risen 154.8 per cent. The detailed results for the last two years are given in the accompanying statement.

Comparative earnings statistics for the last three years follow:

	1917	1916	1915
Per car-mile (cents)	8.98	42.53	40.47
Per mile of single track	$15,175	$9,545	$8,550
Per mile of road	$28,380	$17,220	$15,390
Per passenger (cents)	38.68	37.56	35.97

In July, 1917, the United States government began the construction of one of its army cantonments at Admiral, Md., approximately 2 miles west of Naval Academy Junction. This cantonment is now known as Camp Meade, and occupies approximately 9700 acres, 4100 of which are located north of the track and used for camp quarters, parade grounds, etc., and 5600 acres of which are located south of the track and used for maneuvering purposes. The land was leased from the owners by the railway through its subsidiary, the Terminal Real Estate Company, which latter company subleased it to the United States government.

In order to take care of the travel incident to Camp Meade, it was necessary to construct 5 miles of additional track to provide double-track facilities between Naval Academy Junction and the center of the camp. The company also constructed two large stations.

During the year the company added to its equipment eight modern, high speed Westinghouse electric locomotives and fifty-four modernly equipped trail cars. On account of the increase in rolling stock it became necessary to enlarge the carhouse facilities, and the board of directors authorized the construction of a modern brick and concrete paint and carpenter shop at an expenditure of $35,000.

The growth of the freight business kept pace with that of the passenger, so that, like the passenger terminal in Baltimore, the freight terminal is now seriously congested. The directors have had under consideration the desirability of combining the terminals on one plot of ground, a portion of the land for which has already been purchased.

During the last year Congress authorized additions to the Naval Academy buildings at Annapolis costing $3,500,000 to provide for an increase in attendance at the academy of 1000 naval students, which is about 100 per cent more than the number previously enrolled. This will result in still further increases in freight and passenger business to Annapolis.

Favors Washington Merger

John A. Beeler, traffic adviser to the Public Utilities Commission of the District of Columbia, long favoring a consolidation of the two electric railway systems of Washington, has taken the position that such a consolidation is now looming up as imperative, from practically every point of view. The rapidly diminishing man-power in the industrial world, due to army needs; financial considerations of first moment; the serving of the public by careful utilization of available man-power, thereby getting a maximum of efficiency from a minimum of men and track equipment—all demand, Mr. Beeler holds, the utmost effort for consolidation. Some time ago the movement toward the unification of the railway systems of the District was accelerated by the appointment of committees from both the Washington Railway & Electric Company and the Capital Traction Company to confer with a view of devising a plan of closer co-operation or unified or single management to be submitted to the Public Utilities Commission of the District and to the boards of directors of the companies.

Interurban Revenues Rise

Higher Operating Costs of Illinois Traction System, However, Cause Reduction in Net

Each department of the Illinois Traction System, Peoria, Ill., during the calendar year 1917 showed an increase in gross revenues over the results of the preceding year. The interurban lines showed up particularly well with a gain of $616,059, or 15.4 per cent. The city lines, however, secured an increase in revenue of only $87,245 or 2.8 per cent.

The gains in gross were more than offset by the increases in operating expenses and taxes, for while the gross revenues rose $1,474,423 or 11.7 per cent the expenses and taxes increased $1,659,379 or 22.1 per cent. As a result the gross income fell off $184,955 or 3.6 per cent. The fixed charges increased, and the amount which was available for depreciation and dividends was $1,172,152 for 1917 as compared to $1,473,232 in 1916.

On the interurban lines increases in various rates, and particularly in rates on coal, grain and industrial switching, were made effective. The resulting increased revenue, with the additional tonnage handled which amounted to 24.55 per cent, was a substantial contributing factor in the total increase shown for the interurban department.

INCOME STATEMENT OF THE ILLINOIS TRACTION SYSTEM FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Interurban lines	$4,609,898	32.8	$3,993,836	31.8
City lines	3,198,056	22.8	3,110,811	24.7
Gas	1,035,169	7.4	923,642	7.4
Electric	4,295,501	30.6	3,689,851	29.4
Heat	383,092	2.7	341,379	2.7
Water	15,151	0.1	14,476	0.1
Miscellaneous	504,004	3.6	492,450	3.9
Total gross revenues	$14,040,870	100.0	$12,566,477	100.0
Operating expenses and taxes	9,149,176	65.1	7,489,797	59.6
Gross income	$4,891,694	34.9	$5,076,649	40.4
Interest on bonds, etc.	3,719,541	26.5	3,603,417	28.7
Net income	$81,172,153	8.4	$1,473,232	11.7

The additional cost of steam coal was $456,011. The increased labor expense was $316,679. The increase in taxes, including the new federal taxes, was $285,473. These three items, therefore, represented an increase of $1,058,164 in expenses over last year.

Bridge Line Ordered Removed

County Commissioners of Tom Greene County at San Angelo, Tex., have ordered the sale of the rails across Chadbourne Viaduct in that city. These rails are owned by the Texas Electric Light & Power Company, a Strickland property. They have never been used, as the company claims it is impossible at this time on account of the war to get materials necessary to complete the line. The commissioners entered their order when the company refused to bear its share of paving across the viaduct.

Financial News Notes

Virginia Company Changes Name.—The Blue Ridge Light & Power Company, Staunton, Va., has filed for record a change in its name to the Shenandoah Traction Company.

Texas Line Files Capital Increase.—The Rio Grande Valley Traction Company, El Paso, Tex., has filed an amendment to its charter in the office of the Secretary of State at Austin increasing its capital stock from $300,000 to $500,000.

Kansas Road Suspends.—The Iola (Kan.) Electric Railroad, running between Iola and La Harpe, has ceased operations at least for the present. Owing to the fuel and labor shortages the receiver of the road, Louis E. Lanigan, decided that it was best to suspend. The company operates 10½ miles of road.

Receiver for Ohio Road.—Charles J. Finger was appointed receiver of the Columbus, Magnetic Springs & Northern Railway, Richwood, Ohio, on Aug. 24, by the Court of Common Pleas of Delaware County, Ohio. All claims due on account of the railway should be properly enumerated and forwarded to the receiver on or before Sept. 10.

Woodstock-Sycamore Line Sold.—W. J. Fulton, master in chancery, has sold the property of the Woodstock-Sycamore Traction Company, Sycamore, Ill., at auction, realizing $119,850. The road extends from Sycamore to Genoa and Marengo, a distance of 25 miles. The rails and ties will be sold as junk. The buyer was the Hyman-Michaels Company, Chicago, Ill.

Road Being Dismantled.—The tracks of the New Jersey Rapid Transit Company running through Sea Isle City, N. J., which have not been used for the past two seasons, are being taken up and the rails will be shipped to France. A number of unused sidings and switches along railroad lines will also be removed and similar disposition made, together with all the extra rails not in use. Ties are also to be removed. Those unfit for relaying will be used to make charcoal.

Want Present Receiver to Continue.—Eastern creditors of the St. Petersburg & Gulf Railway, St. Petersburg, Fla., seeking to foreclose on a mortgage given to cover bonds, have instructed their attorneys in Tampa to insist that Charles M. Allen continue as receiver. At a conference of the creditors and their attorneys in Jacksonville recently it was urged that the foreclosure suit should be filed at once and that Mr. Allen had best not act as receiver for both the St. Petersburg Investment Company and the railway. Now the Eastern creditors want Mr. Allen to continue as receiver pending final judgment providing for the sale of the railway property.

Respite for Bowling Green Company.—When the motion to appoint a receiver for the Southern Traction Company, Bowling Green, Ky., which had been made by City Attorney Guy H. Herdman, acting for the city of Bowling Green and the County of Warren, was argued before Judge Moss, J. S. Lewis, president of the company, agreed to have the cars in operation within two days and the court granted him that time, with the understanding that unless the agreement was complied with the case would be heard. Recently the court ordered that the company repair its wires and cars, as it was claimed that their condition jeopardized the safety of the public. The company agreed to make the repairs, but had not done so, nor has it operated any cars since that time. The suit for a receiver was brought to force the operation of the cars.

Will Offer Monongahela Valley Bonds.—The National City Company, New York, N. Y., expects to offer for subscription $5,500,000 five-year, 7 per cent general mortgage bonds of the Monongahela Valley Traction Company, Fairmont, W. Va., at 97 and interest, to yield slightly more than 7¾ per cent. The company operates a system of urban and interurban electric railways in West Virginia and Ohio consisting of more than 177 miles of track. It also does the entire electric and gas business in a number of cities and towns, and owns valuable coal mining properties. The company has outstanding $8,288,861 of common stock, paying 5 per cent, and $3,431,730 of cumulative preferred stock, paying 6 per cent. The proceeds of the bonds now offered will be employed for the retirement of $2,829,000 one-year 6 per cent notes due on Feb. 1, 1919, and for the completion of a construction program.

City Line Being Torn Up.—The Tiffin, Fostoria & Eastern Railway is tearing up the rails at Riverview Park, Tiffin, Ohio, and the work will continue until all of the city tracks are removed. The company and the City Council were unable to come to terms on the operation of the city lines. The company claimed that an audit of its books showed that with fares at 5 cents straight the lines have been operated for a long time at a financial loss to the company. The company proposed to maintain a cash fare of 10 cents and sell six tickets for 45 cents. The council would not agree to this but had an ordinance drawn up providing for a cash fare of 8 cents and six tickets for 40 cents. The company refused to entertain this proposal. The section from Riverview Park to the Rock Creek bridge will be taken up first and after that portion is removed the work of tearing up the remainder of the line will begin at the park, up Huss Street to the line on Sandusky Street and through that portion operated in Highland. The interurban line will not be affected.

Electric Railway Monthly Earnings

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$95,152	*$38,130	$57,022	$32,681	$24,341
1m., June, '17	83,126	*31,987	51,139	28,977	22,162
12m., June, '18	1,178,395	*465,669	712,729	383,640	329,089
12m., June, '17	988,222	*373,889	614,333	342,303	272,030

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT , TEX.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$102,080	*$51,988	$50,092	$12,838	$37,254
1m., June, '17	80,026	*44,656	35,370	11,677	‡25,425
12m., June, '18	1,018,128	*562,238	455,890	150,701	‡326,293
12m., June, '17	895,313	*484,742	410,571	118,805	‡291,766

EL PASO (TEX.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$96,236	*$69,198	$27,038	$6,865	$20,173
1m., June, '17	101,371	*66,845	34,526	4,653	29,873
12m., June, '18	1,272,064	*832,669	439,395	77,145	362,250
12m., June, '17	1,216,516	*774,451	442,065	60,447	381,618

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$25,679	*$18,991	$6,688	$5,006	$1,682
1m., June, '17	27,758	*18,360	9,398	5,117	4,281
12m., June, '18	337,476	*219,327	118,149	60,591	57,558
12m., June, '17	340,082	*199,437	140,645	62,237	78,408

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$60,984	*$47,264	$13,720	$16,502	†$2,782
1m., June, '17	55,516	*36,415	19,101	15,715	†3,386
12m., June, '18	781,551	*540,523	241,028	193,044	47,984
12m., June, '17	856,429	*441,399	215,030	186,754	28,274

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$259,162	*$165,336	$93,826	$65,655	‡$75,238
1m., June, '17	179,405	*112,192	67,213	29,126	38,087
12m., June, '18	3,078,818	*1,747,266	1,331,552	343,630	‡1,074,172
12m., June, '17	2,088,392	*1,227,416	860,976	349,248	511,728

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$24,510	*$18,433	$6,077	$8,212	†$2,135
1m., June, '17	23,652	*17,236	6,416	7,472	†1,056
12m., June, '18	305,871	*228,136	77,735	77,735	†16,981
12m., June, '17	309,892	*225,693	84,199	87,119	†2,920

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$42,732	*$26,200	$16,532	$8,103	$8,429
1m., June, '17	30,147	*15,893	14,254	7,729	6,525
12m., June, '18	417,518	*259,589	157,929	95,348	62,581
12m., June, '17	297,414	*172,588	124,826	93,007	31,819

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$96,677	*$65,253	$31,424	$24,784	$6,640
1m., June, '17	79,183	*51,578	27,605	24,040	3,565
12m., June, '18	1,071,436	*719,354	352,082	295,909	56,173
12m., June, '17	888,906	*587,338	301,568	286,324	15,244

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$83,134	*$51,095	$32,039	$5,085	$26,954
1m., June, '17	78,234	*46,025	32,209	4,370	27,839
12m., June, '18	1,003,642	*583,089	420,553	60,699	359,854
12m., June, '17	997,737	*542,852	454,885	52,255	402,630

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*Includes Taxes. †Deficit. ‡Includes non-operating income.

Traffic and Transportation

Rhode Island Wants More

Company There Files New Tariff After Central Five-Cent Zone Proves Inadequate

New schedules of rates have been filed with the Public Service Commission of Rhode Island by the Rhode Island Company, operating in Providence and other cities. The new rates would become effective on Sept. 15. The commission has announced an inquiry by it into the matter. The company is now charging 5 cents within a short central zone with an additional charge for rides outside.

A. E. Potter, president of the company, has addressed the following letter to Chairman Bliss of the commission:

"The zone system which was authorized by your commission, effective May 5, 1918, furnished some added revenue to the company. As compared with last year the increase in receipts for the month of May was 8.82 per cent and for the month of June 8.30 per cent. In July our general business was not so good as it was in July last year, due not only to unfavorable weather, but to the fact that many of our citizens between the ages of twenty-one and thirty where in the service.

PATRONAGE FALLS OFF

"This, together with economies upon the part of others, due to the high cost of living, resulted in diminished patronage, particularly on lines to the pleasure resorts. These conditions were sufficient to offset any benefit derived from the zone system. Definite figures are not as yet available.

"The estimated income from the present zone system was based very largely upon the operating conditions for the year ended Dec. 31, 1917. Since that time operating conditions have been growing more and more unfavorable. For six months ended June 30, 1918, our gross revenue fell short by $256.647 of meeting our operating expenses, taxes and fixed charges.

"On May 18 it was necessary to make substantial increases in wages. These increases, it is estimated on the basis of hours worked last year, will amount to at least $300,000 per annum. As a little more than half of this amount will enter into our operating expense for the year ending Dec. 31, 1918, this increase for this year will amount to $150,000 in round figures.

"In addition to this the Providence Division, No. 618 of the Amalgamated Association has petitioned the National War Labor Board for an increase in wages, asking for platform men 60 cents an hour and similar increases for all other employees who are members of the association.

"The company has filed an answer to this petition with the War Labor Board, stating that it is in no financial position to pay any increase in wages whatsoever; but even if the wages are to remain the same as to-day, it is very evident that we shall have to pay more and more for material, and the indications are that under the conditions as outlined our operating expenses, taxes and fixed charges will exceed any gross that it is reasonable to expect by approximately $750,000 for the calendar year 1918.

"The tariffs which were filed to become effective Sept. 15, 1918, will, it is calculated, produce added revenue sufficient to meet our present and anticipated operating expenses and fixed charges. These estimates were made for the Rhode Island Company by Ford, Bacon & Davis."

Theodore Francis Green, one of the trustees under the decree in the New Haven dissolution case in which that company is required to dispose of its electric railway holdings, is reported to have said:

"I do not believe the people of the State want to see the property of the Rhode Island Company disintegrated. I do not believe they want to see the nonpaying lines abandoned. I do not believe they wish the United Traction Company to be a factor in the local transportation situation again.

"But the only other possible solution is for the State to operate the system as a whole on the so-called 'service-at-cost' basis."

Freight on Cash Basis

The Ohio Electric Railway, Springfield, Ohio, has inaugurated a cash system for its freight business. No transportation charge will be allowed to run longer than three days and then it must be under a special arrangement.

In the ordinary run of business payment of prepaid charges is to be made to the forwarding agent when the goods are shipped, and payment of collect charges is to be made when freight is delivered.

For convenience in some cases, a one-day settlement basis will be used. When prepaid freight is received for shipment, the agent will at once mail the bill to the shipper. The same thing is done by the receiving agent when goods are shipped collect. In all cases checks must be mailed the next day.

The only plan that approaches a credit basis is where a period of three days is allowed for the settlement of bills, either prepaid or collect. Violation of the terms cancels the credit and shippers and consignees must file bonds if they wish to enjoy this privilege.

Six Cents for Denver

Mayor Expected to Sign Ordinance Passed by City Council—Interurban Increases Pending

The City Council of Denver, Col., on Sept. 3 passed the ordinance for a 6-cent fare on the city lines of the Denver Tramway. It was expected that the Mayor would approve the ordinance on Sept. 4. On that day the company went to hearing before the State Utilities Commission for similar action concurrently for an increase of rates on the interurban lines. Favorable action on this application is expected within a week.

PUBLICITY PAYS

The company has had its fare case before the public for some time. So effective was its campaign of public education through advertising that it had no trouble in securing in a couple of days 7600 names, or more than three times the number needed to initiate an ordinance. This petition for an ordinance regulating fares contained a bill which included in its provisions the following:

"The Denver Tramway shall be entitled to receive 6 cents and no more for a single passage on any line of the company's railway within the city and county of Denver; provided, that children under six years of age, when accompanied by a paying passenger, shall be carried free of charge, and children over six years of age and under twelve years of age at half fare, and the conductor in charge of each car shall at all times be provided with and have for sale tickets, both whole fare and half fare, to accommodate those wishing to purchase same.

"Sec. 2. That at the expiration of the war and at the time of the surrender to private management of the possession and control of the railroads taken over under the act of Congress passed the twenty-first day of March, 1918, and not to exceed one year and nine months following the date of the proclamation by the President of the United States of the exchange of ratification of treaties of peace:

FIVE CENTS AFTER THE WAR

"The Denver Tramway shall be entitled to receive 5 cents and no more for a single passage on any line of the company's railway within the city and county of Denver; provided, that children under six years of age, when accompanied by a paying passenger, shall be carried free of charge, and children over six years of age and under twelve years of age at half fare, and the conductor in charge of each car shall at all times be provided with and have for sale tickets, both whole fare and half fare, to accommodate those wishing to purchase same."

Another section of the petition submitted to the Council said that the ordinance was necessary for the immediate preservation of the public health and public safety.

St. Louis Wants Zones

After Two Months of Six-Cent Fare, Company Asks Three-Zone System With Five-Cent Central Area

The 6-cent fare which went into effect on the city lines of the United Railways of St. Louis on June 1 is not producing sufficient revenue, and Richard McCulloch, president, has applied to the Missouri Public Service Commission for a test of a three-zone system with a minimum 5-cent fare in the central area. In the company's opinion, a further increase in unit fare would discourage short-haul traffic and involve a clumsy fare arrangement, while the zone system proposed is "fairest" and "entirely practicable."

On May 11, as previously recorded in this journal, the commission authorized a 6-cent fare in St. Louis but retained jurisdiction of the case, requiring the United Railways to make monthly reports and requesting that a study be made of the feasibility of a zone system.

SIX-CENT FARE INADEQUATE

From experience with the 6-cent fare during June and July, it is evident to the company that the new rate does not carry out the intent of the commission, since it does not pay operating expenses and taxes, provide for an adequate replacement fund and earn a 6 per cent return on the investment. Using the results during June and July as a basis for forecasting the remainder of the year, and spreading three months' back pay of $350,000 (already paid) over the entire year, the city lines during the calendar year 1918 will show a deficit of $641,500 in earning a return of 6 per cent on $52,800,000, the figure assumed by the commission as the valuation of the city property. On the same basis, the county lines will show a deficit of $694,500 in earning a 6 per cent return on $7,200,000, the assumed valuation of the county property.

If the fare on the county lines were fixed at 2½ cents a mile, effective Oct. 1, 1918, as has been requested, the increase would be only $72,000 and the county deficit for the year would still be $662,500. If this county deficit is added to the city deficit on the theory that after establishing a reasonable rate of fare in the county the city lines should take care of the county deficit, the total deficit would be $1,264,000. To take care of this deficit, an additional charge of ½ cent per passenger would have to be made on the city lines. This estimate does not include probable increases in the cost of power, and probable increase in State and federal taxes.

REVENUE GAIN IS 14 PER CENT

The 20 per cent increase in the city fare on June 1 resulted in a revenue gain of only about 14 per cent, and a loss of 4½ per cent of the passengers. The details are given in the accompanying statement. The company considers that the greater part of this loss is in short-haul traffic, partly on account of the increase in fare and partly on account of the annoyance of the clumsy 6-cent fare. A further increase in fare to 7 cents or perhaps 8 cents, the company avers, would drive away still more short-haul riders until a further increase in fares would yield no increase in revenue. Furthermore, a 6, 7, 8 or 9-cent fare is a clumsy arrangement, as it involves the use of two or more coins instead of one; and many passengers look upon it as really a 10-cent fare, as it leaves only a few pennies after the odd fare has been paid.

ZONE SYSTEM IS ENTIRELY PRACTICABLE

The company believes that it should return to a minimum 5-cent fare, and that an endeavor should be made to adjust the other city rates of fare as far as possible in proportion to the length of ride. In outlining its plan the company says:

"Payments of fare on a strictly mileage basis would be out of the question, as it would involve too much accounting. The fairest method, and an entirely practicable method, of solving this problem, is the installation of a zone system on the city lines with a minimum fare of 5 cents, the other fares being adjusted equitably to provide sufficient revenue. If, after some experience, it should be found that the revenues needed further adjustment, the rates of fare in the second and third zones could be readjusted without change in the zone limits, or the zone limits might be changed, still maintaining the minimum 5-cent fare. The methods for the collection and accounting of fares would remain the same with any change in the rate of fare in the second or third zone.

"The rates of fare would be as follows: In any one zone, including free transfers in that zone, 5 cents. In two zones, including free transfers within two zones, the second rate of fare. In three zones, including the entire city, with free transfers to any part of the city, the third rate of fare.

EFFECT OF SIX-CENT FARE ON CITY LINES OF ST. LOUIS

	Two Months Ended July 31, 1917	Two Months Ended July 31, 1918	Per Cent Increase
City Lines Only:			
Passenger revenue.	$2,092,461	$2,394,650	14.45
Full fares.......	2,071,703	2,375,434	14.65
2½ cent fares....	20,757	19,216	*7.47
Revenue passengers	42,264,386	40,359,226	*4.52
Full fares.......	41,434,079	39,590,581	*4.46
2½cent fares....	830,307	768,645	*7.47
County Lines Only:			
Passenger revenue.	$121,105	$127,774	5.50
Revenue passengers	2,476,392	2,607,455	5.29
Full fares......	2,367,813	2,498,744	5.53
2½ cent fares....	108,519	108,711	0.11
Entire System:			
Passenger revenue.	$2,213,566	$2,522,425	13.94
Revenue passengers	44,740,778	42,966,681	*3.97

* Decrease.

"We believe that a practicable scheme can be worked out by which passengers may be handled under these new conditions as rapidly and satisfactorily, and the fares accounted for as thoroughly, as under present conditions. This system has many advantages over the present flat-rate system, in vogue in American cities. The short riders are taken care of at the minimum fare and the long rider pays for his ride somewhat in proportion to the cost of providing him with service. This system would also have a good effect in rehabilitating certain decayed portions of the city which have become depopulated on account of unreasonably long hauls now furnished by the company at the expense of those who ride only a short distance.

"It is difficult to predict the financial result of so radical a change. The zone system, first adopted, might produce insufficient revenues, or conversely. A test period of the system proposed should be sufficient to measure the influences on revenues, and provision should be made for a revision at the end of such test period."

Appeals to Mr. McAdoo

International Railway Carries Its Increased Fare Case to the Director General of Railroads

Application has been made to Secretary William G. McAdoo, Director General of Railroads by the International Railway, Buffalo, N. Y., for the government to take over the lines of the company. As the result of the defeat of the company's efforts to collect a fare higher than 5 cents by the voters at the recent fare referendum, the railway is prevented from charging a higher fare within the city limits of Buffalo. In its application to the government, the company points out that it has through freight and passenger tariffs on its interurban lines and also operates part of its system in the Dominion of Canada and should therefore come under the jurisdiction of the Interstate Commerce Commission. The International Railway also operates over the lines of the Erie Railroad and also has through tariffs with other steam railways.

BUFFALO CASE DIFFERENT

Secretary McAdoo is considering the Buffalo situation because it differs from other electric railways, especially in regard to operating across the International boundary line between the United States and Canada. Various legal phases of the problem have been left to the law department of the office of Mr. McAdoo, and after a decision is reached by this department action will be taken by the secretary. E. G. Connette, president of the International Railway, expects a decision will be made by Sept. 22. Various war industries of Buffalo have also petitioned the Director General of Railroads to intervene in the Buffalo case.

Chicago Asks Seven Cents

Application from Elevated Shows $2,447,000 as Estimated Increases in Cost for Year

Due primarily to the tremendous burden imposed by the recent wage award of the War Labor Board the Chicago Elevated Railroads on Aug. 30 filed application with the Public Utilities Commission of Illinois for permission to increase fares on all lines from 5 cents to 7 cents. New passenger tariffs were filed with the application and request was made that the applicants be permitted to "put in effect the schedule of rates on less than the notice required by statute."

WAGES A FACTOR

The petition points out that on June 1, 1918, after voluntary negotiations, an agreement was entered into between the elevated railroads and Division 308 of the Amalgamated Association fixing the conditions of labor and rates of wages to obtain for a period of three years. This agreement provided for an average increase of 3 cents an hour in pay, or about 10 per cent, and applied to all classes in the transportation department and certain classes in the shops and maintainance of way department. The scale of wages thus fixed for trainmen ranged from 31 cents to 41 cents an hour. Due to the unforeseen and extraordinary increases in the cost of living the officials of the union on May 20, 1918, presented to the Mayor and the City Council a petition asking for indorsement of a request to the railway for a wage sufficent to meet living costs and in case the request was denied that the National War Labor Board establish such a wage.

The City Council gave its indorsement and a request was made for an increase in rates of wages of 15 cents an hour, or 40 per cent, over the rates established by the contract of June 1. The management of the elevated railroads while recognizing the fact that the contract of June 1 did not provide an adequate wage advised that with the present fare it was impossible to grant an increase. Application was then made to the National War Labor Board and the company submitted to the jurisdiction of the board. The Board made an award effective on Aug. 1 and for the period of the war fixing the wage scale for trainmen at 44 cents to 50 cents an hour and a minimum wage for other male employees of 42 cents an hour. The amount per annum of the wage increase is more than $1,647,000.

EXHIBIT OF COSTS MADE

The application includes an exhibit showing the cost of electric railway materials and supplies in 1918 as compared with 1915. The total necessary increase in expenditures, including increased material cost, increased taxes, etc., is placed by the company at $2,447,000.

A consolidated income statement for the year ended July 31, 1918, and an estimated statement for the year ended July 31, 1919, is made a part of the application and shows a net loss of $1,752,413 for the latter year. It is stated that although the 7-cent fare would produce a theoretical increase in income of $3,896,370 the estimated increased revenue, due to a decrease of at least 4 per cent in traffic, would be not greater than $2,622,282 if the increase became effective as of Aug. 1, 1918. Exhibit "J," attached to the petition, shows the valuation of the elevated properties as of June 30, 1916, by the Chicago Traction & Subway Commission to be $70,400,916 at present value. Other items not included in this valuation but mentioned in the petition add $10,000,000 to $15,000,000.

The application includes letters of President Wilson and Messrs. McAdoo and Williams emphasizing the value of electric lines in the prosecution of the war and the financial difficulties under which they are now operating. Quotation is also made at length from the recommendation of the War Labor Board as to suggested fare relief for the elevated lines. Exhibit "K" includes a table showing the larger cities in which fare increases have been granted or are pending.

The issue of the ELECTRIC RAILWAY JOURNAL for Aug. 24 noted the request of the Chicago Surface Lines to the City Council for a recommendation so that a petition could be presented to the State Public Utilities Commission "for such an increase in fares as may be necessary to meet existing conditions." The Surface Lines operates under a partnership arrangement with the city and, therefore, wishes the coöperation of the city in its application to the commission. The Elevated Railroads operate under the State railroad act and thus come directly under the Public Utilities Commission.

Yonkers Wants More

A public hearing will be given by the Common Council of Yonkers, N. Y., on Sept. 9, on a petition filed by the Yonkers Railroad for the suspension of its franchise agreements and an increase in fares. The petition, signed by Leslie Sutherland, vice-president, asks that the Mayor and Common Council:

1. Suspend for the period of the war, and one year thereafter, the conditions in relation to rates of fare attaching to the lines of the Yonkers Railroad under any franchise or agreement.

2. Submit the matter of the rates of fare to be charged by the Yonkers Railroad to a determination of the Public Service Commission to increase such rate of fare.

The reason for making the request is that as a result of the war, the increased cost of labor and material makes it impossible for the company to operate cars in Yonkers and adjoining municipalities, according to franchise conditions, at a 5-cent fare.

Zone Studies Begun

Public Service Railway Organizes Special Department to Carry Out Order of New Jersey Commission

A special department has been organized by the Public Service Railway, Newark, N. J., to carry out the order of the Board of Public Utility Commissioners of that State that the company submit by Jan. 1 next "a plan whereby the method of charging now in force may be revised by an equitable zoning system over its entire territory."

Active field work in collecting necessary traffic statistics was started when men began riding the cars and asking passengers to fill out slips which will show the origin and destination of each ride. Every line in the entire system will be covered as speedily as possible and the data secured will be tabulated. So much work is involved, however, that it will be months before it is completed.

PRESIDENT McCARTER DIRECTING WORK

Preliminary work has been under way ever since the commission's decision was accepted by the company last month. The task is regarded as of such importance that Thomas N. McCarter, president of the company, is personally directing it, he having designated a special committee consisting of General Manager R. E. Danforth, Assistant General Manager H. C. Donecker, General Solicitor L. D. H. Gilmour and General Auditor M. R. Boylan, with himself as chairman, to carry on the work. Dr. Thomas Conway, Jr., of the Wharton School of Finance, University of Pennsylvania, has been retained as a special expert.

A corps of sixty college students has been recruited to collect data. These young men will be supplied with blanks the use of which will, it is expected, enable the company to chart traffic on all lines in such manner as to enable it to lay before the commission the most comprehensive information covering the demands of service and the length of rides of those using the cars, that it is possible to obtain.

The most important phase of the work will consist of securing the basic data upon which any zoning system must be predicated, and as the company is acting under the direction of the commission, it is counting upon receiving the willing assistance of its patrons. All the passengers will be asked to do will be to write on blanks to be furnished them where their journey will end.

As the Essex division has the heaviest traffic, it has been selected as the territory for starting the field work. Other division will be taken up in order until the whole system is covered.

Public Service Needs More

U. S. Shipping Board Explains Vital Need of Adequate Electric Transportation in New Jersey

In connection with the new application of the Public Service Railway, Newark, N. J., for a 7-cent fare, as noted in the ELECTRIC RAILWAY JOURNAL of Aug. 31, several federal agencies presented petitions indorsing the company's plea. One of these, that of the Emergency Fleet Corporation of the United States Shipping Board, emphasized with considerable detail the vital interest of the nation in the continuance of adequate electric transportation.

Believing such action to be in the national interest, the Emergency Fleet Corporation requested the Board of Public Utility Commissioners of New Jersey to put into effect such a rate of fare as will provide the Public Service Railway with sufficient funds to pay its operating expenses and maintain its financial stability as a going concern, to the end that it may function at its maximum efficiency as a part of the war-making machinery. The petition was signed by A. Merritt Taylor, Director of Passenger Transportation and Housing, and approved by C. M. Schwab, Director General.

It was pointed out that the government is expending $2,317,105 in advances to the company for necessary additions and extensions to its facilities, and that the company's credit must be maintained in order to permit repayment at the proper time. Furthermore, the company is serving nearly 200,000 of war workers as shown in the accompanying list. For these reasons the petition concluded as follows:

"The transportation service of the Public Service Railway must, at all hazards, be preserved and further increased; the large loans of the United States to this company must be protected and secured; the prosecution of the shipbuilding program and the entire war program must not be delayed or hindered by legal restrictions on this company, which prevent it from earning a fair rate of return and meeting the unusual demands made upon it at this time by the government of the United States."

Increase Fare One Cent

The application of the Jersey Central Traction Company, Keyport, N. J., for permission to increase its fares from 5 cents to 7 cents and charge 3 cents for each transfer was denied by the Board of Public Utility Commissioners on Aug. 31.

The board decided, however, that the company could file amended schedules providing for a war surcharge of 1 cent added to the 5-cent fare now charged and that transfers be given where they now are given. It was also decided that the new schedule of rates after being filed shall be published to the patrons of the company for three days by notices in the cars, and that the company shall use every endeavor to maintain its operating schedule, especially connections with trains used by the passengers.

The company bases its application on the ground that in 1917 the cost of maintaining and operating its system increased more than 50 per cent over 1916, and will still further increase this year.

It was estimated that the tariffs filed would give $92,000 additional income to the company.

WAR INDUSTRIES SERVED BY PUBLIC SERVICE RAILWAY

Name	Location	Approximate Number of Employees	
Camp Merritt (one of the largest embarkation camps of the country)	Tenafly	30,000	soldiers
American Can Company	Edgewater and Elizabeth	4,000	employees
Aluminum Company of America	Edgewater	300	
General Chemical Company	Edgewater	700	
Remington Arms Company	Hoboken	2,200	
Crucible Steel Company of America	Jersey City and Newark	9,000	
American Radiator Company	Bayonne	1,000	
General Electric Company	Harrison	3,800	
Federal Shipbuilding Company	Kearny	7,000	
Foundation Company (wooden ships)	Kearny	3,500	
U. S. Army Engineers' Stores	Harrison	600	
Submarine Boat Corporation	Newark	16,000	ultimate
Butterworth-Judson Company	Newark	3,600	
U. S. Army Quartermaster's Station, Port Newark	Newark	3,000	
International Arms & Fuse Company	Newark	12,000	
Splitdorf Electric Company	Newark	1,600	
Balbach Smelting & Refining Company	Newark	1,000	
Thomas A. Edison Company, Inc	West Orange and Bloomfield	7,800	
Westinghouse Electric & Manufacturing Company	Newark and Bloomfield	6,000	
Weston Electrical Instrument Company	Elizabeth	1,000	
Dusenberg Motor Company	Elizabeth	1,000	
Standard Aircraft Corporation	Elizabeth and Plainfield	5,000	
F. S. Moore & Sons Shipbuilding Company	Elizabeth	1,800	
U. S. Army Raritan River Ordnance Depot	Bonhamtown	10,000	ultimate
Union Powder Company	Perth Amboy	3,500	
Parlin Works of the duPont Company	Perth Amboy	6,500	
Nixon Nitration Works	Bonhamtown	600	
Wright-Martin Aircraft Corporation	New Brunswick	4,500	
Standard Shipbuilding Corporation	Shooter's Island (Staten Island)	5,000	
Singer Manufacturing Company	Elizabeth	6,000	
Marconi Wireless Company	Roselle Park	1,000	
John A. Roebling's Sons	Roebling	2,500	
U. S. Army War Department	Gloucester	5,000	
Woodbury (bag filling plant)			
New Jersey Shipbuilding Company			
Pennsylvania Shipbuilding Company	Gloucester	7,000	
New York Shipbuilding Corporation	Camden	11,500	
Under Construction:			
Ford Motor Company (To build government patrol boats)	Newark	5,000	ultimate
Total		190,000	

Baltimore Increase Oct. 1.

Company There Facing Emergency—Files New Tariff While Awaiting Decision on Previous Appeal

The United Railways & Electric Company, Baltimore, Md., on Aug. 28 filed under the terms of the public service commission law, a revised schedule of rates effective on Oct. 1.

The necessity for taking such action prior to a decision on the petition of the company filed recently with the commission arose from the fact that before such a decision could be had a new increase of wages would go into effect; namely, on Sept. 1. This, apart from and in addition to the increased costs of material and maintenance, will further add to the company's expenses more than $700,000 a year. This increase, when added to the wage raises heretofore given in 1918, will, in the aggregate, place an additional burden of more than $1,700,000 a year on the company, over and above the wage scale existing in 1917, and $2,200,000 a year over and above the scale in 1915, based upon the present service. While the company's gross revenues have increased, such increases have fallen below the increased cost of service. Because of the competing wage rates of the war industries, the wage increases were necessary if the transportation service was to be maintained.

Briefly, the result of the new schedule of rates will be to add 1 cent to the fares now collected from adults, children and commutation tickets. The new rate will also take the place of the 3-cent transfers heretofore sold on certain lines.

The new schedule is of course subject to any action the commission may take on the petition for relief filed previously. It was thought at the time that the previous petition for an advance in rates was filed that the company would be able to stand the financial strain pending a hearing in due course.

Favors Fare Advance

A joint committee of members of the City Council and the Chamber of Commerce of Youngstown, Ohio, has recommended that the fare on the Mahoning & Shenango Railway & Light Company's lines be increased to 6 cents during the period of the war. The Council has submitted the following questions to the city solicitor:

1. Can the city of Youngstown legally pass an amended ordinance granting to the Mahoning & Shenango Railway & Light Company the right to charge a 6-cent fare during the continuance of the war with Germany and six months after the conclusion of peace, without invalidating the present franchise?

2. If this increase should pass would it invalidate the present franchise and when would it take effect?

3. If the present franchise would not be invalidated what legal assurance has the City Council to re-establish the present fare, at the end of the war?

Increase for Milford & Uxbridge Road

Increased fares with some modification from the tariff proposed by the company have been authorized by the Public Service Commission of Massachusetts in an order to the Milford & Uxbridge Street Railway. In August, 1917, the commission authorized the company to increase the unit of fare on all owned lines from 5 to 6 cents, to withdraw existing reduced-rate tickets and to substitute workingmen's tickets at the rate of twenty tickets for $1 good in all zones during certain hours only, in lieu of a cash fare, and to issue tickets good during all hours for ten continuous rides over the two fare zones between Holliston and Framingham.

Failing to realize the anticipated increase in revenue, the company filed a new schedule last June substituting for its present system of irregular and overlapping zones, averaging about 4 miles in length, a mileage zone system on all lines owned, similar to that recently approved for the Boston & Worcester Street Railway. Under this system the road is divided into sections about 1 mile in length and a rate of 2½ cents per zone with a minimum fare of 6 cents for a distance of three zones or less is established. On the leased line of the Medway & Dedham company, the existing fare zones are retained, but the present 5-cent fare unit is increased to 6 cents between Dedham and Medway and to 7 cents between Medway and Franklin. The 5-cent ticket rate through the sale of workingmen's tickets is retained in the proposed schedule, each ticket being good during the same hours in lieu of the proposed 6-cent minimum on all owned lines and in lieu of the 7-cent cash fare on Medway-Franklin line.

The finding rules that workingmen's tickets should be sold at the rate of eighteen for $1 and that tickets for nine continuous rides for $1 should be sold for local passengers between Framingham and Holliston or intermediate points, good only for the original purchaser or members of his family.

Missouri Commission Exceeded Authority

In a verbal decision on Aug. 31, Judge Slate of the Cole County Circuit Court held that the Public Service Commission of Missouri exceeded its authority in permitting the United Railways to charge a 6-cent fare in St. Louis.

The decision was rendered on the appeal to the court by City Counselor Daues, made last June. At the same time Judge Slate held that the Public Service Commission also had no right to grant a 6-cent fare in Kansas City.

Judge Slate's decision covered only one of two points raised by Attorney Daues, acting for the city of St. Louis, who contended that the Public Service Commission had no authority to overrule the contract between the city of St. Louis and the United Railways for a 5-cent fare, and also that a 6-cent fare was excessive. The latter question was not touched on by the court.

When Judge Slate announced his decision, Thomas E. Francis, attorney for the United Railways, and Clyde Taylor, attorney for the Kansas City Railway, were in court. Mr. Francis said the United Railways would apply for a writ of supersedeas, and would offer to file a bond with the court to keep the 6-cent fare in effect until the case could be heard on appeal in the State Supreme Court.

Railway and Stores Co-operate

The Birmingham Railway, Light & Power Company, Birmingham, Ala., awakened to the need of reducing the rush-hour peak, published a series of advertisements on the subject. Aside from the value of the advertisements as such to the company they presented a point of view that immediately won the indorsement of the department stores. In fact, six or seven of the largest stores in Birmingham co-operated with the railway by running in their advertisements an appeal to their customers to finish their shopping by 5 o'clock so that the workers could go to their homes without being crowded by shoppers. One store, Loveman, Joseph & Loeb, in its advertisements said:

"Congratulations, Birmingham Railway, Light & Power Company, on your public spirited attitude of encouraging the customer to shop early."

The store followed this up with a series of editorials in its advertisements commenting further on the efforts of the company.

Louis Pizitz, another large department store in Birmingham, the Burger Dry Goods Company, J. Blach & Son, Goldstein Brothers, Louis Saks and others, also preached "shop early" in their ads.

Columbus Case Up Sept. 5

Federal Judge Sater announced that the case of the city of Columbus, Ohio, against the Columbus Railway, Power & Light Company would be heard before Judge A. M. J. Cochran of Maysville, Ky., in Cincinnati on Sept. 5. Judge Cochran planned to hold court in Covington, Ky., at that time, but announced that he would go to Cincinnati, just across the river, to hear the Columbus case, which relates to the action taken by the railway in increasing its rate of fare.

As noted briefly in the ELECTRIC RAILWAY JOURNAL of Aug. 24, page 350, the company, after having tried for months to induce the City Council to grant a fare increase, served notice of a fare of 5 cents, with 1 cent for each transfer and no rebate. At the same time the company declared its intention to surrender its franchise, and a little later filed suit in the Federal Court to enjoin interference with the operation of its cars. The franchise was surrendered on the ground that it had become confiscatory and deprived the company of its property without due process of law, the company basing its action on the fourteenth amendment to the Constitution of the United States. In the action before the courts the company is seeking to enjoin the city from attempting to enforce the franchise.

Transportation News Notes

Fare Hearing Adjourned.—Chairman Hill of the Public Service Commission for the Second District of New York has adjourned to Sept. 16 the hearing on the petition of the International Railway for a 6-cent fare in the city of Lockport.

Would Return to Federal Rates.—The Salt Lake & Utah Railroad, Salt Lake City, Utah, has appealed to the State Public Utilities Commission again to raise its rate of fare to the schedule adopted when the road assumed that it was under government control.

Montgomery Would Charge Seven Cents.—The Montgomery Light & Traction Company, Montgomery, Ala, has asked for permission to increase fares from 5 cents to 7 cents. The request was made to the City Commissioners, who have taken the matter under advisement.

Investigation at Akron.—Tentative arrangements have been made by the city of Akron, Ohio, with William J. Hagenah, Chicago, Ill., to make a survey of railway conditions in that city with reference to the increase in the rate of fare that has been requested by the Northern Ohio Traction & Light Company.

San Antonio Wants More.—A 6-cent fare or a fare of 5 cents with the abolishment of the transfer system is sought by the San Antonio (Tex.) Public Service Company. Formal application for permission to change the fare was filed with the City Commission recently, over the signature of E. N. Kifer, second vice-president of the company.

P.A.Y.E. for Indianapolis.—The Indianapolis Traction & Terminal Company, Indianapolis, Ind., will make all of its cars pay as you enter, if it gets an increase in the rate of fare sufficient to enable it to do so. Twenty-five pay-as-you-enter cars have been added to the system. It will cost $150,000 to add the pay-as-you-enter feature to the more than 500 cars owned by the company.

Excess Fare Certificate Ordered.—The Conestoga Traction Company, Lancaster, Pa., has been ordered by the Public Service Commission to issue certificates of excess fare to all its patrons and to post notices to this effect in its cars. On Aug. 2, the company raised its fares from 5 cents to 6 cents, and a complainant asked the commission to order the issuance of the certificates.

Long Island Road Increases Wages.—A second increase in wages within the last three months has been granted to the employees of the New York & Long Island Traction Company, Hempstead, N. Y. The latest increase went into effect during the week ended Aug. 30. It ranges from 37½ cents an hour for beginners to 43 cents an hour for employees who have been in continuous service for five years or more.

Scranton-Binghamton Line Increases Fares.—Fares on the Scranton & Binghamton Railroad, Scranton, Pa., will be increased on Sept. 15, according to a schedule of rates and tariff filed with the Public Service Commission of Pennsylvania. The increase affects zones in and out of Scranton, the minimum in Scranton being advanced from 6 to 8 cents, while one-way, round-trip and commutation rates for points over the entire system have also been changed.

Wants Jitneys Regulated.—McCarter & English, representing the Atlantic Coast Electric Railway, have complained to the City Commissioners of Asbury Park, N. J., that the State and local laws regulating the operation of jitneys were not being enforced. Mayor Hetrick has asked the Board of Public Utility Commissioners to make an investigation of the company's complaint and report the same to the City Commission. The City Commission contends that the jitneys are necessary when the railway service fails.

Progress Slow in Memphis.—The City Commissioners of Memphis, Tenn., at a recent session declined to act on the plan advanced by T. H. Tutwiler, president of the Memphis Street Railway, and Charles M. Bryan, attorney for the company, to have the 6-cent fare ordinance prepared, published and brought before the members while the merits of the company's claim were still being threshed out. On the other hand, the commission voted to refer the matter to Lee Goodman, commissioner of public utilities, with instructions to investigate and report back.

New Fast Freight Service.—The Northern Ohio Traction & Light Company, Akron, Ohio, arranged for the operation of a new fast package freight service to connect Cleveland, Akron, Barberton, Wadsworth, Canton, Massillon, Dover, New Philadelphia and Uhrichsville, beginning on Sept. 1. Sixteen freight cars were to be used in the beginning and others are to be added as needed. Dry goods, hardware and boxed merchandise will be handled, but it is believed that the inauguration of the service will also make it possible to ship more farm produce to Cleveland and the other cities than in the past.

Increases for Eastern Wisconsin Company.—The Eastern Wisconsin Electric Company, Sheboygan, Wis., has been authorized by the Railroad Commission of Wisconsin to increase fares on the interurban line operating between Sheboygan and Elkhart Lake, from a ticket rate of 1.9 cents, to 2.9 cents per mile. Increases of practically this same amount have been authorized on the interurban lines of the company between Fond du Lac and Oshkosh, Oshkosh and Neenah, and Oshkosh and Omro, and an increase in the fare from Fond du Lac to North Fond du Lac from 5 cents to 10 cents has also been authorized.

Some Recent Pennsylvania Fare Changes.—The Lehigh Valley Transit Company, Allentown, Pa., and the Philadelphia & Western Railway, Upper Darby, Pa., have filed a joint tariff with the Public Service Commission making increases in one-way fares and other rates. The Lehigh Valley Transit Company also has announced 6-cent fares per zone and creation of new zones. The Hanover & McSherrystown Street Railway has gone to a 6-cent fare; the Stroudsburg Traction Company announces changes in rates, while the Easton Transit Company increases regular fares to 6 cents and increases special car fares.

Protest Reduction in Buffalo Service.—A protest has been filed with the Public Service Commission of the Second District by several of the big war industries of Buffalo against the International Railway abolishing all-night car service on all except six of its city lines. This curtailment of owl service, the complaint sets forth, interferes with the transportation of workmen to and from the plants engaged on war work and seriously interferes with early morning travel, as the first morning runs do not start from the carhouses until 5 a. m. Many of the city's car lines are without service until after this time in the morning.

Houston Wants Seven Cents.—The Houston (Tex.) Electric Company will apply to the City Commission for a 7-cent fare, according to David Daly, general manager, in an address before employees of the company. The company recently made application for a 6-cent fare, and the City Commission employed Lamar Lyndon to examine the company's books. In his report Mr. Lyndon said the company had been making sufficient return on its investment and would make ample return this year. Upon this report the City Commission denied the application for a 6-cent fare, but the company asked for a rehearing before the commission. The matter is still pending.

Traffic Survey in Connecticut.—The Connecticut Company, New Haven, Conn., which is now charging a 6-cent fare, is planning to conduct a traffic survey on all of its lines in the State. It will be conducted by college students and others who will ask patrons to answer the usual questions of point of origin and destination. The purpose of the survey is to determine the direction of the present traffic with a view to rerouting and possible fare changes. The survey will be made first on the parts of the system where there is comparatively little summer traffic so as to leave the other lines until later in the year when they will have returned to their standard nine-months' conditions.

Albany Results Disappointing.—According to Harry B. Weatherwax, vice-president of the United Traction Company, Albany, N. Y., the 6-cent fare is not bringing in sufficient revenue to pay the increased expenses of operation due to the raise in pay granted the employees by the War Labor Board. When the increased fare had been in effect a week Mr. Weatherwax was quoted by the Albany *Journal* as stating: "The increase in revenue has been about 10 per cent; we had expected 20 per cent. In fact, the first day's operation showed an increase of only 6 per cent, which rose to 8 per cent on the second day. The three last days of operation showed an increase of about 10 per cent in the amount of the receipts."

Council Favors Fare Increase.—As the result of a petition addressed to the City Council of Galesburg, Ill., in which the company asked that the Council as a whole or by a special committee investigate the condition of the Galesburg Railway & Light Company, go over its books and take some steps either to allow the reduction of expenses or an increase of revenue, a resolution has been passed by the City Council recommending that the company be allowed to advance rates. The application will seek to establish 7-cent single fares, four tickets for a quarter and ten for 60 cents, these rates being suggested in the report of the Council special committee. The application of the company to the Public Utilities Commission for permission to increase fares will accordingly go to that body with a recommendation in its favor from the Council.

Six Cents in Salt Lake.—The Utah Light & Traction Company, Salt Lake City, Utah, has been authorized by the State Public Utilities Commission to charge a cash fare of 6 cents and to sell tickets in strips at the rate of twenty for $1. An estimate made by the commission places the annual increase of income on account of the present order at $134,643, the assumption being that 40 per cent of the passengers carried will pay 6 cents for each fare and not purchase rides at the commutation rate. The increase estimate is based on the traffic of last year. H. F. Dicke, manager of the company, is reported to have said: "The decision is a disappointment to us. We asked for a 6-cent fare with a 5½-cent commutation ticket. According to our closest calculations this will be necessary to offset the $89,000 annual wage increase which went into effect on May 1." In December last the commission handed down a decision authorizing the company from Jan. 1 to discontinue the sale of 4-cent commutation tickets and to charge a straight 5-cent fare.

Personal Mention

S. W. Baker has been appointed purchasing agent of the Cripple Creek & Colorado Springs Railroad, Colorado Springs, Col., to succeed John F. Esch.

R. A. Clark, formerly treasurer of the Waterbury & Milldale Tramway, Waterbury, Conn., has been elected second vice-president of the company.

C. E. Bostwick, Jr., has been appointed purchasing agent of the Jacksonville Traction Company, Jacksonville, Fla., to succeed F. M. Martzall.

H. G. Mechan has been appointed chief engineer of the Cripple Creek & Colorado Springs Railroad, Colorado Springs, Col., to succeed M. J. Burgdorf.

O. E. McCormick, formerly assistant secretary of the Middle West Utilities Company, Chicago, Ill., has been appointed assistant treasurer of the company.

Lee M. Reely, who has been welfare superintendent of the United Railways & Electric Company, Baltimore, Md., has entered the United States Naval Reserve Force.

J. W. Dawson, formerly inspector and instructor with the Denver (Col.) Tramway, has joined the instruction department of the Washington Railway & Electric Company, Washington, D. C.

J. H. Ridgely, superintendent of the food depot of the United Railways & Electric Company, Baltimore, Md., since its establishment, has been designated to direct the welfare work of the company, and has assumed the duties of that position.

A. R. Marshall, formerly secretary of the Trinidad Electric Transmission Railway & Gas Company, New York, N. Y., has accepted a position with the Hemphill Manufacturing Company, Pawtucket, R. I., manufacturer of the Banner automatic knitting machines, as assistant secretary and assistant treasurer.

M. J. McDonough, chairman of the central safety committee of the United Railways & Electric Company, Baltimore, Md., has been named to succeed J. H. Ridgely at the food depot of the company. Mr. McDonough will not discontinue his safety work, the scope of which has been so widely extended under his direction, but will undertake to handle both positions.

C. Nesbitt Duffy, vice-president and general manager of the Manila Electric Railroad & Light Corporation, Manila, P. I., and president of the Manila Merchants' Association, was the moving spirit and organizer of an excursion of Manila business men to important cities in the Islands early this summer. Among the cities visited were Ilo Ilo, Zamboanga, Isabela, Jolo, Cebu and San Carlos.

John R. Davies was appointed assistant to the president of the Philadelphia (Pa.) Rapid Transit Company, effective on Aug. 31. Mr. Davies has been connected with the system in Philadelphia since 1911. He was born in Utica, N. Y. His first railroad experience was obtained during 1893-1894 in Chicago with the World's Columbian Exposition as chief clerk to the superintendent of transportation, handling all foreign and domestic exhibits before the opening of the exposition, during its operation and at the close of the World's Fair. He was paymaster and general timekeeper during the construction of the Wisconsin & Michigan Railroad in 1894. He entered the service of the Chicago (Ill.) City Railway in 1895 and worked in the transportation, mechanical, purchasing and stores department until appointed purchasing agent in 1909. In 1911 he went to Philadelphia from Chicago with T. E. Mitten, president of the Philadelphia Rapid Transit Company, assisting Mr. Mitten in the development and purchase of 1500 near-side cars for the Philadelphia system. In 1912 he was appointed manager of Willow Grove Park and the turnpike under control of the Philadelphia Rapid Transit Company. Mr. Davies is a member of the Rotary and Poor Richard Club and has assisted many committees in bringing important conventions to Philadelphia and in the entertainment of thousands of visitors in the famous Willow Grove Park in that city.

J. R. DAVIES

Robert V. Prather, former secretary of the Illinois Public Utilities Commission, at a joint meeting of the Illinois State Electric Association and the Illinois Electric Railways Association, held in Chicago on Aug. 16, was elected joint secretary of the two associations, effective from Sept. 1. Mr. Prather will devote his entire time to the two associations. The headquarters of the associations will be located at rooms 304 and 306 DeWitt Smith Building, Springfield, Ill. Mr. Prather has been secretary of the Public Utilities Commission for the last five years, having been appointed by Governor Dunne a few weeks after the organization of the commission on Jan. 1, 1914. Mr. Prather served through the administration of Governor Dunne and was reappointed secretary by Governor Lowden on July 1, 1917. Prior to his connection with the Public Service Commission of Illinois, Mr. Prather was Western solicitor for a large New York brokerage house.

Obituary

John Edward Bunker, a member of the Public Utilities Commission of Maine, is dead. Mr. Bunker was born in Trenton, Me., in 1866. He was graduated from Boston University in 1892 and was admitted to practice before the Hancock County Bar in October, 1892. Shortly thereafter he opened an office in Bar Harbor. During the administration of Governor Curtis Mr. Bunker was Secretary of State. In 1916 he was a Democratic candidate for Congress in the third district. He was appointed to the Public Utilities Commission last year by Governor Carl Milliken.

Elbert B. Peck, vice-president and comptroller of the Indianapolis Traction & Terminal Company and the Terre Haute, Indianapolis & Eastern Traction Company, died at his home in Indianapolis, Ind., on Aug. 24. Mr. Peck had been ill for about eight months. He was born at Machias, N. Y., in 1860 and was educated in the common schools of New York State. During his early business career Mr. Peck moved to Kansas City, Mo., where he was associated with the Barber Asphalt & Paving Co. In 1899 he became associated with the late Hugh J. McGowan and went to Indianapolis with him where he gained his first electric railway experience, acting as private secretary to Mr. McGowan. In 1900 Mr. Peck was appointed manager of the Broad Ripple Traction Company and when the street railway systems of Indianapolis were consolidated, Mr. Peck had charge of the construction of the terminal building and stations. In 1907 he was elected vice-president and comptroller of the Indianapolis Traction & Terminal Company and also of the Terre Haute, Indianapolis & Eastern Traction Company, which position he held at the time of his death. Mr. Peck was very active in the work of the Central Electric Railway Association and was president of that association in 1911. Funeral services were held in Indianapolis. Interment was at Adrian, Mich.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Franchises

Portland, Ore.—The Kenton Traction Company has asked the City Council of Portland for a twenty-five-year franchise to operate its cars over the Derby Street approach to the Interstate Bridge.

Track and Roadway

Petaluma & Santa Rosa Railway, Petaluma, Cal.—Plans for the reorganization of the Petaluma & Santa Rosa Railway, by which the properties ordered sold at foreclosure will be acquired by a new corporation, have been approved by the Railroad Commission of California.

Belt Line Railroad, San Francisco, Cal.—Electrification of the Belt Line Railroad in San Francisco, Cal., has been decided upon by the State Board of Harbor Commissioners, under whose jurisdiction the line operates. The Belt Line runs along the waterfront connecting the various piers with the several railroads that enter San Francisco.

United Railroads of San Francisco, San Francisco, Cal.—To improve the present transportation system and for the convenience of the men employed at the Union Iron Works, the United Railroads of San Francisco is constructing a pay-as-you-enter station and loop system at Eighteenth and Kentucky Streets. The new station will include six tracks in the loop and will, it is believed, handle the full force of the works without delay or congestion.

Stockton (Cal.) Electric Railway.—Work has been begun by the Stockton Electric Railway on the reconstruction of its lines on South San Joaquin Street through the Homestead district. The cost of the work is estimated at $30,000.

Connecticut Company, New Haven, Conn.—The Connecticut Company has borrowed through the United States Housing Corporation approximately $1,350,000, at interest, to provide funds for constructing tracks to take care of munition workers in the city of Bridgeport and to purchase one-man safety and other cars as announced elsewhere. The title to the cars and additional track facilities will remain in the housing corporation's name until full payment has been made by the company. The exact location and dimensions of this track work have not yet been definitely decided upon, but one of the plans contemplates double-tracking a street parallel to the main street which is greatly congested, and the building of a terminal station with the necessary loops and through tracks reasonably near the center of the city.

New York, New Haven & Hartford Railroad, New Haven, Conn.—The New York, New Haven & Hartford Railroad, for the present at least, has abandoned the plan of double-tracking the electric railway between Warren and Fall River. Sections of the railway were double-tracked, but the rails laid are now being removed to other sections of the system for use. This action is said to be due to the scarcity of steel for rails. As soon as possible the company will return to its original plan of double-tracking the entire railway.

***Gulf Ports Terminal Railroad, Pensacola, Fla.**—Efforts are being made to obtain the approval of the United States Railroad Administration for the completion of the Gulf Ports Terminal Railroad from Pensacola to Mobile, this line being an extension of the Pensacola, Mobile & New Orleans Railway. Track has been laid to a point within 18 miles of Mobile Bay and on the unfinished portion the roadbed has been graded and the bridges built. About $500,000 is required to lay the track and put the road in operation. It is proposed to seek $400,000 from the War Finance Corporation, while $100,000 is to be raised locally. The use of electric passenger cars is being considered. E. McLaughlin, president.

Lincoln (Ill.) Municipal Railway.—Plans are being considered for the reconstruction of the lines of the Lincoln Municipal Railway.

Anaconda Copper Mining Company, Anaconda, Mont.—An extension will be built by the Anaconda Copper Mining Company from the present terminal to the zinc plant, about 1 mile. The extension passes over a hill that makes an engineering problem of some size, and the estimated outlay is $50,000.

Boston & Maine Railroad, Portsmouth, N. H.—Plans have been made by the Boston & Maine Railroad for the construction of an extension from Dennett Street to the plant of the Atlantic Shipbuilding Corporation at Freeman's Point.

Interborough Rapid Transit Company, New York, N. Y.—Residents of Brooklyn have presented a petition to the Public Service Commission for the First District of New York asking for an extension of the Nostrand Avenue branch of the Eastern Parkway subway to Manhattan Beach, over the tracks of the Long Island Railroad. The Commission has referred the petition to its legal department.

Texas Electric Railway, Dallas, Tex.—Work is under way by the Texas Electric Railway on the construction of a line from Twenty-eighth and Lasker Streets into the Army Replacement Camp, about 1¼ miles.

Blue Ridge Light & Power Company, Staunton, Va.—Amendments have been made to the charter of the Blue Ridge Light & Power Company, changing the name of the company to the Shenandoah Traction Company.

Monongahela Valley Traction Company, Fairmont, W. Va.—Plans are being made by the Monongahela Valley Traction Company for a $2,500,000 loan to be used to complete work under way, including the Rivesville power plant, gas-producer plant, gasoline plant, drilling gas wells, laying gas mains, paving, extending transmission lines, developing coal land, sinking two shafts for mines, and the construction of twenty-five houses.

Shops and Buildings

Southern Pacific Company, San Francisco, Cal.—The Southern Pacific Company contemplates the erection of new shops in Roswell, N. M., to cost between $75,000 and $100,000.

Connecticut Company, New Haven, Conn.—The Connecticut Company plans to build a terminal station in Bridgeport, near the center of the city. This will be built on a so-called "plaza," ground space for which will be provided by the demolition of many old buildings by the city. Included with the terminal building will be pay-as-you-enter inclosures for car patrons.

Power Houses and Substations

West Penn Power Company, Connellsville, Pa.—According to an announcement made by the officials of the West Penn Power Company, controlled by the West Penn Railways, a new power plant will be erected on the Allegheny River at Freeport, at a cost of about $5,000,000. The proposed plant will have an output of 40,000 kw., and will provide power for essential industries of the district doing war work for the government. Of the necessary capital the government has agreed to advance $2,000,000. The plant will be in charge of the government, which will specify the distribution of the power.

Rutland Railway, Light & Power Company, Rutland, Vt.—A contract has been placed by the Rutland Railway, Light & Power Company with the Rutland Railroad for the supply of additional power to the amount of about 500 hp. for the operation of the new shops now in course of construction.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Inventory of Steel Stock To Be Taken

The Government Census Bureau Is Sending Questionnaires to All Manufacturers Asking for Reports

A country-wide inventory of stocks of steel on hand is being made by the War Industries Board at the instance of its chairman, Bernard M. Baruch, in co-operation with the Census Bureau of the Department of Commerce. The ascertainment of the supply of steel is of first importance in view of the deficiency of production of steel for direct and indirect war needs.

The present estimated total production of steel in sight is 17,000,000 tons, and war demands total more than 23,000,000 tons, with the demand constantly rising. In a recent interview with the Washington newspaper correspondent, Mr. Baruch announced he could not approve requests for an ounce of steel for domestic uses, because of the imperative need of meeting the war demands.

The Census Bureau through its census-taking organization, is sending questionnaires to more than 40,000 manufacturers in this country asking complete reports of stocks of steel on hand, down to the smallest holdings. It is sought to reach every manufacturer who uses steel in any way and in any amount in his industry. Cheerful compliance with the government's plan to inventory the stocks on hand is confidently expected by the War Industries Board, because of the win-the-war need that prompts the step and because of the general character of the inquiry.

A number of industries—such as the automobile industry—have been called upon to report stocks of steel on hand that the War Industries Board may be guided in making an intelligent administration of the steel stocks. Mr. Baruch decided, however, it was necessary to gather complete information from all steel-using industries and the War Industries Board determined on a general inventory from all manufacturers.

Effect on Railway Industry

The effect that this may have on the electric railway industry is largely dependent on how vital the government considers the electric railways in carrying out its war program. There may be certain lines that are not considered essential, and repair and maintenance parts of steel would undoubtedly be cut off from such lines. Manufacturers of electric railway apparatus feel that any stock of steel that they may have on hand for future use with electric railway equipment cannot be used to greater advantage to the government than by supplying the most urgent present needs of roads requiring this equipment.

Steel manufacturers state that they will follow government orders implicity and will roll only such shapes and manufacture only such steel parts as are approved by the authorities. No shipments will be made unless orders are accompanied by priority certificates or affidavits showing the essential use that will be made of the material.

This is in accordance with instructions issued to steel manufacturers by the government some time ago, and it has been followed since then.

Contract for 36-Mile Signal System Awarded

The Washington, Baltimore & Annapolis Electric Railroad has recently contracted with the Union Switch & Signal Company for block signaling to be installed over its double-track line between Naval Academy Junction and District Line, near Washington. This is a second section of signaling to be recently undertaken on the main line of this road between Washington and Baltimore, the first, between Naval Academy and Baltimore, having already been placed in service.

This new signaling will protect 36 miles of track and thirty-seven switches with twenty blocks on a headway of approximately three minutes under caution and six minutes under clear signals. The signaling has been laid out to reduce this running time one-half by the later addition of intermediate signals when future traffic warrants.

The apparatus will be similar to that employed in the first installation involving continuous alternating-current track circuits, style "N" color-type light signals mounted on iron pipe posts and Model 15 vane relays. Light-type switch indicators with push-button attachment will be used at all switches. Power at 2200 volts and 25 cycles will be secured from the railroad's power system at Naval Academy Junction.

General Electric Prospects for Current Year

Orders Running at Annual Rate of $250,000,000—Large Business from Government for Turbines

Current orders of the General Electric Company are running at the annual rate of $250,000,000 against a rate of less than $240,000,000 for the corresponding period last year, according to the *Wall Street Journal.* Bookings for the full year 1917 aggregated $246,778,491 and the amount by which they surpassed the rate up to this time last year bids fair to be equalled in the calendar year. In any event, it would not be surprising if the volume of sales billed in 1918 should reach the $225,000,000 mark against $196,926,318 in 1916.

Attainment of $250,000,000 total bookings in 1918 would establish a new high mark for the third successive year. Record 1917 bookings of $246,778,491 bettered the 1916 total by 45 per cent; they were 120 per cent larger than those of 1913 and 1764 per cent larger than those of 1896.

In the following table comparison is made for a number of years of bookings, billings, cost of sales and percentage of cost to gross.

According to the *Wall Street Journal* the percentage cost of sales of 85.2 per cent in 1917 was the lowest in many years. The percentage cost of sales in the last five years, including depreciation charges, has been about stationary and the average for the period is 88.7 per cent. This profit of 11.3 cents on the dollar compares with a profit of 14.1 cents in the year 1906 and 7.9 cents in 1896.

Year	Bookings	Billings	Cost of sales	P. C. cost to gross
1917	$246,778,491	$196,926,318	$167,921,778	85.2
1916	167,169,058	134,242,290	118,984,199	88.3
1915	98,385,891	85,522,070	76,898,182	89.9
1914	83,748,521	90,467,692	81,496,728	90.0
1913	111,819,142	106,477,438	96,207,833	90.3
1912	102,934,788	89,182,185	81,074,192	90.9
1906	50,044,272	43,146,902	37,025,346	85.9
1896	13,235,016	12,730,058	11,759,857	92.1

Manufacturing and labor costs being higher, it is probable General Electric this year will report a smaller percentage of net. As compared with 85.2 per cent in 1917, ratio of manufacturing costs and interest charges to sales billed will probably be not less than 88 per cent this year. Applying this percentage to the estimated total of $225,000,000 sales billed would give $27,000,000 net, to which must be added "other income" last year amounting to $4,512,290, or $31,512,290 in all. Profits for the current year are estimated at $26,000,000.

An outstanding feature of company's financial position, it is pointed out, is its greatest strength of working capital. Cash on hand at the close of 1917 was $21,190,675, as against $12,167,707 at close of 1916. Total quick assets as of Dec. 31, last, were $154,549,251. Current liabilities aggregated $20,907,746, leaving working capital of $133,641,505, or $131.6 per share, as compared with $83,179,120, at the end of 1916.

The company has subordinated regular business to the government's needs. A substantial part of its present production consists of turbines for merchant ships and war vessels. The company has a blanket order from the government to turn out as many turbines and as much electrical equipment as its facilities will permit, so that with ordinary business accumulating, capacity operations at all plants of the company are assured for an indefinite period.

Car Equipment Market Conditions

Manufacturers In Position to Take Care of More Business — No Evidence That Prices Will Fall So Long as War Lasts

Broadly speaking, electric railways in that part of the country subject to severe winter conditions are in need of much new car equipment as the summer closes. Many of the roads in the North have not fully recovered from the strain the extraordinarily rigorous weather of last winter put upon their rolling stock. During the summer a good deal of important work has been done in the way of stocking up with spare parts against emergency conditions which may arise in the coming winter. One New England road, for example, has purchased about $50,000 worth of railway motor coils, and on the whole, the railway properties in that section are reasonably well supplied with this kind of material as the result of forehanded buying following the late winter severities. So far as spare motors go, however, few roads are in a position to feel over-confident as to their service maintenance in case the coming cold months force temporary withdrawals of equipment on a large scale. There is no question that companies with a fair-sized motor reserve made a much better showing and lost far less money from interrupted schedules last winter than did those which ran close to the wind, so to speak, in the matter of spare units.

The manufacturers are at present in a position to take care of a good deal more motor and control equipment business than is on the books. Some large orders are being handled, but in general, buying has been retarded by rather unsatisfactory credit conditions leading out of inadequate net earnings.

Motor and control equipment can be delivered from the factory in about three months at present, given the necessary priority order; and ordinary quotations run from four to five months. Despite the pressure of war orders upon the great majority of manufacturers, space is still available for the increased production of motors and other car equipment.

In conformity to the government's desires, very little stocking up is at present being done as regards equipment using large quantities of steel, copper and insulating material at the factories. It would be helpful to the manufacturer and to the operating companies as well if motor and accessory orders could be placed as far ahead of actual needs as possible, instead of waiting until the pressure of an unbearable operating situation inscribes the operating company manager's name upon the familiar dotted line. Motors are now being produced in considerable numbers for use on one-man cars, but there is still room for a much wider appreciation of the economic value of such equipment from the standpoint of merchandising transportation service.

Few managers indeed would contend at this time that they have no serious equipment needs. The question of means is the most important one in relation to the provision of new apparatus. Operating expenses have gone to unprecedented levels, and it is undeniable that the long-continued use of old rolling stock and motors has in many cases run unit costs up beyond former standards as well as increased platform expenses. There is a very close connection between the quality of service offered the public and the securing of sufficient revenue to maintain an adequate equipment reserve. There is a recognition in the industry that more frequent service must be offered on many lines in order to stimulate short-haul patronage, and with the drain the war is making upon the repair shops, a larger reserve in rolling stock or at least in motors and electrical apparatus used on the cars is needed.

The essential character of electric railway service in communities containing munitions plants, shipyards, arsenals, etc., has been recognized by the government and a considerable amount of buying on behalf of such properties has been a feature of the equipment market of late. On such roads, at least, the hand-to-mouth policy in purchasing car equipment has given way to a consistent development of the market along the lines of war necessity.

While no immediate advance in the price of car equipment is in sight, in view of the close control of the government over the prices of materials entering into such products, the cost of labor appears to be tending upward, and in manufacturing circles the opinion is voiced that there is little use in deferring the purchase of equipment because at some later date prices may go considerably lower than at present. So long as the war lasts and indeed for some time thereafter, it is more probable that prices will run nearer present levels than much below them. Experienced observers of market conditions are emphasizing the fundamental need of electric transportation and the corresponding economic demand for more equipment. This must be met through equipment trusts or some other suitable financing, and it is advantageous for the operating companies that the manufacturers are in as good a position as at present appears to be the case to handle orders for new and reserve car equipment.

Coal Production Recovers From Slump

Total Production for Year to Date Is 869,000 Tons or 2.17 per Cent Over 1917

Recovery from the slump of the past five weeks marked the production of bituminous coal during the week ended Aug. 24, according to the weekly report of the Geological Survey. The output during that week (including lignite and coal made into coke) is estimated at 12,603,000 net tons and not only exceeded the production during the week preceding by 669,000 net tons, or 5.6 per cent, but exceeded the production during the past three weeks. Production during the current week of 1918 was 1,852,000 net tons, or 17 per cent in excess of the production during the corresponding week of 1917.

The average production per working day during the week of Aug. 24, is estimated at 2,100,000 net tons, as against 1,989,000 net tons during the week preceding, and 1,792,000 net tons during the week of Aug. 24, 1917.

Anthracite Production Up

Production of anthracite in the United States during the week of Aug. 24 is estimated at 2,134,000 net tons, as against 1,924,000 net tons during the week preceding, an increase of 10.9 per cent, and as against 1,988,600 net tons during the corresponding week of 1917, or an increase of 7.3 per cent. The average daily production during the week of Aug. 24 is estimated at 355,667 net tons, as against 336,839 net tons during the coal year to date, and as against 329,831 net tons during the same period of 1917.

Total production for the coal year to date is estimated at 41,768,000 net tons, an increase over 1917 of 869,000 net tons, or 2.1 per cent.

The anthracite industry, according to *Anthracite News*, goes into the fall with no storage coal and orders far in excess of current producing capacity.

More coal could be produced if the labor power could be increased. The anthracite mine-workers' army has been reduced 80 per cent since the war began. That this has not prevented a record output is because of every mechanical apparatus and washing operations that is being employed to overcome this handicap.

Rolling Stock

Connecticut Company, New Haven, Conn., will purchase from the American Car Company, St. Louis, Mo., twenty one-man cars, permission for the purchase of which was announced in last week's issue of the ELECTRIC RAILWAY JOURNAL. These cars will be 27 ft. 9½ in. over all in length and 8 ft. in. width. The height from the rail to the top of the roof will be 9 ft. 9⅝ in. The platform floor will be on the same plane as the body floor, and folding doors and steps will be provided. The cars will have two-motor equipment, with air brakes and all modern safety features. The total weight will be 5 tons. The company will also purchase fifty interurban cars of the Connecticut Company's standard dimensions, the length being 48 ft. 2 in. over all. The seating capacity of these cars will be fifty-six, and they will be equipped for double-end operation. The total weight will be 24 tons.

Trade Notes

Chicago (Ill.) Pneumatic Tool Company announces the appointment of C. W. Cross as special representative for the sale of pneumatic tools to railroads, succeeding L. C. Sprague, promoted to be district manager of sales for the company at New York.

Vulcan Steel Products Company, Inc., 120 Broadway, New York City, has made the following announcement: Governmental restrictions concerning house organs and the urgent need for the conservation of labor and material render it advisable to discontinue the publication of *Vulcan*. The August issue—which we have striven to make our best edition—will be the last *Vulcan* during the period of the war.

Page Steel & Wire Company annual meeting resulted in the election of Norman Bridge to the board to fill the vacancy created by the death of the late Austin Clement. The board organized by electing the following officers: B. Lissberger, president; A. A. Clement and J. N. Podrasnik, vice-presidents; A. B. Cody, secretary; J. E. Carr, assistant secretary and assistant treasurer; J. N. Podrasnik, treasurer, and E. C. Sattley, general manager. Dividends were declared from the profits in the period from Jan. 1, 1918, to July 1, last, as follows: $3 a share on the first preferred stock and $3.50 a share on the preferred stock, payable on Oct. 31 to stock of record as of Oct. 15. The net profits before taxes for the year ended June 30, 1918, were $420,556. It was stated after the meeting that the company had $4,000,000 of unfilled orders on its books.

New Advertising Literature

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 247, descriptive of locomotives, cars, trucks, shovels, ditches, skidders, loaders and machine tools.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.: Catalog 3-B, dated June, 1918, a very comprehensive bulletin on switchboard, portable and precision instruments, meter shunts, instrument transformers and relays.

Jeffrey De Witt Insulator Company, Huntington, W. Va.: Catalog No. 2, describing and illustrating its high-tension disk insulators. Illustrations are produced which show the effect of high-frequency tests on these insulators at 600,000 volts and 10,000 cycles. High-frequency tests are also shown with Corona effects top and bottom at 110 kv. and the flashover in air at 125 kv. These insulators are also shown in strain. Substations equipped with the "JD" insulators and transmission lines are also produced.

NEW YORK METAL MARKET PRICES

	Aug. 28	Sept. 4
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.00 to 9.25	9.50
Tin, Chinese*, cents per lb	90 to 90.5	....
Aluminum, 98 to 99 per cent., cents per lb	†33.10	†33.10

* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Aug. 28	Sept. 4
Heavy copper, cents per lb	23.50 to 24.50	23.50 to 24.50
Light copper, cents per lb	20 to 21.50	21.00 to 21.50
Red brass, cents per lb	22 to 23	23.50 to 24.50
Yellow brass, cents per lb	13½ to 14½	16.00 to 16.75
Lead, heavy, cents per lb	7.50 to 7.75	7.50 to 7.75
Zinc, cents per lb	6.75 to 7.00	7.50 to 7.75
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton.	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton.	$60.00	$60.00
Machine shop turnings, Chicago, net ton.	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	Aug. 28	Sept. 4
Rubber-covered wire base, New York. cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40	32.40 to 36.75
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, rdger (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	80%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	80%	77%
Car window glass (double strength, all sizes AA quality), New York discount	82 & 3%	79%
Waste, wool (according to grade), cents per lb	11½ to 22	11½ to 22
Waste cotton (100 lb. bale), cents per lb.	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.86	$1.90
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.88	$1.92
White lead (100 lb. keg), New York, cents per lb	10½	14
Turpentine (bbl. lots), New York, cents per gal	63	65½

* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, September 14, 1918 *Number 11*

Support the Electric Railway War Board!

THE Electric Railway War Board, with its headquarters at the country's capital, is the national focus of the influence of the electric railway industry. It is striving conscientiously and with all of the power that the industry puts into it to discharge its obligations to the country and to the electric railways. It is your representative at Washington whether you are a member of the American Electric Railway Association or not. It needs support; financial, statistical, moral. Send in your subscription to the work; respond to requests for data; let the board know that you appreciate its efforts. Get behind the Electric Railway War Board! Push!

New Cincinnati Franchise Possesses Novel Features

"EVERY commercial enterprise, to be successful, must offer a reward—a reward of merit for efficient and economical management." In these words the attorney for the Cleveland Railway pointed out to the War Labor Board recently one of the defects in the much-quoted Tayler ordinance of Cleveland. The defect in question is the absence of incentive to efficiency in the Cleveland franchise, which practically guarantees a return on capital investment and leaves the responsibility for service to others than the company officials.

Members of the City Council of Cincinnati in approving a new ordinance would seem to have profited by the Cleveland experience. The Cincinnati measure follows modern lines in having a cost-of-service basis. It proposes to start with an initial fare of 5 cents with provision for readjustment upward or downward every three months as cost of operation dictates. The novel feature is the section which gives the company a declining rate of participation in the surplus gross receipts as the fare increases. In the case of a 5-cent fare or less, 55 per cent of any surplus gross receipts go to the reserve fund and 45 per cent to the company; with a 5½-cent fare the rates are 70 and 30 per cent respectively, and with a 6-cent fare 80 and 20 per cent. With more than a 6-cent fare the company does not share in the surplus.

It is probably visionary now to expect any surplus from a 5-cent fare, but under more normal conditions the company would at least have this inducement toward economy and efficiency. In this respect the proposed Cincinnati franchise differs from other recent traction agreements, and it is an indication that those who have to do with the making of such contracts have studied results in other cities and are thinking in the right direction.

Planning the Prepayment Loading Station

THE rapid increase in the number of industrial plants employing large forces of workmen is emphasizing to electric railway transportation department officials the many advantages of prepayment loading stations where large numbers of passengers must be interchanged quickly. The use of a loading platform, access to which by the passengers can be gained only by passing a turnstile collection booth is, of course, not a new idea. To a limited extent it has been used for years, particularly in connection with rapid transit lines, ferries and the old-time pleasure parks. Despite the fact that prepayment station design is not an art in its infancy, there are a few recent installations that would serve excellently as good examples of what ought not to be, if we may judge from some recent observations on the subject. To be successful a prepayment station must be so planned that all paths of passenger flow are as direct as possible and under no circumstances should they intersect. Nor, in a well-planned station, should the passenger stream cross operative car tracks. While, of course, space or other local restrictions may prevent the working out of the ideal plan in every case, a few minutes of careful thought and study in the design of such stations will save in the aggregate many hours of operating time and many dollars in claim department allowances, as well as make for a better satisfied riding public.

Let's Vote on the Charge for Milk and Other Supplies

THE experience at Buffalo on Aug. 20 with the popular vote on the fare to be charged on the electric railways in that city was so decisive as to suggest that the same plan could be followed to advantage as regards the price of other necessities. If a referendum is good for determining the charge for transportation, why cannot it be equally effective in regard to the prices at which food and other household supplies are sold? Heretofore, there has been supposed to be some relation between the cost of producing articles of this kind and the price which had to be charged for them. Such a rule, according to the Buffalo theory, may be all right when it relates to a reduction in price for the finished article, but it is a most absurd provision when its effect is to raise prices.

Hence, we strongly recommend that the citizens of Buffalo, having disposed of the question of electric railway fares in their city, take up the price of milk, which presumably in Buffalo as elsewhere was gone up 50 per cent in price during the past two or three years. Probably as many people consume milk as use electric railway transportation, and a reduction to the charge made before the war would greatly lessen the present high cost of living. If the farmers don't like it they can lump it. They probably made tremendous profits four years ago at the lower price and now will simply forego a portion of their present profits if they return to the former price. Again, statistics recently published by the United States Department of Labor show that the retail price of three different cuts of beef has increased from 65 to 82 per cent since 1913. This is another case where an election should be held to decide whether a lower selling price would not be more popular.

Why not also have a vote to determine the selling price of shoes? And another as to whether it would not be better next winter for the temperature not to go below zero, or to limit the snowstorms to one every two weeks? If a referendum is superior to some of nature's laws, why should it not be superior to others?

Every Issue of the "Journal" a Win-the-War Number

THE ELECTRIC RAILWAY JOURNAL is dedicated heart and soul to the winning of the war, sharing in this vital matter the spirit of the industry. Every article, every news item to be "available for publication" must pass the acid test. Publishers and editors are a unit on this point as on others affecting the policy of the paper. This policy is first to hold up a mirror to the industry so that it can instantly see itself reflected in the events of each week, and second to suggest to the industry and to the public an interpretation of what the mirror shows to be true. We believe that the war-time (as well as peace-time) duty of electric railways is to furnish good service, and that to do this requires co-operation of employees, public and owners. Especially now is it important that these three understand one another and their respective duties. This will be the keynote of every issue of this paper, in the endeavor to make each successive issue a better win-the-war number than the last. Sometimes the editorials and other articles may appear to be severely critical. We hope, however, that judged by the standard mentioned they will prove to be constructively helpful.

While each issue of the paper is, we hope, a patriotic issue there are occasions when a special win-the-war effort is justified. The Liberty Loan and W. S. S. campaigns are cases in point. For example, in last week's issue a new plan for use in preparing for the Fourth Liberty Loan is propounded. There is still time to send in requests for the booklets explaining this plan. This week a number of letters telling about successful plans used in the Third Liberty Loan Campaign are printed. With next week's issue copies of a new poster entitled "Hello! Liberty Speaking" will be distributed and sticker reproductions of this will be available at cost. We expect that millions of the stickers, which are primarily for use on correspondence, will be called for. As for the poster which will be sent with each copy of next week's issue, we suggest that each subscriber put his up in the place where he thinks it will do the most good. The issue of the paper for Sept. 28 will be a special "War-Service and Economy" issue in which some of the national aspects of electric railway transportation will be taken up.

It is a wonderfully inspiring thing to consider the electric railway industry as an integral part of our great national war machine, and the editors of this paper hope that each issue will produce a cumulative effect in intensifying the conviction on the part of all that it is so.

Are Electric Railway Employees Becoming More Courteous?

IN THE CARS of the New York, New Haven & Hartford Railroad the following acrostic is prominently displayed:

> Courtesy is a business asset, a gain and never a loss.
> Officers and employees, above all others, should be courteous.
> Use courtesy in all dealings with passengers, patrons and one another.
> Railroad men help their company by being courteous.
> This railroad believes in courtesy.
> Even the discourteous like to be shown courtesy.
> Smooth away life's difficulties by being courteous.
> You will find your value increased by courtesy.
> "Life is not so short but there is always time for courtesy."—*Emerson.*

This acrostic contains a great many suggestions and a perusal of it naturally leads to such questions as these: Is the campaign for greater courtesy on the part of electric railway employees producing results? Can such a campaign be conducted without "preachiness"? What are the conditions which must be overcome in such a campaign? What can be done to make courtesy campaigns on the part of electric railways more effective?

Railway managers who are not as successful as they would like to be in securing courtesy on the platform and elsewhere must realize that there is a general slump in the matter of politeness all over the country. This is due partly to slackness in home training and partly to immigration of men and women who have standards of politeness lower than our own. The class of labor which is available for platform service, particularly, is not as good as formerly. In addition, many of the men in the service are too old to change their ways, and suggestions to the effect that they be more polite do not appeal to them. This is especially true if the suggestions come in a form which looks like preaching.

It must be confessed also that not all managers set a perfect example in the matter of courtesy. In some cases there is one attitude toward peers and another toward subordinates. As the essential of courtesy is considerateness, example rather than precept is the better means for inculcating it.

Courtesy campaigns must begin with the children, and a tremendous work confronts us here. But it will take time to achieve results with the coming generation. In the meantime, when labor conditions permit, men notoriously discourteous should be eliminated from the service. Comments from passengers may well be encouraged, and men who are conspicuously polite should be informed that their work is appreciated. A manager of a large interurban property in the Middle West said a few days ago that one conductor in his employ is worth twice what the company can afford to pay him because passengers will go out of their way to ride with this man. May the time soon come when such men are the rule rather than the exception on electric railway properties!

The Substation Renders the Power System Flexible

AT PRESENT the substation is to many the most interesting part of the physical equipment of the electric railway because its rate of progress is greatest, even though this progress is hampered by war-time conditions. One reason for this is that the substation offers many opportunities for saving in several directions. Railways which have been called upon to furnish more service or to redistribute their service have utilized to the full the flexibility of power distribution made possible by the substation. The managers, possibly even more than the engineers, are following substation developments very eagerly under present conditions.

No matter whether railways generate or buy their power they must transform it, and continue to transform it. Three-phase, high-voltage power is standard for transmission, and low-voltage, usually direct-current, power for utilization. The connecting link is the substation, and it is highly desirable that electric railway men keep themselves posted as to its development. This explains why the ELECTRIC RAILWAY JOURNAL gives so much space to substation matters. Several short articles on the subject appear in this issue.

The highly-perfected modern substation is the result of a perfectly logical evolution which is now and then well worth review. The early railways were dependent for power upon small direct-current generators, of low voltage and therefore limited transmission range. Vast quantities of copper in feeders were necessary for even moderate power requirements in a restricted area. As soon as alternating current was a demonstrated success, which was fortunately almost simultaneously with the electrification of horse railways, the railway pioneers were quick to avail themselves of the chance which it afforded to lengthen their electrified lines. Alternating-current motors were employed to drive direct-current generators, as is still the practice under special conditions, but soon the motor and generator were combined into one machine, the rotary converter. This is one of the most perfect and valuable electrical machines which we possess. It renders the electric railway practically independent of distance from a source of power.

The rotary converter has, of course, gone through many metamorphoses. Designers have had to overcome such difficulties as these: (1) To force the machine to keep up or even increase its voltage with load, as was done by the use of compound field winding. (2) To utilize its ability (as a synchronous motor) to control the line power factor, as was done by varying the excitation. (3) To simplify the starting problem, as was done by using a separate starting motor, or arranging for starting from the alternating-current end without field, or finally by putting on special starting windings. (4) To eliminate the "hunting" or pulsating effect in the alternating-current circuit, as was done by using pole dampers. (5) To eliminate "sparking" on overloads, which was partially accomplished by means of commutating poles, and now special flash barriers are being used also. (6) To adopt the machine to high frequency (60 cycles), as has been accomplished through the combined operation of several principles already mentioned, together with increasing knowledge of design principles. The result of all this has been a machine which will withstand several times full load momentarily and which operates at remarkable efficiency. In fact the total loss in a well-designed rotary substation, including that in the transformers, is almost negligible.

And now comes the automatic substation with its practical elimination of the labor problem, so that a railway system (in normal times) can have as many substations as transmission economy demands. Thus is removed one of the last limitations in power distribution for electric railways, but it must not be forgotten that this is possible only because the rotary converter has been previously so highly perfected.

Only Two Weeks to Prepare for the Liberty Loan Campaign

TWO weeks from to-day the campaign for the Fourth Liberty Loan will begin in this country and will continue three weeks. It is our prediction that the American people will over-subscribe this loan as they did the three previous loans. They realize that the quickest way to defeat the Hun is to overwhelm him with a large military force, and this costs money which the proceeds of this loan will supply.

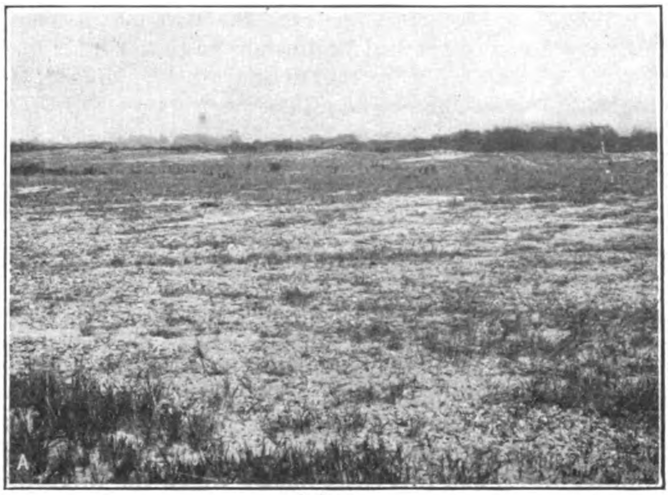
Just prior to the opening of the Third Liberty Loan campaign, we published an account of the methods used by a number of different electric railway companies to place the prior loan before their employees, and we give this week similar facts on the third loan from ten or more other important properties. This article shows that the railways can assist greatly in the sale of Liberty Bonds by helping their individual employees to finance purchases of bonds, as well as by advertising the merits of the bonds on their cars and in their waiting stations.

The American people realize to a greater extent than ever before that the war with Germany is a conflict in whose outcome each individual in this country is vitally interested. Each, therefore, whether he is rich or poor, employer or employee, has equal responsibility to do all that he can to win the war, and this includes a prompt response to all national calls for funds and man-power. Full appreciation of this fact will prevent a tendency on the part of anyone to shift the responsibility of making subscriptions to someone else, because of the belief that such a person is more concerned in the successful outcome of the war than he.

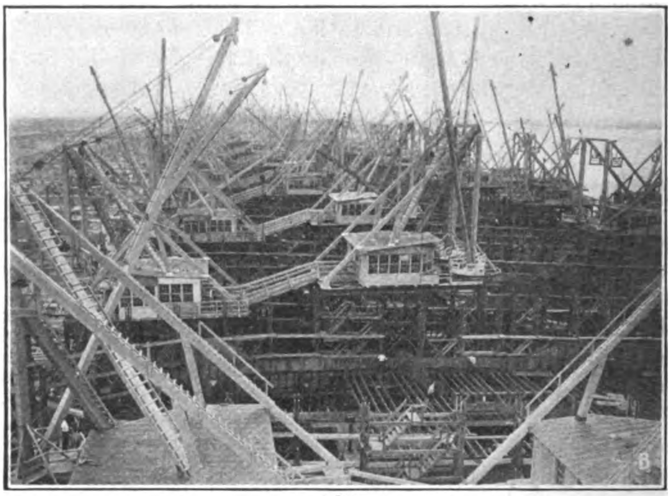
But employers have in one respect a greater responsibility in the coming campaign than employees—the responsibility which comes from their leadership. They should fulfill this obligation by acting as leaders in explaining to their men the present needs of the situation as well as the necessity for the success of the loan. They can also help in facilitating the purchase of bonds by their employees through a system of easy payments such as has been done by the companies whose practices are described in this week's issue. Each electric railway department can well aim for a 100-per cent record, and the same object could well be the goal of each individual company.

Hauling Shipbuilders to Hog Island—and Home Again

Electric Railways Play a Prominent Part in Solving the Transportation Difficulties at Uncle Sam's Big Plant—The Transfer of 30,000 Persons Each Way Every Day Presents Some Interesting Problems

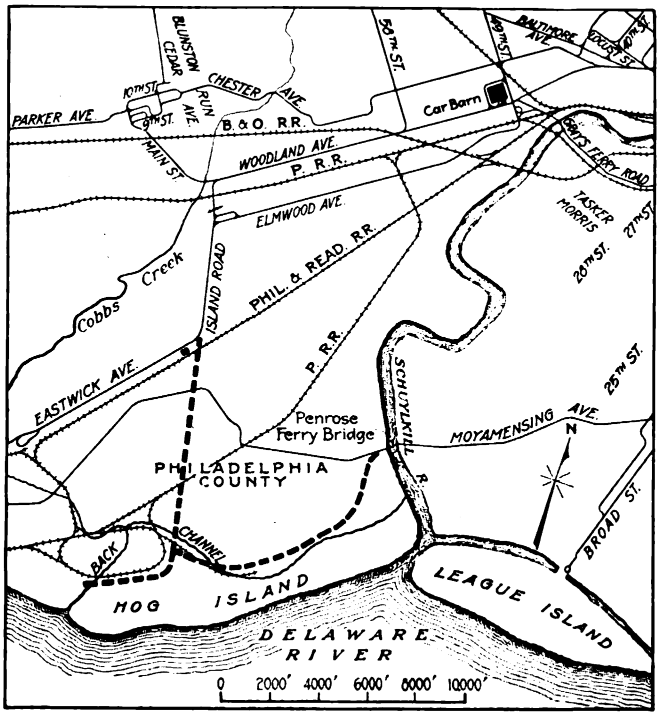


Before



After

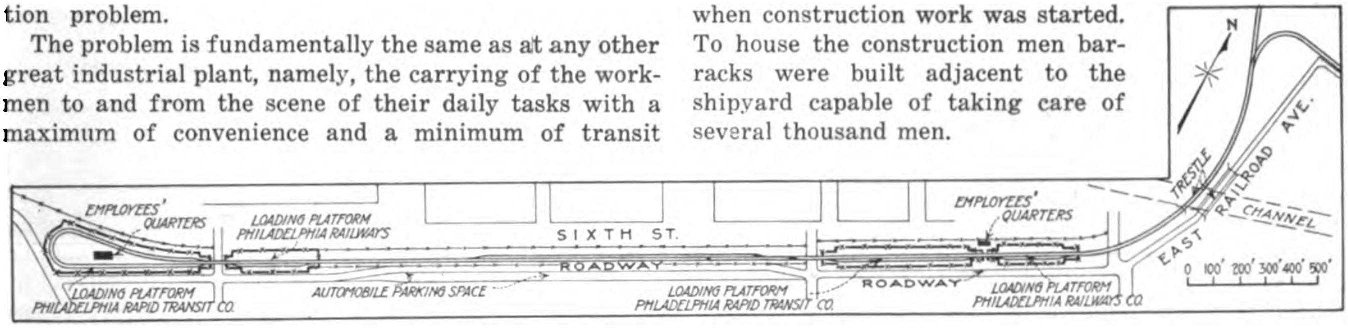
HOG ISLAND last September—and now! The change is almost unbelievable and in the peaceful days before the war would have been ranked among the greatest of engineering accomplishments. Hog Island is the name by which a low, marshy bit of land, about 900 acres in extent, lying along the Pennsylvania bank of the Delaware River just below Philadelphia, has been known for many years. It is some 7 miles, as the crow flies, from the City Hall in Philadelphia. As the narrow back water channel which formerly separated it from the main land has been filled in in several places it is no longer an island. At the time the American International Shipbuilding Corporation started work late last September, those portions of the island which were not marsh were covered with undergrowth and small trees. In ten months the land has been graded; some 75 miles of standard-gage track and many miles of highway have been constructed; sewerage, fire protection and electric power systems have been installed, and buildings, shops, shipways and all the rest of the vast paraphernalia necessary for the greatest shipyard in the world have been practically completed and put in working order. By the middle of July, thirty-six of its fifty-nine ways contained keels, some of the ships were rapidly nearing the time when they would be launched and towed to the great wet basin where twenty-eight ocean-going ships can be outfitted at one time, and on Aug. 4 the first ship was launched. Truly a remarkable accomplishment! The accompanying illustrations reproduced from photographs furnished by the shipbuilding company convey a good conception of the magnitude of the task.


BLUNSTON
CEDAR
10TH ST.
9TH ST.
RUN AVE.
CHESTER AVE.
PARKER AVE.
MAIN ST.
B. & O. R.R.
58TH ST.
49TH ST.
BALTIMORE AVE.
LOCUST ST.
40TH ST.
Car Barn
GRAYS FERRY ROAD
WOODLAND AVE.
P. R. R.
ELMWOOD AVE.
TASKER
MORRIS
27TH ST.
28TH ST.
Cobbs Creek
ISLAND ROAD
PHIL. & READ. RR.
P. R.R.
EASTWICK AVE.
25TH ST.
Penrose Ferry Bridge
SCHUYLKILL R.
MOYAMENSING AVE.
N
PHILADELPHIA COUNTY
BROAD ST.
BACK
CHANNEL
HOG ISLAND
LEAGUE ISLAND
DELAWARE RIVER
0 2000′ 4000′ 6000′ 8000′ 10000′

MAP OF ELECTRIC LINES IN HOG ISLAND VICINITY SHOWING NEW EXTENSIONS

The yard, when in full operation, will be able to turn out a 7500- or 8000-ton steel ship every two days. It is the largest of the yards under the control of the United States Shipping Board's Emergency Fleet Corporation, the actual construction agent of this plant being known as the American International Shipbuilding Corporation. As might easily be guessed, the problem of transporting the army of employees, now numbering about 30,000, has not been a particularly easy one. Under the present trying conditions its solution has been made possible only by the complete co-operation of the Emergency Fleet Corporation and the electric railways concerned. Some details of the part which the railways are playing in its solution were published in the ELECTRIC RAILWAY JOURNAL, for Aug. 3, 1918, page 186. Details of the formal agreements between the railways and the Emergency Fleet Corporation have been printed from time to time. This article is devoted to the presentation of further details pertaining to the transportation problem.

The problem is fundamentally the same as at any other great industrial plant, namely, the carrying of the workmen to and from the scene of their daily tasks with a maximum of convenience and a minimum of transit time. The complicating circumstances in this case are the large number of passengers to be moved in a short time, the isolated location of the plant with respect to the main avenues of rapid transportation, the widely separated dwelling communities of the workers, the presence of other industrial plants in the territory served by the nearest electric lines and, by reason of war conditions, the difficulty of getting the material "wherewithal" of transportation. By this last is meant the equipment, power and labor necessary to establish electric railway lines and to operate them once they are established. In normal times these complicating circumstances would be, in the main, mere trifles. Not so in war times, however. Another idea of the magnitude of the problem can be gained from the statement that the increase in electric railway facilities alone for this one shipyard has cost nearly $3,250,000.


N
EMPLOYEES' QUARTERS
LOADING PLATFORM PHILADELPHIA RAILWAYS
SIXTH ST.
ROADWAY
LOADING PLATFORM PHILADELPHIA RAPID TRANSIT CO.
AUTOMOBILE PARKING SPACE
LOADING PLATFORM PHILADELPHIA RAPID TRANSIT CO.
ROADWAY
EMPLOYEES' QUARTERS
LOADING PLATFORM PHILADELPHIA RAILWAYS CO.
TRESTLE
RAILROAD AVE.
EAST
CHANNEL
0 100' 200' 300' 400' 500'

PLAN OF THE PASSENGER PREPAYMENT TERMINAL

THE WORKERS LIVE IN WIDELY SEPARATED DISTRICTS

It is indeed fortunate that the workers' hours of labor are not all the same. The staggering is such that the morning rush hour extends from 6 a.m. to 8 a.m. and the evening from 4.30 p.m. to 6.30 p.m. Within these periods sharp peaks occur at 7 a.m. and 5 p.m.

The districts in which the workers live are widely separated, one being almost directly south of the City Hall in Philadelphia, others in the northern, northwestern and southwestern parts of the city. In addition to these districts new housing facilities are being developed by the Emergency Fleet Corporation at two points along Elmwood Avenue (see map), and a number of houses in the vicinity of Sixtieth Street and Chester Avenue have been commandeered for shipyard employees. To transport these workers from their points of origin no direct facilities existed when construction work was started. To house the construction men barracks were built adjacent to the shipyard capable of taking care of several thousand men.

Last autumn the nearest steam railroad and the nearest trolley line were each about 1½ miles distant from the center of the island. The only transport facilities available were boats on the Delaware and one or two precarious marsh roads. As practically all construction material both for plant and ships had to come by rail, steam railway transport received first consideration. The American International Shipbuilding Company built the line shown on the map as connecting its interworks railway with the Philadelphia & Reading Railroad. The lines shown as belonging to the Pennsylvania Railroad are new extensions necessitated by the shipyard and other war industry developments.

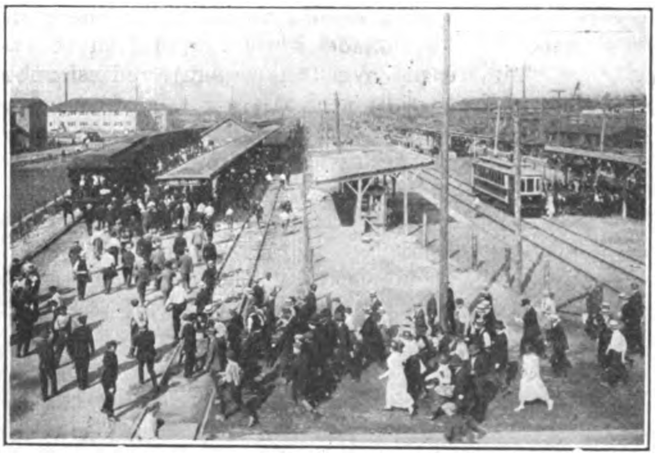
While the steam railroad extensions solved the freight-haulage problem, the Emergency Fleet Corporation officials early realized that they did not constitute a solution to the problem of transporting the workmen to and from the plant. Steps were taken to secure such extensions and reinforcements of the near-by trolley systems, the Philadelphia Rapid Transit Company and the Philadelphia Railways as would enable them to take care of the traffic.

THE P. R. T. HELPS BUILD SHIPS

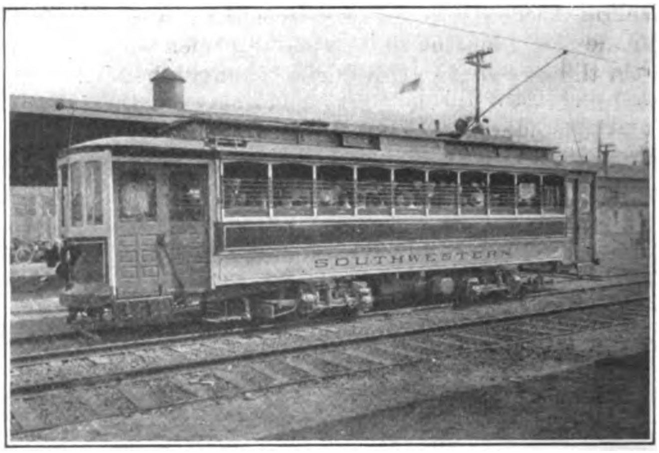
Of the two companies the first-named, with its great interconnected system of surface, subway and elevated lines, is by far the more important. As shown on the map, its nearest tracks were those traversing Eastwick

THE STORAGE YARD AT HOG ISLAND

BEFORE THE ELECTRIC RAILWAYS STARTED OPERATION



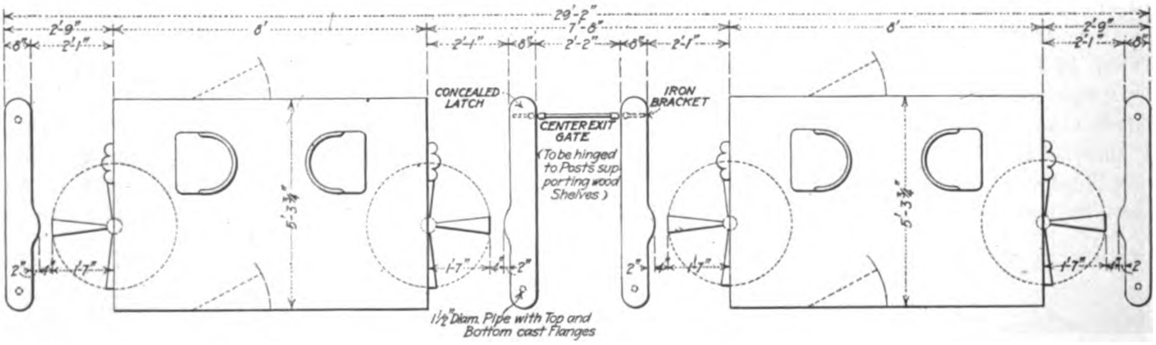
STARTING ELECTRIC SERVICE AT HOG ISLAND



HAULING SHIPBUILDERS IN PHILADELPHIA

Avenue over which its Chester Short Line cars are operated. This line serves a number of industrial plants in the vicinity of Chester, Pa., notably the Essington works of the Westinghouse Electric & Manufacturing Company, the Eddystone Ammunition Company, the Baldwin Locomotive Works, and the Sun Shipbuilding Company, and even before the Hog Island development started carried a very heavy rush-hour traffic. A number of cars are operated as trippers between the industrial plants named and the carhouse at Woodland Avenue and Forty-Ninth St., the passengers from these cars transferring to some one of the lines intersecting the route of the Chester Short Line near the carhouse.

The new extension to the tracks of this company, which was officially opened on Aug. 3, and is shown by the dash lines on the map, is a double-track way along a newly opened extension of Island Road. The distance from Eastwick Avenue and Island Road to the shipyard property line, where the terminal loop commences, is about 9000 ft. A comprehensive scheme of power distribution system reinforcement, including new feeders, primary power cables, additional converter capacity in existing substations and a new substation at the junction of Eastwick Avenue and Island Road, has been worked out. To carry the passengers, 100 new large double-truck, double-end cars equipped with longitudinal seats have been purchased from the J. G. Brill Company. These cars, the main specifications for which were published in the ELECTRIC RAILWAY JOURNAL for March 16, 1918, page 552, are equipped with multiple-unit control for two- and three-car train operation. Most of these cars have been delivered, and it is expected that all will be in service by October.



GENERAL ARRANGEMENT OF THE PASSIMETERS AND BOOTHS

With the extension in operation some rerouting of existing lines has been necessary in order to avoid serious overloading of the cars on the Chester Short Line route.

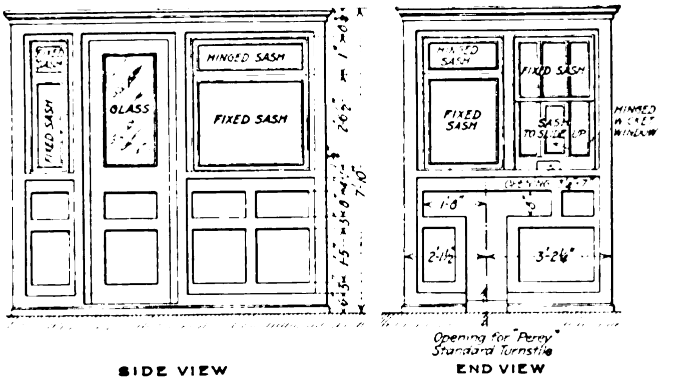
While the extension was under construction the company gave partial service to a large number of Hog Island employees through a shuttle steam line of the Shipbuilding Company which ran to Ninety-Fourth Street and Eastwick Avenue where the electric cars were boarded. The Philadelphia & Reading Railroad and the Pennsylvania Railroad also operated workmen's trains which carried from 8000 to 12,000 people to the terminal stations of these companies, from which about 50 per cent of the riders used the lines of the rapid transit company to reach their homes. It is estimated that the P. R. T. handled thus more or less indirectly some 15,000 employees of the shipyard before the extension was built. This number probably will be increased approximately 50 per cent when full operation of the new extension is reached.

One of the problems imposed by this heavy rush-hour traffic is that of getting sufficient train crews to operate the cars. While the company is fortunate in having for the groundwork of its operating force 50 per cent of the total normal number of trainmen who have been in its employ five years or more, the matter of getting extras for the peak period has been a most serious one. Just now it is using the part-time services of about 150 men who are regularly employed in other industries but who some time in the past have been employees of the railway company. These men give great assistance in caring for the Saturday and Sunday park and pleasure resort peaks. For the other days in the week clerks and general office employees of the company who volunteer for the work, together with some workmen who are free from their regular duties during the rush-hour periods, take care of the morning and evening peaks.

Until recently all employees at the shipyard not using the steam roads were either within walking distance or were carried by boats on the Delaware, by trucks or by private automobiles.

THE PHILADELPHIA RAILWAYS CARRIES SHIPBUILDERS

As was noted in the news columns of the ELECTRIC RAILWAY JOURNAL for July 20, 1918, page 126, the other electric line operating in Hog Island vicinity, the Philadelphia Railways, started to give partial service into South Philadelphia on July 15. This company has a small suburban line with a terminal at Third and Jackson Streets, and thus serves a community in which many workmen live. The line crosses the Schuylkill River at the old Penrose Ferry Bridge. When first constructed the road branched just beyond the bridge, one branch extending in a westerly direction and paralleling for some distance the Chester Short Line of the Philadelphia Rapid Transit Company. The other branch meandered across the marsh to a ferry which crossed the backwater channel to Hog Island. Service on the latter branch was abandoned years ago although the old roadway still remained. This old branch has been rebuilt into a double-track line on a new highway extending from Hog Island to the Penrose Ferry Bridge and the entire line into Philadelphia has been greatly reinforced. The power system has been rejuvenated and thirty second-hand cars have been purchased for the Hog Island service. At Hog Island physical connection is made with the Philadelphia Rapid Transit Company line as both companies use the same terminal loop. When in full operation it is expected that this line will give service to approximately 7000 shipbuilders.



SIDE AND END ELEVATIONS OF COLLECTION BOOTH

A PREPAYMENT TERMINAL IS USED AT THE SHIPYARD

This terminal is on government property and extends for nearly a mile along the back of the shipyard. Its tracks divide the government property into two parts; one between the river and the terminal containing the yard, the other the section occupied by steam railway terminals, hotels, workmen's barracks and other accessory buildings. As shown on an accompanying line cut, the terminal consists of a loop with two groups of loading and unloading platforms. These platforms are located with reference to the main entrances to the shipyard. The railways, while using the loop jointly, have separate loading and unloading platforms. The platforms used by the Philadelphia Rapid Transit Company contain each four double-gate passimeter booths, or thirty-two turnstiles in all. Of these one-half are on the loading platforms and the other on the unloading platforms where a post-payment fare is collected. The reason for this is that the line into Philadelphia has been divided into two 5-cent zones, the dividing line being at Eastwick Avenue and Island Road. A 5-cent fare is collected of passengers as they enter the cars going toward the shipyard. As the cars are crowded, a post-payment collection of the other zone fare seemed more advisable than an attempt to go through the car at the zone line. On the return trip a 10-cent fare is collected at the loading platform before the passenger enters the cars. As there are practically no stops between the terminal and the first zone limit any passenger leaving the car within the zone will have 5 cents rebated to him by the conductor. The procedure on the Philadelphia Railways is somewhat similar except that the post-payment fare is 3 cents and the total fare from the shipyard to any point beyond the Penrose Ferry Bridge is 8 cents.

The turnstiles are arranged in pairs, one on either side of the collection booth. From the booth the passengers proceed in two streams, one entering the front end of a car and the other the rear end. The employees, while giving some trouble at the start, keep in line very well. The excellent police system of the shipyard, of course, renders good service in this connection.

Special loading tracks are provided in front of the platforms so that loading cars may not obstruct traffic on the loop. Train sheds protect the turnstiles and platforms.

The terminal, with the exception of the overhead lines which were built by the Philadelphia Rapid Transit Company, was constructed by the American International Shipbuilding Corporation after plans drawn up by the rapid transit company with the co-operation and assistance of the transportation experts of the Emergency Fleet Corporation. It is hoped by the corporation officials that once the terminal is in full operation the steam roads will be relieved of caring for the passenger traffic.

Everybody Can Make Small Savings

S. G. McMEEN, president Columbus Railway, Power & Light Company, issued recently to the company's employees a little folder to enlist their co-operation in making small, as well as large, savings. Among his suggestions were these: "Remember that material is money. There are many ways of making small savings in all departments and these will have a large influence upon operating costs. Consider the following, for savings can be made in the ways suggested:

> "A conductor threw away a broom when it was only slightly worn. A new one costing 63 cents had to be given him—a needless waste.
>
> "A motorman dropped a vestibule window and broke the glass, when he might as easily have lowered the sash slowly. The glass cost 91 cents. Scores of them are needlessly broken every year.
>
> "Trolleymen repairing the line left a coil of wire, which cost 15 cents a foot, beside the track. They only forgot to pick it up but they might just as well have thrown away several dollars in silver; the effect would have been the same."

Get Behind the Fourth Liberty Loan

Once Again the Electric Railway Industry Has an Opportunity to Show What Team Work Can Do in the Nation's Interest

THE CAMPAIGN FOR THE FOURTH LIBERTY LOAN begins on Sept. 28 and closes Oct. 19. Details as to the amount of the issue or interest or maturity had not been announced at the time this paper went to press, but in all probability the American people will be called upon to pour out more money in a shorter time than ever before. Rapid and efficient work, and prompt and liberal subscriptions, are therefore needed.

The news of the day gives inspiration for a great effort. The cracks in Germany's armor are hourly becoming more apparent, and it is only a question of time until a just and lasting peace can be secured. Germany is not invincible but highly vulnerable. The Huns are not yet defeated, however, and any suspending or even slackening of effort would be folly. Now, even more than before, the nation must stand united and firm.

Hence, push the Fourth Liberty Loan. The thorough, careful organizing of every part of the country to raise five or six billions of dollars is a mammoth undertaking, but it can be done. To help bring this about every electric railway, every employee, must feel individual responsibility. As described in the ELECTRIC RAILWAY JOURNAL of March 30 in the case of many representative companies and again in the following letters from additional leading companies not canvassed before, electric railways have exhibited a patriotic support of the previous loans, and the work will now be continued. But a 100 per cent subscription record for the employees of every company and for the industry—that's the record that should be made in the coming campaign!

United Railways, St. Louis, Mo.

RICHARD MCCULLOCH, *President*

Subscriptions to Liberty Loans by the employees of the United Railways have been made as follows:

First Liberty Loan, 788 employees	$39,500
Second Liberty Loan, 2679 employees	109,500
Third Liberty Loan, 4968 employees	270,800
Total, 8435 employees	$419,800

In the case of the Third Liberty Loan, every employee subscribed for at least one bond.

In some cases the bonds were paid for in full, but in most cases the company subscribed for the bonds in the name of the employees, the employees signing an agreement that they would pay a certain amount each month. The minimum payment was $2 a month for each $50 bond. In a number of cases, however, the employees voluntarily agreed to pay more than this minimum.

More than $60,000 of the bonds of the First and Second Liberty Loans have already been paid in full, and $35,000 of the bonds of the Third Liberty Loan have been paid for in full.

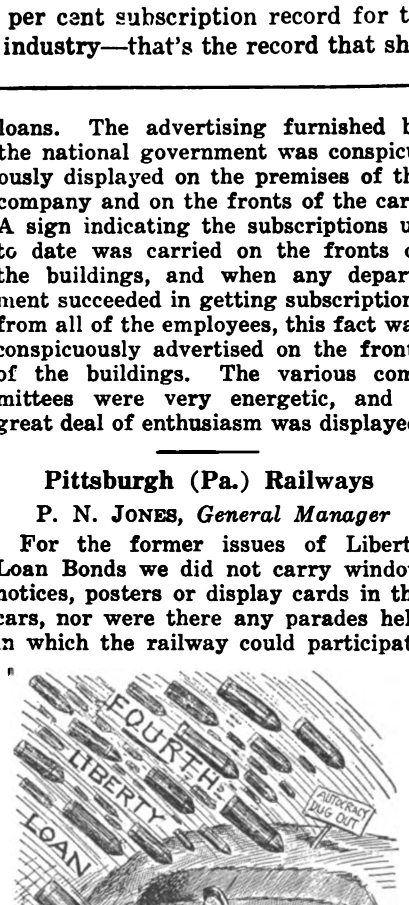
Where the employees have discontinued the payments, the company has taken over the bonds. There have been few cancellations by employees still in the service of the company.

The method of carrying on the Third Liberty Loan campaign was as follows: Each department and each carhouse appointed a committee to solicit loans. The advertising furnished by the national government was conspicuously displayed on the premises of the company and on the fronts of the cars. A sign indicating the subscriptions up to date was carried on the fronts of the buildings, and when any department succeeded in getting subscriptions from all of the employees, this fact was conspicuously advertised on the fronts of the buildings. The various committees were very energetic, and a great deal of enthusiasm was displayed.

Pittsburgh (Pa.) Railways

P. N. JONES, *General Manager*

For the former issues of Liberty Loan Bonds we did not carry window notices, posters or display cards in the cars, nor were there any parades held in which the railway could participate with the use of floats and similar advertising inducements.



"ACH, THEY'VE GOT OUR RANGE AGAIN"

In the case of the Third Liberty Loan we got a late start, as we had given some of the women's auxiliaries committees permission to collect the subscriptions of bonds in our several carhouses and in some of the shops. After they had had five days' collecting, we were asked by the central industrial committee, having charge of the loan in Allegheny County, to make a general canvass among the men ourselves. In the remaining time of the campaign we succeeded in obtaining 2500 and odd subscriptions for a total of about $150,000.

In the coming campaign we will use the same methods as formerly. Each shop and carhouse will have its own committee to take up the subscriptions with the original payment, which will be turned over to the designated banks by a general committee in the office. In this way at the time of the Third Loan we worked up considerable friendly rivalry between the operating, mechanical and way departments and in a great many instances had 100 per cent subscriptions.

We have given some consideration to either a wooden or a cardboard sign on which we will have painted two designs representing thermometers, one giving the number of employees in the department and the other the total amount subscribed. We believe these will induce our men to subscribe through the company and the general

The Nation Needs 100 Per Cent Record

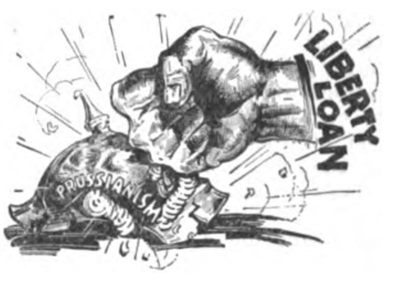
Representative Companies Not Canvassed Before Report that Efforts Made in Preceding Campaigns Will Be More Than Equalled

industrial committee, and also keep the interest alive during the entire period of the coming campaign. Naturally, we will have meetings at the larger shops and carhouses with good speakers to explain the progress the nation has made in the war, as was done in the previous campaigns in Allegheny County.

With a company having as many carhouses as we have, we believe that friendly rivalry between the several points is the best method of arousing interest and "keeping all on their toes."

Puget Sound Traction, Light & Power Company, Seattle, Wash.

A. W. Leonard, *President*

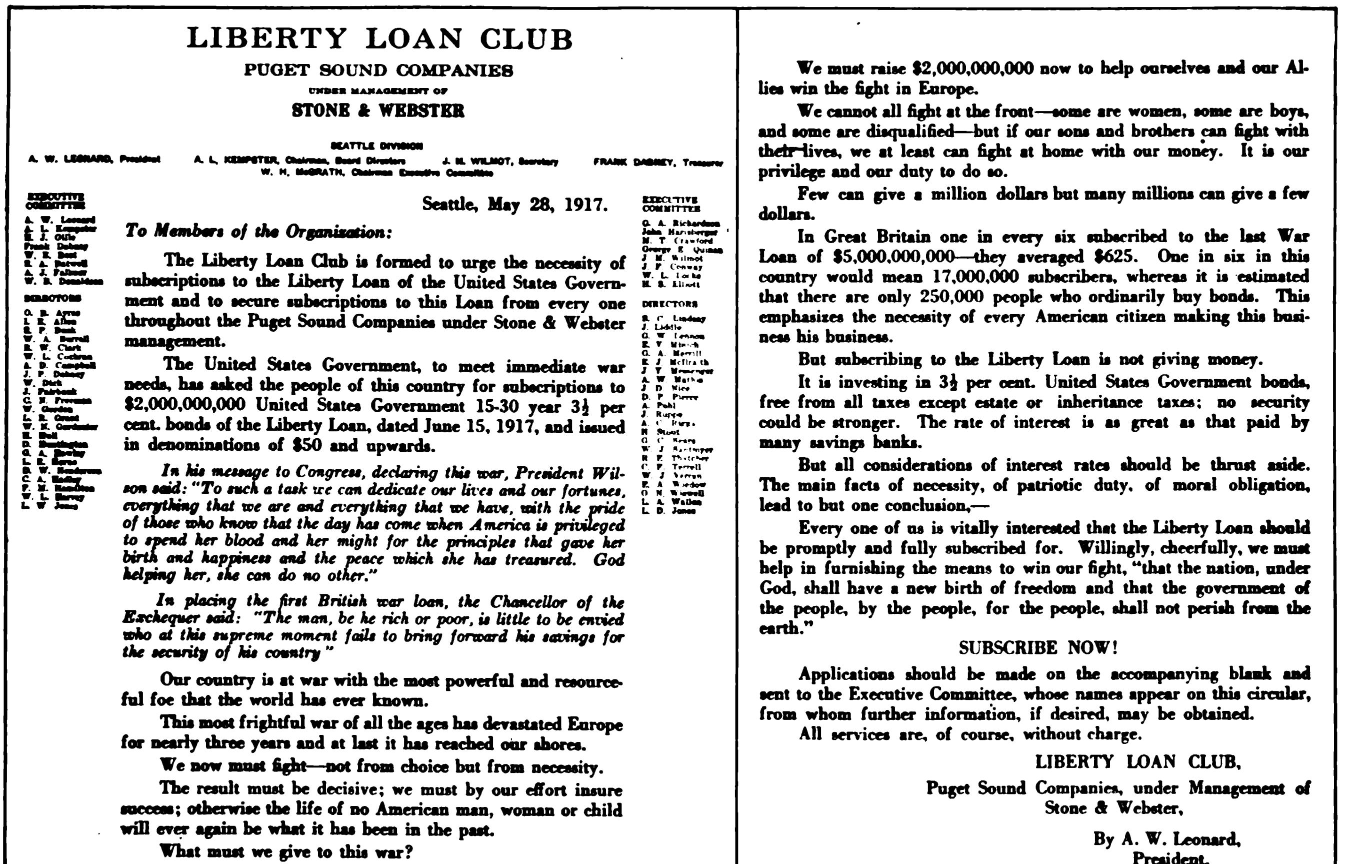


The Puget Sound companies under the management of Stone & Webster formed a Liberty Loan Club to urge the necessity of subscriptions to the bonds. It was the desire of the club that as many employees of the companies as possible should avail themselves of the opportunity for patriotic service, and the club made the purchase of bonds an easy matter.

Under a plan arranged by the club payments by employees could be made as follows: Subscription was received from any employee, 10 per cent to be deducted from the next pay check succeeding the receipt of the subscription. Each month thereafter deductions were made at the rate of 10 per cent till the full amount of the subscription has been deducted. The final deduction included the adjustment of the accrued interest on the bond to the date of final payment.

In subscribing for bonds the employee was required to sign an order on the assistant treasurer to make the necessary deductions on the payroll and also a formal subscription blank authorizing the subscription for the bond in the denomination desired. Both forms could be secured from any department head or Liberty Loan Club director, any of whom were glad to answer any question regarding the plans and purposes of the club. The plan worked out very successfully for the First, Second and Third Liberty Loans and will be followed for the next one.

To interest the public we carried advertising matter inside of all cars. This matter was prepared by the local city Liberty Loan Committee. We also donated space in the local newspapers for the use of this committee.



LIBERTY LOAN CLUB
PUGET SOUND COMPANIES
UNDER MANAGEMENT OF
STONE & WEBSTER

SEATTLE DIVISION
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W. H. McGRATH, Chairman Executive Committee

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Frank Dabney
W. R. Best
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H. Stout
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R. E. Thatcher
C. F. Terrell
W. J. Vernon
E. A. Woodow
O. N. Wiswell
L. A. Wallen
L. D. Jones

Seattle, May 28, 1917.

To Members of the Organization:

The Liberty Loan Club is formed to urge the necessity of subscriptions to the Liberty Loan of the United States Government and to secure subscriptions to this Loan from every one throughout the Puget Sound Companies under Stone & Webster management.

The United States Government, to meet immediate war needs, has asked the people of this country for subscriptions to $2,000,000,000 United States Government 15-30 year 3½ per cent. bonds of the Liberty Loan, dated June 15, 1917, and issued in denominations of $50 and upwards.

In his message to Congress, declaring this war, President Wilson said: "To such a task we can dedicate our lives and our fortunes, everything that we are and everything that we have, with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured. God helping her, she can do no other."

In placing the first British war loan, the Chancellor of the Exchequer said: "The man, be he rich or poor, is little to be envied who at this supreme moment fails to bring forward his savings for the security of his country"

Our country is at war with the most powerful and resourceful foe that the world has ever known.

This most frightful war of all the ages has devastated Europe for nearly three years and at last it has reached our shores.

We now must fight—not from choice but from necessity.

The result must be decisive; we must by our effort insure success; otherwise the life of no American man, woman or child will ever again be what it has been in the past.

What must we give to this war?

Men and money.

The draft will soon provide a million or more men.

We must equip these men and send them to the front.

We must raise $2,000,000,000 now to help ourselves and our Allies win the fight in Europe.

We cannot all fight at the front—some are women, some are boys, and some are disqualified—but if our sons and brothers can fight with their lives, we at least can fight at home with our money. It is our privilege and our duty to do so.

Few can give a million dollars but many millions can give a few dollars.

In Great Britain one in every six subscribed to the last War Loan of $5,000,000,000—they averaged $625. One in six in this country would mean 17,000,000 subscribers, whereas it is estimated that there are only 250,000 people who ordinarily buy bonds. This emphasizes the necessity of every American citizen making this business his business.

But subscribing to the Liberty Loan is not giving money.

It is investing in 3½ per cent. United States Government bonds, free from all taxes except estate or inheritance taxes; no security could be stronger. The rate of interest is as great as that paid by many savings banks.

But all considerations of interest rates should be thrust aside. The main facts of necessity, of patriotic duty, of moral obligation, lead to but one conclusion,—

Every one of us is vitally interested that the Liberty Loan should be promptly and fully subscribed for. Willingly, cheerfully, we must help in furnishing the means to win our fight, "that the nation, under God, shall have a new birth of freedom and that the government of the people, by the people, for the people, shall not perish from the earth."

SUBSCRIBE NOW!

Applications should be made on the accompanying blank and sent to the Executive Committee, whose names appear on this circular, from whom further information, if desired, may be obtained.

All services are, of course, without charge.

LIBERTY LOAN CLUB,
Puget Sound Companies, under Management of
Stone & Webster,

By A. W. Leonard,
President.

PUBLICITY MATTER USED BY THE LIBERTY LOAN CLUB OF STONE & WEBSTER PUGET SOUND PROPERTIES

Portland Railway, Light & Power Company, Portland, Ore.

C. N. HUGGINS, *Treasurer*

The campaign for handling the Third Liberty Loan among our employees was supervised by the treasurer. This official appointed a campaign manager, selected for his special ability in such matters, to select committeemen for soliciting subscriptions from employees in the various departments. Committees of three were appointed at each of our four carhouses, and smaller committees at the various shops, power plants and headquarters buildings for maintenance-of-way, office and other departments.

These Men Are Doing Their Part—
Let Us Do Ours

Prior to the solicitation of subscriptions, these committeemen were brought together and fully instructed by the campaign manager and the treasurer in the methods to be followed, and were made familiar with all conditions of the bonds, manner of payment, etc. Upon the date when subscriptions began, these committeemen devoted their entire time to active solicitation until the job in their particular departments was completed. In most instances this work was finished in twenty-four hours, although at the carhouses, shops, interurban railway points and maintenance-of-way headquarters two or three days was required, it being a part of the plan that every individual employee should be solicited.

In the Third Loan campaign our company made installment terms somewhat different from the government terms in order to spread the payments more conveniently over the period. These terms were cash with subscription, 10 per cent; deductions from May payroll, 20 per cent; deductions from June payroll, 20 per cent; deductions from July payroll, 20 per cent; deductions from August payroll, 20 per cent; deductions from September payroll, 10 per cent. Interest on the deferred balance was charged at the government rate of 4¼ per cent. Regular employees so wishing were permitted to make their payments at the treasurer's office in cash instead of by deductions from payroll. All handling of the subscriptions after these were received and turned in has been done by the treasury department. The success in the third and prior drives was very gratifying, and we expect to follow practically the same plan in handling future loans among employees.

In the matter of advertising Liberty Bonds to the general public, we followed no special program, merely displaying posters and advertising cards furnished by the United States Treasury Department.

Michigan Railway, Jackson, Mich.

J. W. GLENDENING, *Treasurer*

In connection with Liberty Loan campaigns we send out to all the employees a circular, soliciting the purchase of bonds and advising that the company will carry these and make deductions from wages as follows: 10 per cent of the total amount of the bond on the first payday after subscription, and 5 per cent each pay day thereafter until the bond has been paid for.

We have found that the number of bonds purchased by the employees has increased considerably for each issue, and we expect to carry out a similar plan for the fourth issue. We anticipate that subscriptions to this issue by the employees will be considerably larger than for any previous subscription.

In order to reach the public also we carry on our cars and place in our stations posters furnished to us by the Liberty Bond committees.

United Railways & Electric Company, Baltimore, Md.

T. A. CROSS, *President*

The company purposes to conduct an energetic campaign among its employees for the Fourth Liberty Loan, and all the employees have been requested to make their subscriptions exclusively through the company. As shown by the announcement reproduced herewith, the company wants a 100 per cent record among its employees.

THE UNITED RAILWAYS & ELECTRIC
CO., OF BALTIMORE

"WE WANT A 100% RECORD"

Baltimore, Md., September 4, 1918.

TO EMPLOYEES OF THE
UNITED RAILWAYS & ELECTRIC
COMPANY:

As you are doubtless aware, the FOURTH LIBERTY LOAN is about to be launched by our Government to provide the sinews of war. The three Loans previously issued met with glorious success, and it is essential, in order that the German Imperial Government may know that American people are unwavering in their determination to bring about a speedy and successful termination of this world-wide conflict, that every citizen of the United States embrace the privilege of subscribing to the forthcoming Loan.

This Company proposes to conduct an energetic campaign among its employes, and all are requested to make their subscriptions exclusively through the Company. We want every United employe to buy a FOURTH LIBERTY LOAN BOND. WE WANT A 100% RECORD; our country needs a 100% record.

Hundreds of our boys are in the military service "Over There," and it will be of immeasurable comfort to them to know that their fellow-employes "Over Here" are in every respect UNITED behind them.

T. A. CROSS,
President.

New Orleans Railway & Light Company, New Orleans, La.

H. A. FERRANDOU, *Treasurer*

The previous Liberty Loan campaigns were handled by making a canvass of the general offices, carhouses, powerhouses, shops, etc., to obtain subscriptions from employees.

The subscriptions were paid by deducting from the payrolls semi-monthly $2 for each $50 bond subscribed for, and the amount so deducted was turned over to the banks through which the subscriptions were placed. As the bonds were paid for they were turned over to the subscribers.

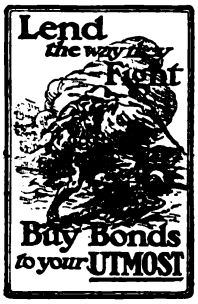
The plan we will follow in the next campaign has not yet been determined, but it probably will be the same as the past one, for this has proved very successful.

Utah Light & Traction Company, Salt Lake City, Utah

H. F. DICKE, *Manager*

As to the method followed in previous Liberty Loan campaigns, we made it a point to have someone solicit a subscription from substantially every person in our employ. The company arranged to purchase bonds for our employees in the sum of total subscriptions and then permitted employees to pay for their subscriptions on the basis of 10 per cent per month. We found that this permitted practically every employee to subscribe for at least one $50 bond and many of them for two or three of such bonds. We purpose to follow this same plan for the fourth campaign.

With respect to advertising, we cooperated with the advertising committee of this city in sending out a street car several hours during the middle and at the close of each day of the campaign. This car had large posters on each side of it. On several occasions a band was taken out in the car.



Denver (Col.) Tramway

J. C. DAVIDSON, *Publicity Manager*

In past Liberty Loan campaigns tramway employees could subscribe for the bonds either through the company or through one of the banks. The tramway terms were the same as those of the banks—that is, $5 a month with interest on a $50 bond, $10 a month with interest on a $100 bond, etc. This plan was very successful, and we are going to handle the Fourth Liberty Loan in the same manner.

Car cards, posters and dashboard cards (large cardboard signs on the front of all cars) were used exclusively. In order to make them more conspicuous the posters were printed in blue ink with a red border on white paper. We also devoted an issue of our bi-weekly publication to the public, *Tram-O-Grams*, to this work.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.

S. B. WAY, *Vice-President and General Manager*

All employees of the company, in previous Liberty Loan campaigns, have been individually canvassed by members of the company Liberty Loan committee. These committeemen were appointed from each department, the number being proportionate to the number of employees in each department. Each employee was canvassed and the advantages of the security offered, as well as the opportunity given to participate in helping the government, were pointed out.

In view of the limited resources of a large proportion of the men, we considered the campaign eminently successful. On the basis of this experience, we presume that the same plan will be followed in the campaign to be undertaken beginning Sept. 28.

We carried dash signs and car cards in the cars, and employed posters on all company property. We also distributed Liberty Loan literature to our employees.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.

ROBERT I. TODD, *President*

In the previous campaigns, on account of the unfortunate conditions prevailing in Indianapolis because of our inability to secure an increased rate of fare and, consequently, to grant increases in wages to our employees which would enable them to subscribe to any great extent to the several Liberty Loans, it was impossible for us to take a very active part in pushing the sale of bonds.

On the interurban lines posters were distributed over the various divisions and placed in all stations and waiting rooms; stenciled signs were used on the windows of the cars and stations; and committees were formed to secure subscriptions from employees. On the Indianapolis city lines we organized committees of inspectors, carhouse foremen and representative employees, who went out and solicited subscriptions from the trainmen, carhouse, shop and power station employees. Posters were placed on the billboards on the front dash of the city cars, signs were stenciled on the car windows, and space in the Traction Terminal station was utilized for large poster advertising furnished by the government.

Lend Him A Hand

We felt that in view of the conditions under which we were operating the amount of subscriptions secured through the company's committees was most favorable. We have made no definite plans in regard to the campaign which will begin on Sept. 28, other than probably to follow very closely along the lines mentioned above.

Ohio Electric Railway, Springfield, Ohio

H. G. GILPIN, *General Manager*

Previous Liberty Loan campaigns have been handled throughout this neighborhood without special offer on the part of this company to its employees of these bonds. We have had a number of men, however, purchase bonds throughout the district covered, buying in their respective localities as the homes of our men are scattered over a large territory. We have had Liberty Loan posters displayed in our stations throughout the entire property.

Engineers Get Together on Standard Car Design

Significant Meeting of Experts Was Held at Washington at the Request of the United States Housing Corporation

A MEETING of a number of railway car builders and transportation experts was held at Washington, D. C., on Sept. 12 for the purpose of considering the designing of a new type of standard electric railway car. The experts were called together for conference at the suggestion of O. M. Eidlitz, director United States Housing Corporation. He asked E. C. Faber, manager of the War Board of the American Electric Railway Association, to bring the experts together in the hope that they might be able to assist in designing a car which would be interchangeable among the electric railway lines of the country. Such use would be as a war measure.

Following are the names of the men who participated in the conference: A. L. Drum, consulting engineer, Chicago, Ill., at present associated with the Philadelphia Rapid Transit Company; Gardner F. Wells, manager transportation division United States Housing Corporation; Garrett T. Seely, assistant director transportation and housing division United States Shipping Board; H. H. Adams, superintendent of shops and equipment Chicago Surface Lines; J. H. Hanna, vice-president Capital Traction Company; John Lindall, superintendent of rolling stock and shops, Boston Elevated Railway; C. O. Birney, Stone & Webster and American Car Company; M. B. Lambert, assistant manager railway department Westinghouse Electric & Manufacturing Company, and J. F. Layng, General Electric Company, now serving with the United States Fuel Administration.

At its meeting the conference committee elected Mr. Drum as chairman, and proceeded thoroughly to discuss the requisites in a standard car of the type desired. As a result it was decided to commit the details of the design to a sub-committee shortly to be appointed. This subcommittee will at once take up a thorough analysis of the subject and prepare a report for consideration by the conference committee at the earliest possible moment.

National Safety Council Report

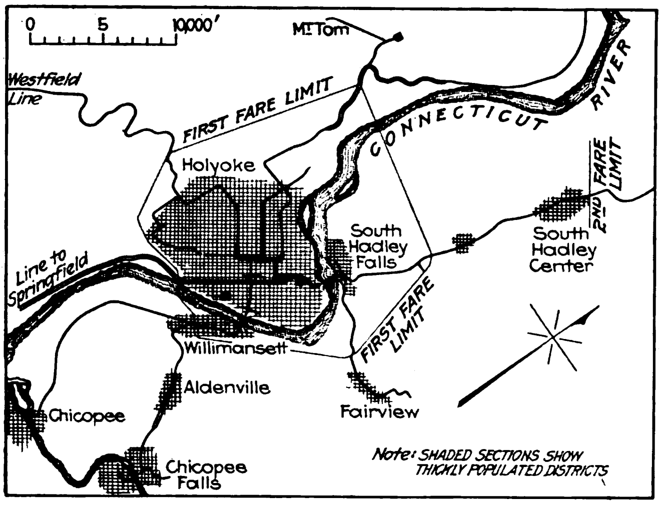
General Manager W. H. Cameron, who directs the activities of the National Safety Council, has presented to the members his annual report. It shows an income for the year of about $120,000, invested funds of about $17,000 and cash in bank of $7,000. During the fiscal year ended July 31 the membership increased by 306 to a total of 3606. This included 16,000 representatives and 6,000,000 employees.

Why Holyoke's Zone Fares Are Insufficient

Commission's Amendment of Company's Request Brings Only $55,000 Annual Increase—More Revenue Obtainable Without Raising Base Fare of 5 Cents—Important Factory Shut-Down and Loss of Young Men Reduce Riding

ON FEB. 17, 1918, the Holyoke Street Railway inaugurated a fare system based on one 5-cent fare for the inner zone or any one zone with two 5-cent cash fares or six-for-40-cent tickets (6⅔ cents) for two zones for one group of lines, and two 5-cent cash fares or forty tickets for $3 (7½ cents) for another section of the system. The first group consists of the lines to Springfield, Chicopee Falls, Chicopee, Fairview and South Hadley Center, and the second section, the lines to Westfield and Smith's Ferry.

The tickets on the Westfield line are good only between the hours of 5.30 and 7.30 in the morning, and 5 and 7 in the evening and are not good on Sundays and holidays. The six-for-40-cent tickets are purchaseable from the conductors on cars. The Westfield and Smith's Ferry tickets are purchaseable at the office of the company. The company also issues tickets in books of 100 for $5, good in any one zone except on the Amherst and Sunderland division, where the unit of fare is 7 cents. Books containing ten and 100 tickets for school children are sold at 2½ cents a ride in any one zone, except on the Amherst and Sunderland division, where they are 3½ cents and good for a ride in any one zone. School tickets are purchaseable only at the company's office, and children purchasing these tickets are required to have a certificate from the superintendent of schools.



Note: SHADED SECTIONS SHOW THICKLY POPULATED DISTRICTS

MAP OF HOLYOKE SYSTEM SHOWING ZONE FARE LIMITS

The fare from any point to any point within the first fare limits is 5 cents, and that from any point within the first fare limits to any point up to the second fare limit on the Chicopee, Chicopee Falls, Springfield and Fairview lines is two 5-cent cash fares, except that tickets are sold at the rate of six for 40 cents which give the same ride as two 5-cent fares, as described in the article.

Full details of the old and new Holyoke fare systems appeared in the ELECTRIC RAILWAY JOURNAL for Jan. 12, 1918. The zone diagram on page 458 is reproduced from the earlier article.

In making application for a fare increase the company had presented a schedule which on the basis of industrial conditions then existing was expected to increase the gross revenue by 20 per cent or $135,000 per annum. The changes made by the Massachusetts Public Service Commission reduced the estimated relief to $110,000, and the actual result has been an increase at the rate of only $55,000 per annum. This compares with a former normal annual increase of $30,000 to $35,000 or about 5 per cent of the gross earnings.

As shown in the zone map, the rates of fare are certainly extremely low. For 5 cents a passenger can ride with or without a transfer anywhere within a 2-mile or greater radius of the City Hall of Holyoke, which means a possible ride of 4 miles. In addition, a ride to Mountain Park, 4 miles from the City Hall, is obtainable for 5 cents. This exception was made so that the people of Holyoke could ride to this park for one 5-cent fare. There are also 5-cent inner zones in Chicopee Falls and other communities but these are of relatively small importance.

In general, about 50 per cent of the riders still pay only 5 cents.

DRAFT AND LABOR LOSSES IMPORTANT FACTORS

For the disappointing showing in revenue there are reasons sound enough and important enough to indicate that it is not due to any dislike of the zone system. In fact, the majority of the people favor it. The few malcontents are to be found chiefly in Fairview where the 6⅔-cent ticket or 10 cents cash has replaced an 11-mile ride for 5 cents, and also among suburban realty owners who had capitalized the ruinous 5-cent fare for their own benefit.

The principal causes for the decrease in riding as indicated by the accompanying tables are these:

The withdrawal for army service of 5000 to 6000 men out of a population of 100,000. As these men are between the ages of 21 to 30, they were obviously the best spenders, and accounted in that respect for, say, 12 per cent of the outgo of the community. Their absence has been felt not by the railway alone, but by the theaters and other places of amusements.

The increased cost of the longer rides has discouraged pleasure travel, which is quite a feature in this picturesque territory. Of course, the loss of this kind of travel can be borne with some equanimity since it is the short-haul rider, the backbone of the electric railway, who has had to subsidize the long-haul rider.

The voluntary and involuntary economies which the thrift campaigns and the increased cost of living have fostered.

Finally, the reduction of the working force of the Westinghouse factory at Chicopee Falls whose employees, 1200 to 1500 in number, rode back and forth over the lines of the company.

For the first twelve days of the zone system, Feb. 17 to 28 inclusive, the receipts on the Holyoke Street Railway increased $346.10 over the corresponding period of 1917 or $28.84 a day. Against this, however, was

TABLE I—SHOWING PASSENGER REVENUE, CAR-MILES AND EARNINGS PER CAR-MILE OF HOLYOKE STREET RAILWAY FOR FIRST THREE MONTHS OF 1918

Lines	January						February						March					
	Passenger Revenue in 1918	Increase Over 1917	Car-Miles, 1918	Increase Over 1917	Earnings per Car-Mile, Cents	Increase Over 1917 Cents	Passenger Revenue in 1918	Increase Over 1917	Car-Miles, 1918	Increase Over 1917	Earnings per Car-Mile, Cents	Increase Over 1917 Cents	Passenger Revenue in 1918	Increase Over 1917	Car-Miles, 1918	Increase Over 1917	Earnings per Car-Mile, Cents	Increase Over 1917 Cents
Route 1	$7,285	*d*$550.55	18,570	*d*1,217	39.23	*d*.37	$6,334	*d*$1,011.85	16,809	*d*865	37.68	*d*3.93	$6,751	*d*$1,111.61	19,126	*d*1,730	35.30	*d*2.40
Route 2	13,217	64.30	33,665	*d*2,517	39.25	2.91	11,880	1.70	31,049	*d*1,768	38.26	2.06	13,437	203.06	35,148	*d*2,173	38.23	2.77
Route 3	2,518	592.24	8,010	*d*39	31.44	*d*2.49	2,345	624.76	7,287	86	32.18	8.29	2,411	488.05	8,105	132	29.75	5.61
Route 4	4,429	*d*868.40	16,960	*d*6,182	26.12	3.23	4,081	*d*568.44	15,028	*d*5,555	27.16	4.57	5,280	141.04	17,065	*d*6,140	30.94	8.79
Route 5	7,808	*d*735.30	16,698	*d*6,004	46.76	9.19	7,926	343.26	14,638	*d*5,888	54.15	17.21	9,989	1,072.40	15,944	*d*7,610	62.65	24.78
Route 6	8,577	*d*2,111.30	20,340	*d*1,042	42.17	*d*7.82	7,746	*d*1,730.83	19,582	411	39.56	*d*9.88	9,646	*d*1,517.84	22,699	*d*2,610	42.50	*d*1.61
Route 7	2,781	*d*64.63	13,777	*d*5,157	20.19	5.16	2,985	416.55	12,048	*d*5,162	24.78	9.85	4,359	1,201.39	13,493	*d*5,651	32.31	15.81
Route 8	3,303	*d*326.57	24,199	*d*3,704	13.65	.64	2,961	*d*404.05	19,774	*d*4,756	14.98	1.26	4,166	110.39	24,190	*d*3,651	17.22	2.65
Total	$49,922	*d*$4,000.21	152,219	*d*25,902	32.80	2.53	$46,260	$*d*2,328.90	136,215	*d*23,497	33.96	3.54	$56,042	$586.88	155,770	*d*29,433	35.98	6.04

d Decrease.

Route 1	Highland & South Hadley Falls
Route 2	South Hadley Center & Elmwood, Chicopee & Elmwood
Route 3	Oakdale & North Pleasant St.
Route 4	Fairview and Westfield
Route 5	Springfield
Route 6	Chicopee Falls
Route 7	Northampton
Route 8	Amherst & Sunderland & Hampshire

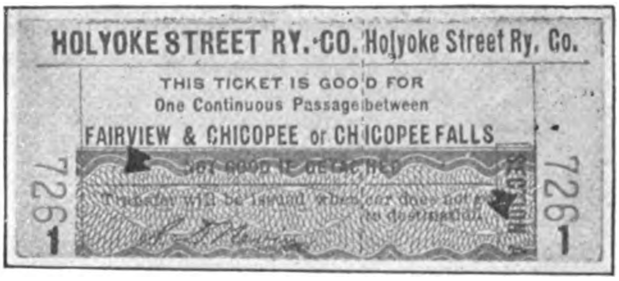
the fact that for the first sixteen days of February, 1918, at the old rates the receipts had been $2,290.90 or $143.18 a day less than for the same period of 1917. Therefore, the new rates must be credited with both the actual increase ($28.84) and the probable decrease ($143.18) or an average daily increase of $172.02. The earnings for the first six months of 1917 and 1918 are presented in Tables I and II.

It will be seen that for January, before the zone fare was installed, there was a drop in revenue of $4,000.21. Partial zone operation cut the February loss to $2,328.90. In March there was an increase of $586.88. In April the closing of the Westinghouse works at Chicopee Falls cut the increase to $168.55 as the Chicopee Falls line fell back $1,638.48. In fact, if the Chicopee Falls line had but held its own the increases would have been as follows:

	Theoretical	Actual
March	$2,104.72	$586.87
April	1,807.03	168.55
May	5,538.10	4,111.88
June	2,506.84	1,756.21

The drop in Springfield riding, shown for June, is doubtless due to the heavy increase in fare hereinafter noted.

That careful watch has been given to the car mileage is indicated by the fact that the car-miles were reduced on all lines but Oakdale and North Pleasant Streets. In some cases short-haul service has been added while decreasing the mileage as a whole. With approximately a 15 per cent reduction in the car mileage and the loss of between 5000 and 6000 men in the communities served, the gross earnings of the company, it is estimated, will be about 2 per cent more than they were for the year 1917. If the rates asked for by the company had been allowed by the Public Service Commission, it would have increased the revenue approximately $40,000.


HOLYOKE STREET RY. CO. Holyoke Street Ry. Co.

THIS TICKET IS GOOD FOR
One Continuous Passage between
FAIRVIEW & CHICOPEE or CHICOPEE FALLS

726
1

TWO-ZONE TICKET USED IN HOLYOKE

In regard to the results of the adoption of the zone system for increasing revenue, it may safely be said that if the men who have left for the war, approximately 6000, had remained in the community, assuming that

TABLE II—SHOWING PASSENGER REVENUE, CAR-MILES AND EARNINGS PER CAR-MILE, HOLYOKE STREET RAILWAY FOR SECOND THREE MONTHS OF 1918

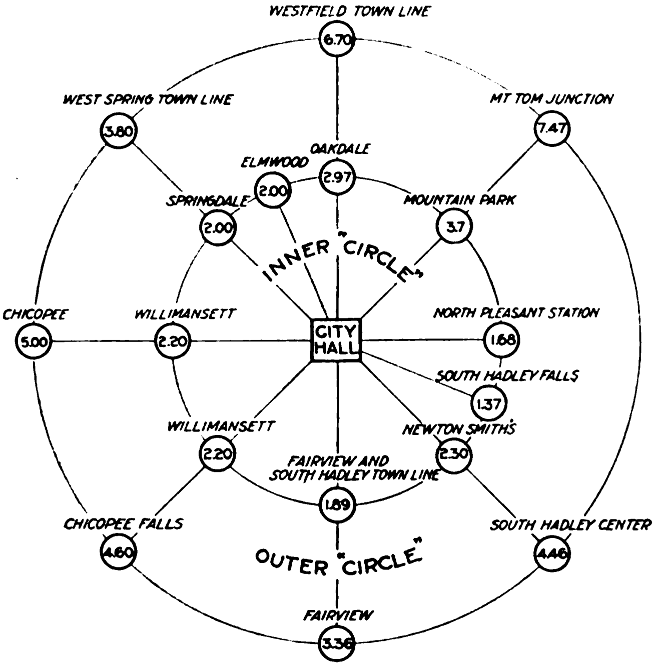
Lines	April						May						June					
	Passenger Revenue in 1918	Increase Over 1917	Car-Miles in 1918	Increase Over 1917	Earnings per Car-Mile, Cents	Increase Over 1917 Cents	Passenger Revenue in 1918	Increase Over 1917	Car-Miles in 1918	Increase Over 1917	Earnings per Car-Mile, Cents	Increase Over 1917	Passenger Revenue in 1918	Increase Over 1917	Car-Miles, 1918	Increase Over 1917	Earnings Per Car-Miles, Cents	Increase Over 1917, Cents
Route 1	$6,269	*d*$902.23	18,894	*d*1,375	33.18	*d*2.20	$8,597	$358.00	23,154	*d*1,840	32.78	*d*$0.19	$10,529	*d*$111.80	28,199	*d*2,665	37.41	2.98
Route 2	13,111	500.93	34,573	*d*2,001	37.92	3.44	13,775	1.058.24	36,069	*d*1,370	38.19	4.23	13,619	650.04	35,511	*d*869	38.43	2.73
Route 3	2,107	473.87	7,960	310	26.47	5.12	2,192	521.40	8,294	377	26.42	5.31	2,189	416.99	8,296	597	26.39	3.37
Route 4	5,336	53.57	17,262	*d*5,706	30.91	7.91	6,155	755.46	18,485	*d*5,889	33.24	11.09	7,173	541.68	19,162	*d*6,356	37.44	11.46
Route 5	9,650	920.97	16,866	*d*5,792	57.21	19.16	9,773	746.56	18,156	*d*5,364	53.82	15.45	10,390	*d*493.13	17,753	4,982	58.50	10.62
Route 6	8,755	*d*1,638.48	22,398	*d*1,737	39.09	*d*3.97	9,327	*d*1,426.23	22,320	*d*3,215	41.78	*d*.33	9,404	*d*750.63	19,621	*d*5,515	47.94	7.76
Route 7	4,132	701.03	13,676	*d*5,013	30.21	11.86	5,992	1,673.14	15,121	*d*4,870	39.63	18.03	7,496	1,274.16	15,035	*d*5,375	49.75	19.25
Route 8	3,938	58.89	23,869	*d*2,628	16.50	1.86	4,053	425.30	23,865	*d*3,702	16.98	3.82	3,917	228.90	21,877	*d*6,240	17.89	4.76
Total	$53,302	$168.55	155,498	*d*23,942	34.27	$4.66	$59,867	$4,111.87	165,464	25.873	36.18	$7.04	$64,720	$1,756.21	165,454	*d*31,435	39.18	7.18

d Decrease. See key to routes at bottom of Table I.

each one of these men spent 5 cents per day for transportation, the increase would have been $300 per day or a total increase of approximately $110,000, which approximates very closely the figure estimated from the installation of zone system.

It is obvious, therefore, that in order to obtain an increase of revenue sufficient to offset the increase in cost of labor and material, it will be necessary either to increase the rate per zone or decrease the length of the zone sufficiently to make up for the loss, due to the departure of this number of men for the war.

Whatever plan for securing more revenue is approved by the commission, the railway intends to retain the 5-cent base fare as there is ample scope for cutting down the 5-cent ride and still offer no temptation to walk. For example, free transfer riding across the inner zone, constituting a diameter of 4 miles, might be eliminated, the new fare being 5 cents plus a transfer charge.



NEW HOLYOKE ZONE SYSTEM, WITH DISTANCES TO CITY HALL

Modifications of the Holyoke-Springfield service conducted jointly with the Springfield Street Railway are also in hand. On this line the old fare of 10 cents with transfers anywhere has been superseded by four 5-cent fares with transfers within the arrival zone only. It is proposed to inaugurate a "limited service," the running time between the two cities to be reduced from fifty minutes as at present to thirty-five minutes. Only eight stops will be made between the two cities and the cars will run until the crews meet, thus obviating the delay at the Holyoke-West Sheffield line. Limited cars will be run every forty minutes in the morning and every twenty minutes in the afternoon. Ultimately it is intended to make the run in a half hour, when the congestion which now exists in Springfield can be relieved.

Local service will be furnished to the West Springfield town line by each company, and the schedules are made so that under normal condition the cars will meet at the line, but it is not intended that the cars shall wait beyond their leaving time at this point but will change crews at other points en route. This change will eliminate delays due to layovers.

The new service means through cars every thirty or twenty minutes instead of every fifteen minutes in favor of more service for the outlying part of Holyoke and the territory contiguous thereto.

FARE COLLECTION AND TRANSFER PRACTICE

All tickets good for riding in two zones are partially perforated to permit a stub, bearing the same identification numbers, to be torn therefrom. When the passenger presents the complete ticket the stub, which is really a token to permit riding into a second zone, is returned to the passenger. This stub is collected by the conductor in the second zone, but the only registration made by him is when he makes the first collection. This is in accord with the company's practice to register nothing worth less than 5 cents. Hence it eliminates the possibility of registering a lower fare for a higher one. At the end of each round trip the conductor turns in both tickets and stubs to the receivers, who match them so far as possible. A few stubs may be missing in cases where the passenger left the car just before the second collection, but this is not important. Both the body and stub must be perforated by the conductor as a cancellation.

One transfer is given on presentation of a stub. In case of a three-zone ride, the conductor takes up a complete ticket and issues a duplex transfer. One-half of this duplex is collected by the conductor on the second car in the first zone and the other half in the following zone. Transfers are not registered. The number of complete tickets turned in should equal the number of duplex transfers issued, thus securing a check on the mishandling of duplex transfers.

Instead of slowing up fare collection, the zone system appears to accelerate it, since half of the riders pay 5 cents as before while most of the remainder use tickets. It is possible that scrip tickets will be issued later to permit a ride in the first zone with two tickets and thereafter with one ticket for each zone. This will limit the present variety of tickets to the school and adult classifications only.

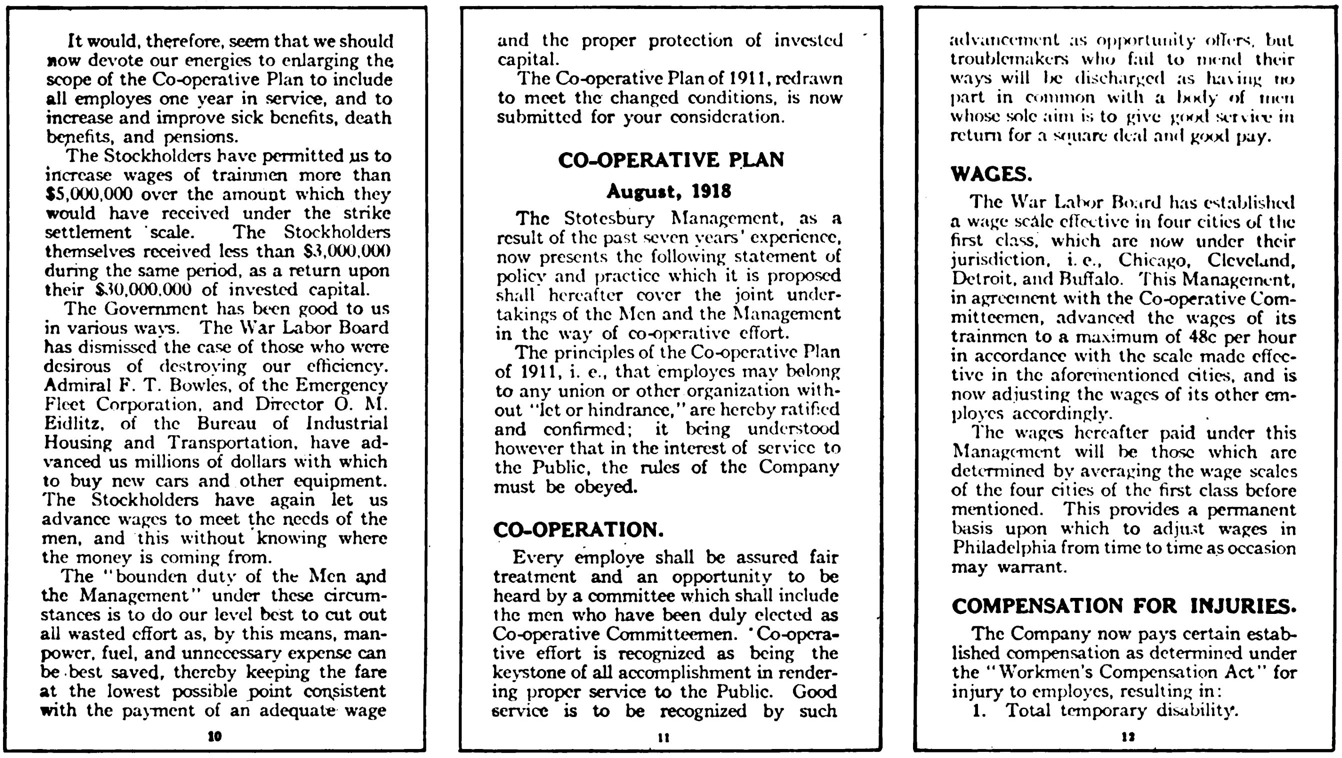
Massachusetts Roads Save Coal

MASSACHUSETTS electric railways will save about 200,000 tons of coal this year by improved methods of operation, according to reports in the hands of James J. Storrow, Federal Fuel Administrator for New England. Ninety per cent of the street railway mileage in the State is represented in this campaign, which is being handled by a committee composed of H. Bertram Potter, assistant to the president Boston Elevated Railway; A. E. Potter, general manager Rhode Island Company; C. D. Emmons, general manager Boston & Worcester Street Railway; David A. Belden, president Massachusetts Northeastern Street Railway; and Charles C. Peirce, head of the railway department General Electric Company, Boston office. The fuel saving is accomplished through improved methods of using power, elimination of stops, reduction of traffic loads on "heatless" Mondays and holidays, and power-plant economy.

Philadelphia Co-operative Plan Extended

Success of the Plan for Producing Cordial Relations Between Labor and Capital Is Demonstrated by Eight Years of Experience—Wages Now Raised to Equal the Highest Established by War Labor Board—Several Changes Made in Original Plan

WHEN the co-operative plan of administration was begun on the Philadelphia Rapid Transit System in 1910 by the Stotesbury-Mitten management, it was recognized as a radical departure in electric railway practice. To give to the employees through regularly elected representatives an equal voice with the company in nearly every question concerned with operation in which the comfort and welfare of the employees was concerned was unprecedented. Practically the only matters on which the company retained entire control were those of wages, which were governed by the well-known 22-per cent rule, and discipline. Hence it is not surprising that the plan attracted the attention of many authorities on the subject of industrial economy.



It would, therefore, seem that we should now devote our energies to enlarging the scope of the Co-operative Plan to include all employes one year in service, and to increase and improve sick benefits, death benefits, and pensions.

The Stockholders have permitted us to increase wages of trainmen more than $5,000,000 over the amount which they would have received under the strike settlement scale. The Stockholders themselves received less than $3,000,000 during the same period, as a return upon their $30,000,000 of invested capital.

The Government has been good to us in various ways. The War Labor Board has dismissed the case of those who were desirous of destroying our efficiency. Admiral F. T. Bowles, of the Emergency Fleet Corporation, and Director O. M. Eidlitz, of the Bureau of Industrial Housing and Transportation, have advanced us millions of dollars with which to buy new cars and other equipment. The Stockholders have again let us advance wages to meet the needs of the men, and this without knowing where the money is coming from.

The "bounden duty of the Men and the Management" under these circumstances is to do our level best to cut out all wasted effort as, by this means, manpower, fuel, and unnecessary expense can be best saved, thereby keeping the fare at the lowest possible point consistent with the payment of an adequate wage and the proper protection of invested capital.

10

The Co-operative Plan of 1911, redrawn to meet the changed conditions, is now submitted for your consideration.

CO-OPERATIVE PLAN

August, 1918

The Stotesbury Management, as a result of the past seven years' experience, now presents the following statement of policy and practice which it is proposed shall hereafter cover the joint undertakings of the Men and the Management in the way of co-operative effort.

The principles of the Co-operative Plan of 1911, i. e., that employes may belong to any union or other organization without "let or hindrance," are hereby ratified and confirmed; it being understood however that in the interest of service to the Public, the rules of the Company must be obeyed.

CO-OPERATION.

Every employe shall be assured fair treatment and an opportunity to be heard by a committee which shall include the men who have been duly elected as Co-operative Committeemen. Co-operative effort is recognized as being the keystone of all accomplishment in rendering proper service to the Public. Good service is to be recognized by such

11

advancement as opportunity offers, but troublemakers who fail to mend their ways will be discharged as having no part in common with a body of men whose sole aim is to give good service in return for a square deal and good pay.

WAGES.

The War Labor Board has established a wage scale effective in four cities of the first class, which are now under their jurisdiction, i. e., Chicago, Cleveland, Detroit, and Buffalo. This Management, in agreement with the Co-operative Committeemen, advanced the wages of its trainmen to a maximum of 48c per hour in accordance with the scale made effective in the aforementioned cities, and is now adjusting the wages of its other employes accordingly.

The wages hereafter paid under this Management will be those which are determined by averaging the wage scales of the four cities of the first class before mentioned. This provides a permanent basis upon which to adjust wages in Philadelphia from time to time as occasion may warrant.

COMPENSATION FOR INJURIES.

The Company now pays certain established compensation as determined under the "Workmen's Compensation Act" for injury to employes, resulting in:

1. Total temporary disability.

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THREE PAGES FROM ISSUE OF CO-OPERATIVE BULLETIN FOR AUGUST, 1918, DESCRIBING IN PART NEW CO-OPERATIVE PLAN

Among those who have contributed their views upon the workings of the co-operative plan at length to the columns of this paper are Dr. Charles W. Eliot, president emeritus of Harvard, who described it as "remarkably successful" in an article on page 674 of the issue of this paper for Oct. 10, 1914, and Dr. Thomas Conway, Jr., of the Wharton School of Finance and Commerce, University of Pennsylvania, who reviewed the experience with the plan from 1910 to 1916 in an extended article which appeared in the ELECTRIC RAILWAY JOURNAL for Nov. 4, 1916. Probably the most significant fact brought out by Professor Conway was that while the resignations of employees from the service during the five years ended May 31, 1910, had averaged 3096 annually and the discharges 1628 a year, these figures had been reduced to an average of 225 and 129 respectively during the two years ended May 31, 1916, the last complete fiscal year of the company at the time the article was written. Equally notable was the record on the system as regards labor difficulties. From a period of almost continual strikes before the inauguration of the system, this method of settling disputes has practically disappeared from Philadelphia. There have been during the past eight years, it is true, two or three attempts of this kind to create trouble by a few dissatisfied employees, but they were completely abortive, as the great majority of men preferred to remain loyal to the company.

WHAT THE CO-OPERATIVE PLAN HAS DONE

The practical results of the plan have been beneficial to employees, company and public. The maximum wage of conductors and motormen was 23 cents an hour in 1911 when the company agreed, under the co-operative plan, to devote 22 per cent of its gross receipts to the payment of wages to its transportation employees. Under this agreement the wage had risen on July 15, 1918, to 43 cents per hour. In addition, a sick benefit fund of $1 a day, a pension of $20 a month to superannuated employees, and death benefit aggregating $650, payable to dependents, had been inaugurated, available for all employees who had been two years in the service and paid 25 cents per month dues to the benevolent association.

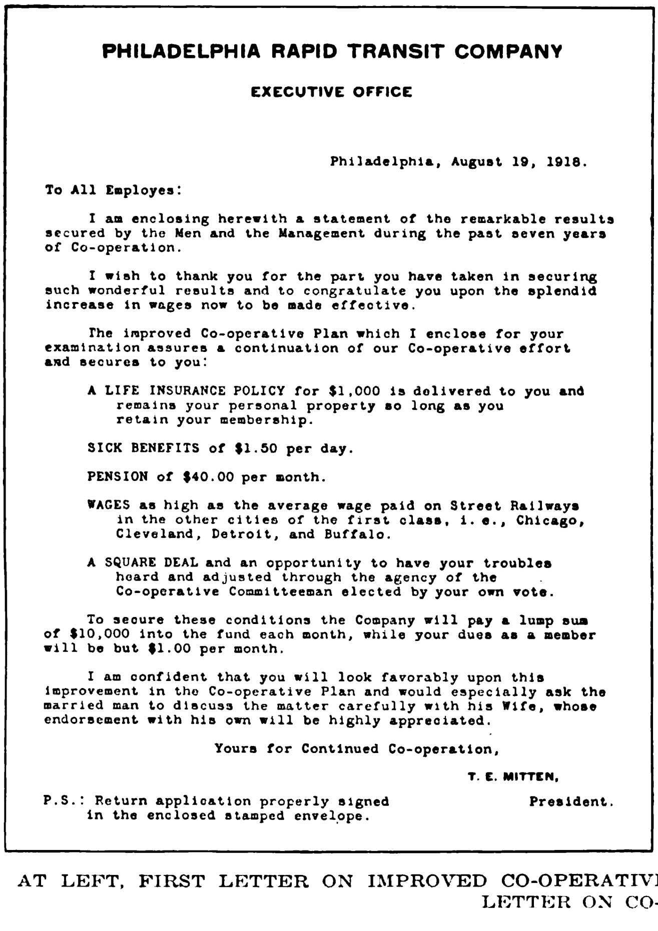
The benefits to the public and company were equally marked. So far as the latter is concerned, at the close of 1910, the company was practically bankrupt in cash, and the earnings in 1909 and 1910 had not been sufficient to meet the operating expenses, rentals and interest by more than $1,500,000. While the capital stock was $30,000,000 fully paid in, the fixed charges amounted to 46 per cent of the gross receipts. Now, without any increase in the capital stock, the fixed charges have been reduced to 32 per cent of the gross receipts, and dividends have been paid on the stock as follows: 1916, 2 per cent; in 1917, 5 per cent; in 1918, at the rate of 5 per cent per annum. The physical condition of the property has been greatly improved, and the last report of the company showed a surplus of more than $5,000,000 in the balance sheet.

The public has profited not only by the improved service and equipment but by reduced accidents and a reduced fare, the average fare during the year ended June 30, 1910, being 4.15 cents as compared with an average fare of 3.96 cents per passenger during the year ended June 30, 1918.

WAR-TIME CONDITIONS SUGGEST CHANGES

Changes have been required in the co-operative plan by war-time conditions, but they are changes in detail and not in principle. The labor situation in Philadelphia has been greatly affected by the war as the city has enormously expanded its manufacturing facilities through extensions to its many existing large industrial enterprises and the addition of others, particularly in the ship building line. All of these have made heavy drains on the labor supply, and it began to be difficult to recruit the right kind of men for the railway, even with the high wages then paid. This led to the revision of the co-operative plan, notably in the wages paid, announced early last month by President Mitten and accepted for the employees by the co-operative committee. In his talk outlining these changes as reported on page 301 of the issue of this paper for Aug. 17, President Mitten described the importance of the war transportation done by the Philadelphia Rapid Transit Company and the necessity of all employees giving their best service. He also referred to the past labor situation on the property, saying that there still existed the Amalgamated Association, a former branch of the Amalgamated Association which seceded from the national body some years ago under the leadership of a man named Pratt, and a local organization known as the Keystone Union. President Mitten referred to the question of wearing buttons denoting the union affiliation in the following words:

> Now as to the button question, we remember the condition of things in 1911 when some of us were wearing the Keystone button, the Amalgamated button and the button of the Prattites. Fights on duty were an ordinary occurrence. Accidents by collision of cars increased in number; in fact, the men were so busy trying to convert each other that they had little time left to devote to the performance of their duty.
>
> We still have the Keystone, the Amalgamated and the Prattites, and, therefore, can not consider going back to the old condition of "bedlam let loose" by allowing organization buttons to be worn while on duty—so we will have none of that.



PHILADELPHIA RAPID TRANSIT COMPANY

EXECUTIVE OFFICE

Philadelphia, August 19, 1918.

To All Employes:

I am enclosing herewith a statement of the remarkable results secured by the Men and the Management during the past seven years of Co-operation.

I wish to thank you for the part you have taken in securing such wonderful results and to congratulate you upon the splendid increase in wages now to be made effective.

The improved Co-operative Plan which I enclose for your examination assures a continuation of our Co-operative effort and secures to you:

A LIFE INSURANCE POLICY for $1,000 is delivered to you and remains your personal property so long as you retain your membership.

SICK BENEFITS of $1.50 per day.

PENSION of $40.00 per month.

WAGES as high as the average wage paid on Street Railways in the other cities of the first class, i. e., Chicago, Cleveland, Detroit, and Buffalo.

A SQUARE DEAL and an opportunity to have your troubles heard and adjusted through the agency of the Co-operative Committeeman elected by your own vote.

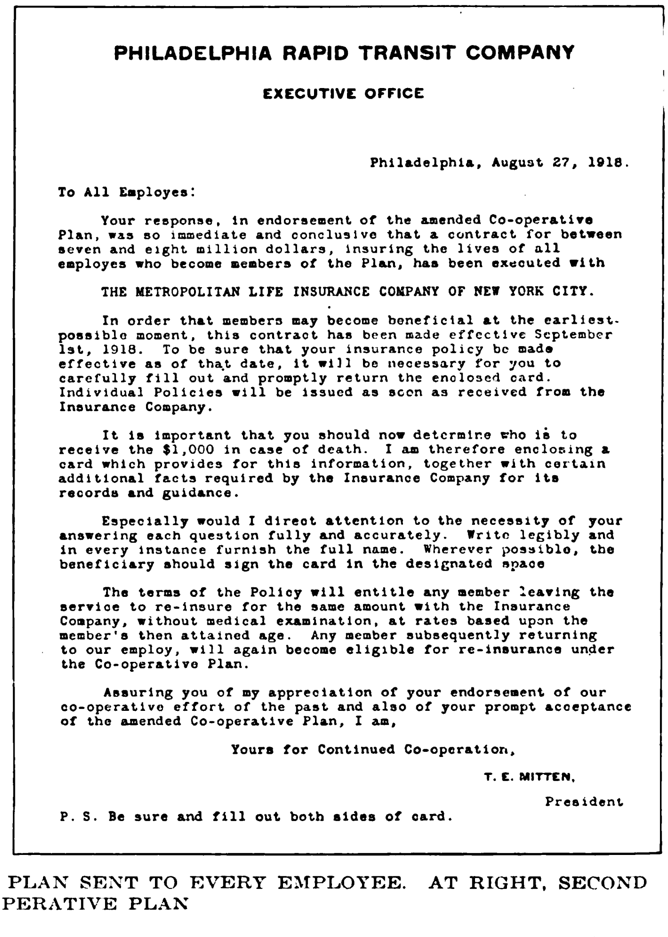
To secure these conditions the Company will pay a lump sum of $10,000 into the fund each month, while your dues as a member will be but $1.00 per month.

I am confident that you will look favorably upon this improvement in the Co-operative Plan and would especially ask the married man to discuss the matter carefully with his Wife, whose endorsement with his own will be highly appreciated.

Yours for Continued Co-operation,

T. E. MITTEN,
President.

P.S.: Return application properly signed in the enclosed stamped envelope.



PHILADELPHIA RAPID TRANSIT COMPANY

EXECUTIVE OFFICE

Philadelphia, August 27, 1918.

To All Employes:

Your response, in endorsement of the amended Co-operative Plan, was so immediate and conclusive that a contract for between seven and eight million dollars, insuring the lives of all employes who become members of the Plan, has been executed with

THE METROPOLITAN LIFE INSURANCE COMPANY OF NEW YORK CITY.

In order that members may become beneficial at the earliest possible moment, this contract has been made effective September 1st, 1918. To be sure that your insurance policy be made effective as of that date, it will be necessary for you to carefully fill out and promptly return the enclosed card. Individual Policies will be issued as soon as received from the Insurance Company.

It is important that you should now determine who is to receive the $1,000 in case of death. I am therefore enclosing a card which provides for this information, together with certain additional facts required by the Insurance Company for its records and guidance.

Especially would I direct attention to the necessity of your answering each question fully and accurately. Write legibly and in every instance furnish the full name. Wherever possible, the beneficiary should sign the card in the designated space

The terms of the Policy will entitle any member leaving the service to re-insure for the same amount with the Insurance Company, without medical examination, at rates based upon the member's then attained age. Any member subsequently returning to our employ, will again become eligible for re-insurance under the Co-operative Plan.

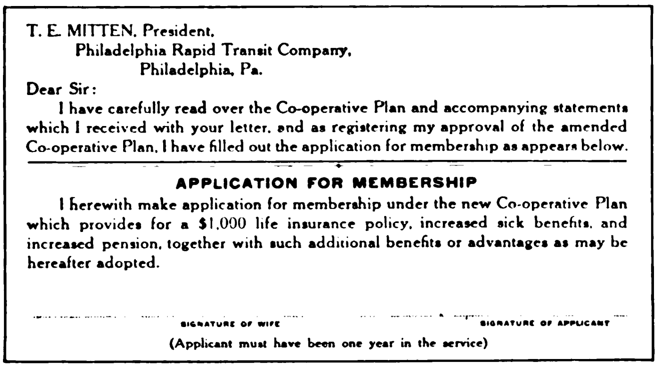
Assuring you of my appreciation of your endorsement of our co-operative effort of the past and also of your prompt acceptance of the amended Co-operative Plan, I am,

Yours for Continued Co-operation,

T. E. MITTEN,
President

P. S. Be sure and fill out both sides of card.

AT LEFT, FIRST LETTER ON IMPROVED CO-OPERATIVE PLAN SENT TO EVERY EMPLOYEE. AT RIGHT, SECOND LETTER ON CO-OPERATIVE PLAN



T. E. MITTEN, President,
Philadelphia Rapid Transit Company,
Philadelphia, Pa.

Dear Sir:

I have carefully read over the Co-operative Plan and accompanying statements which I received with your letter, and as registering my approval of the amended Co-operative Plan, I have filled out the application for membership as appears below.

APPLICATION FOR MEMBERSHIP

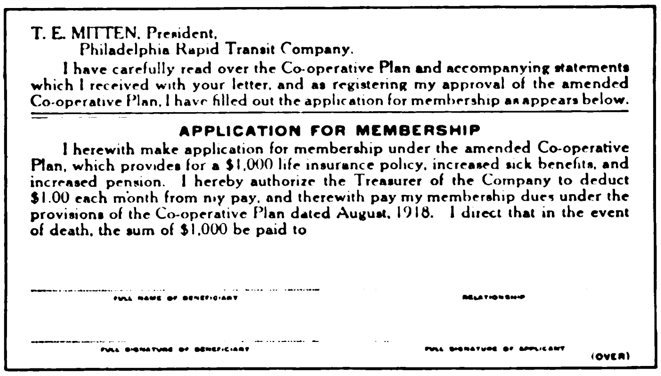
I herewith make application for membership under the new Co-operative Plan which provides for a $1,000 life insurance policy, increased sick benefits, and increased pension, together with such additional benefits or advantages as may be hereafter adopted.

SIGNATURE OF WIFE

SIGNATURE OF APPLICANT

(Applicant must have been one year in the service)

RETURN CARD SENT WITH LETTER OF AUG. 19



T. E. MITTEN, President,
Philadelphia Rapid Transit Company.

I have carefully read over the Co-operative Plan and accompanying statements which I received with your letter, and as registering my approval of the amended Co-operative Plan, I have filled out the application for membership as appears below.

APPLICATION FOR MEMBERSHIP

I herewith make application for membership under the amended Co-operative Plan, which provides for a $1,000 life insurance policy, increased sick benefits, and increased pension. I hereby authorize the Treasurer of the Company to deduct $1.00 each month from my pay, and therewith pay my membership dues under the provisions of the Co-operative Plan dated August, 1918. I direct that in the event of death, the sum of $1,000 be paid to

FULL NAME OF BENEFICIARY

RELATIONSHIP

FULL SIGNATURE OF BENEFICIARY

FULL SIGNATURE OF APPLICANT

(OVER)

RETURN CARD SENT WITH LETTER OF AUG. 27

The meat of the button question elsewhere is that it denotes the willingness of the company to permit men to belong to the union. Well, we do that in an unqualified way without there being any need of recourse to the button to prove it, and in order to reassure the War Labor Board in this regard I suggest that we now reaffirm the principles of the Co-operative Plan, as adopted by the Stotesbury management in 1911, namely, that employees of the company may join and belong to any union or other organization without interference of any kind, but in order that the service to the public and to the war workers be safe and satisfactory, the rules of the company must be obeyed.

How the Wage Rate Was Determined

The wage rate for the conductors and motormen for the surface lines in Philadelphia was determined by taking the highest rate recommended for surface cars by the War Labor Board in its recent decisions. In consequence conductors and motormen during the first three months of service receive 43 cents an hour, during the following nine months 46 cents an hour and thereafter 48 cents an hour. For all overtime of swing runs exceeding 14 hours, an addition in pay for the period of such excess time is allowed as follows: For the fifteenth hour, fifteen minutes; for the sixteenth hour, thirty minutes; for the seventeenth hour, forty-five minutes; for the eighteenth and each succeeding hour, one hour. Time and one-half is also paid for extra trips or tripper service. For motormen on the elevated system, an advance of 3 cents on these figures was agreed upon because this has been the excess which the elevated motormen have enjoyed.

As for wages in the future, the company has offered and the co-operative committee has agreed to accept a wage schedule made up by averaging the wage scales of the other cities of first class which had submitted their questions of wage schedules to the War Labor Board, *i.e.*, Chicago, Cleveland, Detroit and Buffalo. The new plan also extends this permanent basis to the wages of the men in the electrical, rolling stock and buildings, way and transportation departments for which, under the former 22 per cent agreement, there was no provision.

Other Beneficial Features of New Plan

Other beneficial features of the co-operative plan announced in connection with or shortly after the increase in wages was a life insurance policy for $1,000 for each employee, sick benefit of $1.50 a day, and a pension of $40 a month to incapacitated employees who have reached sixty-five years of age and have been continuously in the service for twenty-five years. The cost of these benefits is to be defrayed from a fund to which each employee who accepts the plan will contribute $1 a month and to which the company will contribute a lump sum of $10,000 a month. In making this offer the company says that it will be contingent upon the general acceptance of the plan by a large majority of the employees, and to determine whether they were in favor of it it sent two letters to each employee, one on Aug. 19 and one on Aug. 27. These letters are reproduced herewith. The first was accompanied by a card on which the employee could indicate whether the proposed amendments to the co-operative plan received his approval. The second card which was sent out with the letter of Aug. 27 authorized the treasurer of the company to deduct $1 each month from the pay of the employee as dues under the co-operative plan, gave the name of the beneficiary for the insurance policy and (on the back) contained statistical data in regard to the age, etc., of the employee.

The first page of the life insurance policy, which is issued by the Metropolitan Life Insurance Company, reads as follows:

> This is to certify that under and subject to the terms and conditions of Group Policy No. 138G ————————, an employee of the Philadelphia Rapid Transit Company is hereby insured for one thousand dollars.
>
> If death occur while said employee is in the employ of the Philadelphia Rapid Transit Company, the amount of insurance in force on said employee, in accordance with Group Policy as above, will be paid to ————————, who has been named as beneficiary.
>
> The employee may change the beneficiary at any time in the manner set forth on the back hereof.
>
> *Privilege of Continuance.*—In the event of the termination of the employment for any reason whatsoever, the employee shall be entitled to have issued to him by the Metropolitan Life Insurance Company, without further evidence of insurability, and upon application made to the Metropolitan Life Insurance Company within thirty-one days after such termination, and upon the payment of the premium applicable to the class of risk to which he belongs and to the form and amount of the policy at his then attained age, a policy of life insurance in any one of the forms customarily issued by the Metropolitan Life Insurance Company, term insurance excepted, in an amount equal to the amount of his protection under the group insurance policy at the time of such termination.

The conditions printed on the back of the policy include, among other things, an agreement that if the person insured, before he is sixty years old should become permanently disabled by accidental injury or disease, further payments will not be required and the person injured will receive instead for each $1,000 of insurance, either sixty monthly installments of $18.00, or twenty annual installments of $67.98, or fifteen annual installments of $83.90, or ten annual installments of $116.18, or five annual installments of $214.00. If the insured dies during the period of total permanent

disability, any installments remaining unpaid shall be payable as they become due to the beneficiary nominated by him. The acceptance of the plan thus far has been practically unanimous, although the men have until Sept. 15 to signify their consent.

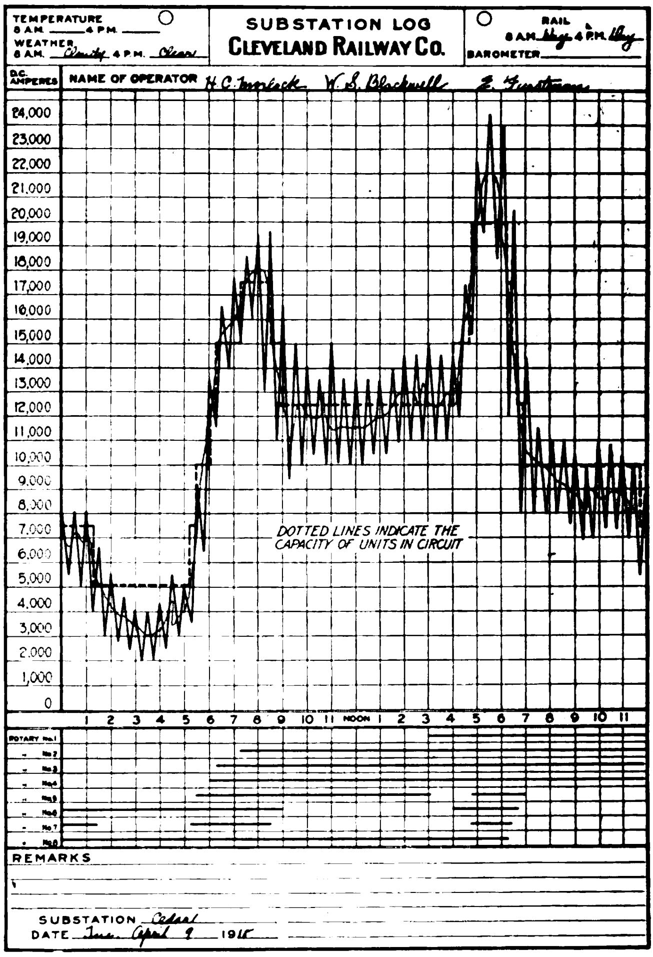
The co-operative plan of August, 1918, differs in a few other points from that of 1910, particularly in the fact that the earlier plan was restricted to the transportation employees. The present plan takes in all of the departments, all of which will now be represented on the co-operative committee.

Adjusting Substation Capacity to the Load Line

THE Cedar Avenue substation of the Cleveland (Ohio) Railway was described in the issue of the ELECTRIC RAILWAY JOURNAL for April 13, 1918, page 700. In the article the point was made that one of the fundamental principles in the design of the substation was to provide facilities for keeping the capacity of machines in operation closely adjusted to the load line.

A sample power chart for this substation is reproduced herewith. From the diagram it is evident that the combination of facilities and care in operation result in almost perfect co-ordination of load and capacity. The other illustration shows the energy chart for the same day, and also incidentally gives an idea of the record form used in the substations on this property.

At right, typical graphical log for Cedar Avenue substation, Cleveland Railway; below, sample record sheet of energy readings, Cedar Avenue substation, Cleveland Railway.



TEMPERATURE 8 A.M. ____ 4 P.M. ____
WEATHER 8 A.M. Cloudy 4 P.M. Clear

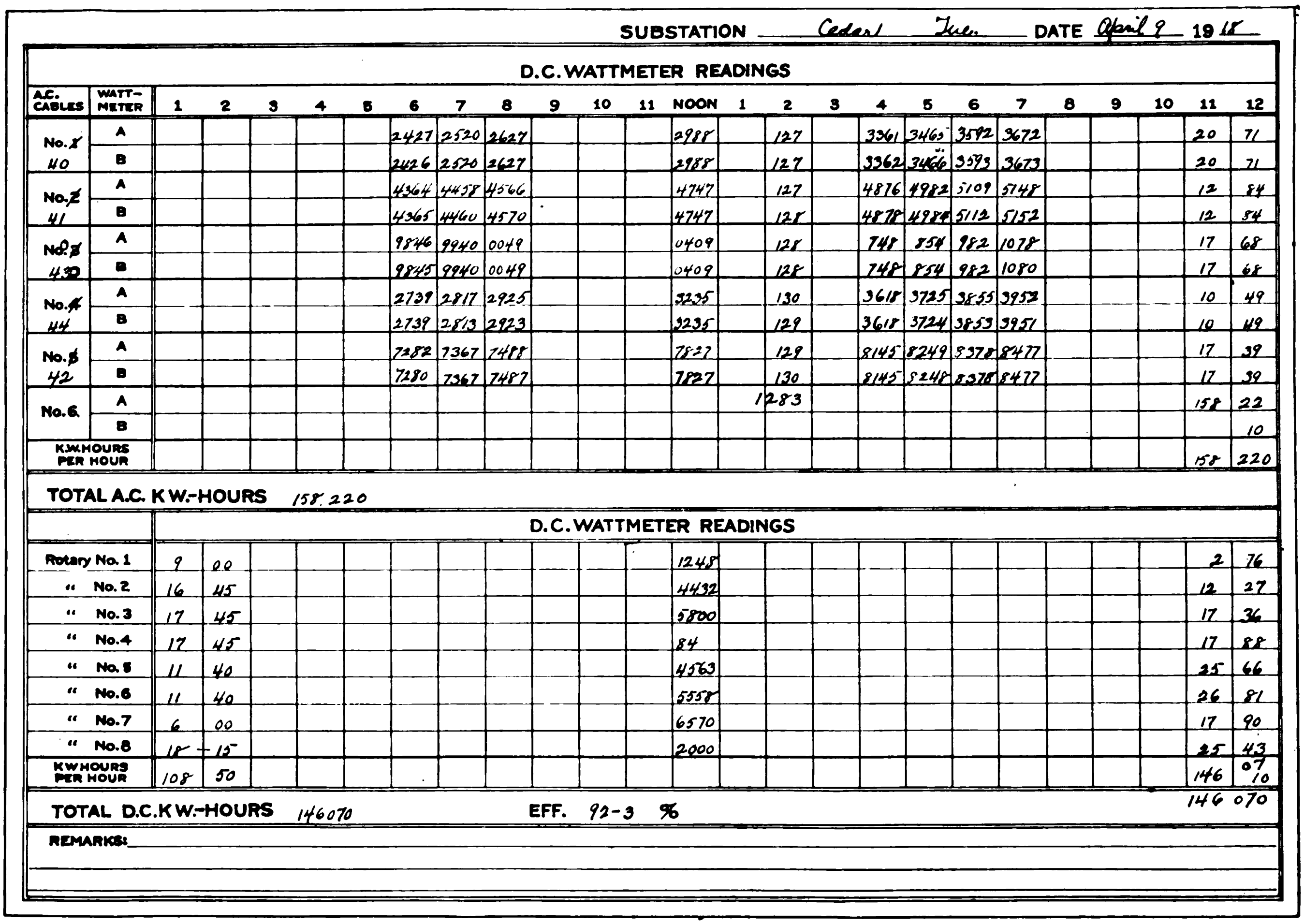
SUBSTATION LOG
CLEVELAND RAILWAY CO.

RAIL 8 A.M. Dry 4 P.M. Dry
BAROMETER ____

NAME OF OPERATOR H. C. [illegible] W. S. Blackwell E. [illegible]

REMARKS

SUBSTATION Cedar
DATE Tue. April 9 1918



SUBSTATION Cedar Tue. DATE April 9 1918

D.C. WATTMETER READINGS

A.C. CABLES	WATT-METER	1	2	3	4	5	6	7	8	9	10	11	NOON	1	2	3	4	5	6	7	8	9	10	11	12
No. ~~1~~ 40	A						2427	2520	2627				2988		127		3361	3465	3592	3672				20	71
	B						2426	2520	2627				2988		127		3362	3466	3593	3673				20	71
No. ~~2~~ 41	A						4364	4458	4566				4747		127		4876	4982	5109	5148				12	84
	B						4365	4460	4570				4747		128		4878	4984	5112	5152				12	84
No. ~~3~~ 43	A						9846	9940	0049				0409		128		748	854	982	1078				17	68
	B						9845	9940	0049				0409		128		748	854	982	1080				17	68
No. ~~4~~ 44	A						2739	2817	2925				3235		130		3618	3725	3855	3952				10	49
	B						2739	2813	2923				3235		129		3618	3724	3853	3951				10	49
No. ~~5~~ 42	A						7282	7367	7488				7827		129		8145	8249	8378	8477				17	39
	B						7280	7367	7487				7827		130		8145	8248	8378	8477				17	39
No. 6	A													1283										158	22
	B																								10
K.W. HOURS PER HOUR																								158	220

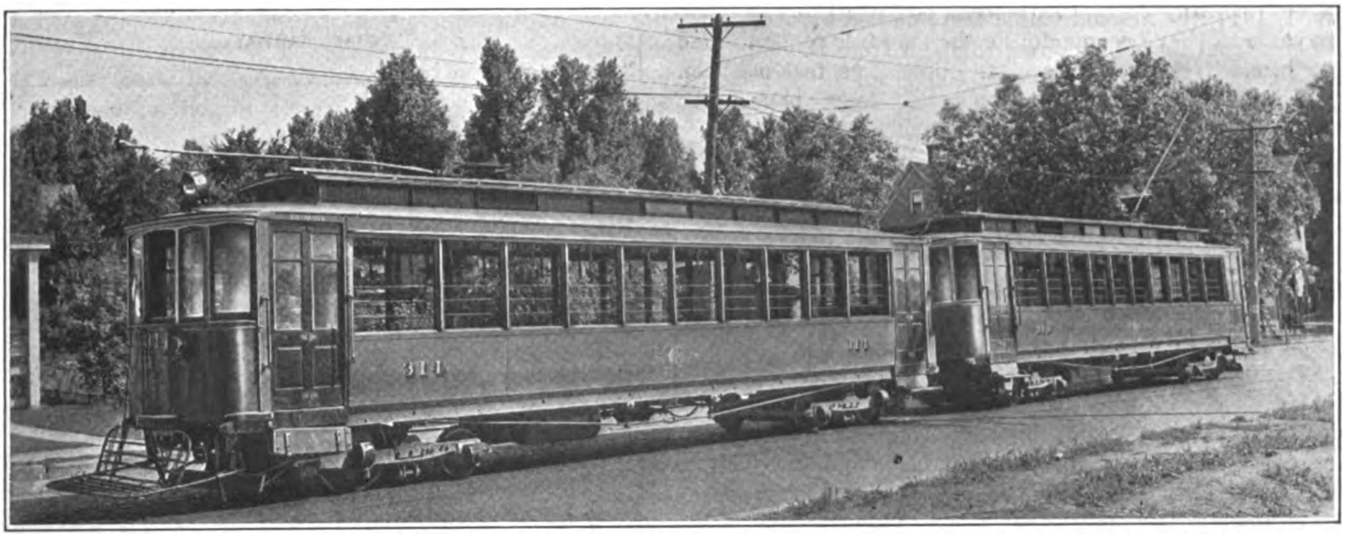
TOTAL A.C. K.W.-HOURS 158,220

D.C. WATTMETER READINGS

Rotary No. 1	9	00										1248											2	76
" No. 2	16	45										4432											12	27
" No. 3	17	45										5800											17	36
" No. 4	17	45										84											17	88
" No. 5	11	40										4563											25	66
" No. 6	11	40										5558											26	81
" No. 7	6	00										6570											17	90
" No. 8	18	15										2000											25	43
KW HOURS PER HOUR	108	50																					146	07 10

TOTAL D.C. K.W.-HOURS 146070 EFF. 92-3 % 146 070

REMARKS:



TWO-CAR TRAIN USED AT DAVENPORT, REBUILT FROM TWO OPEN CARS

Two-Car Train Operation at Davenport

Tri-City Railways Rebuild and Buy Fifty-eight Cars to Handle the Large Increase in Number of Employees in Government Arsenal at Rock Island, Ill.

IN 1916, the United States government arsenal, located at Rock Island, Ill., employed about 3000 men. These employees lived in Davenport, Rock Island and suburbs and 40 per cent of them used the cars of the Tri-City Railways to and from work. This traffic was handled by nineteen special cars arriving at the arsenal at 8 a.m. and leaving again at 4.30 p.m.

In the fall of 1917 the work of increasing the facilities at the arsenal began and by Jan. 1, 1918, the number of employees had increased from 3000 to 9000. This made a serious transportation problem for the Tri-City Railways, as more than 60 per cent of these men have to be handled on the street cars.

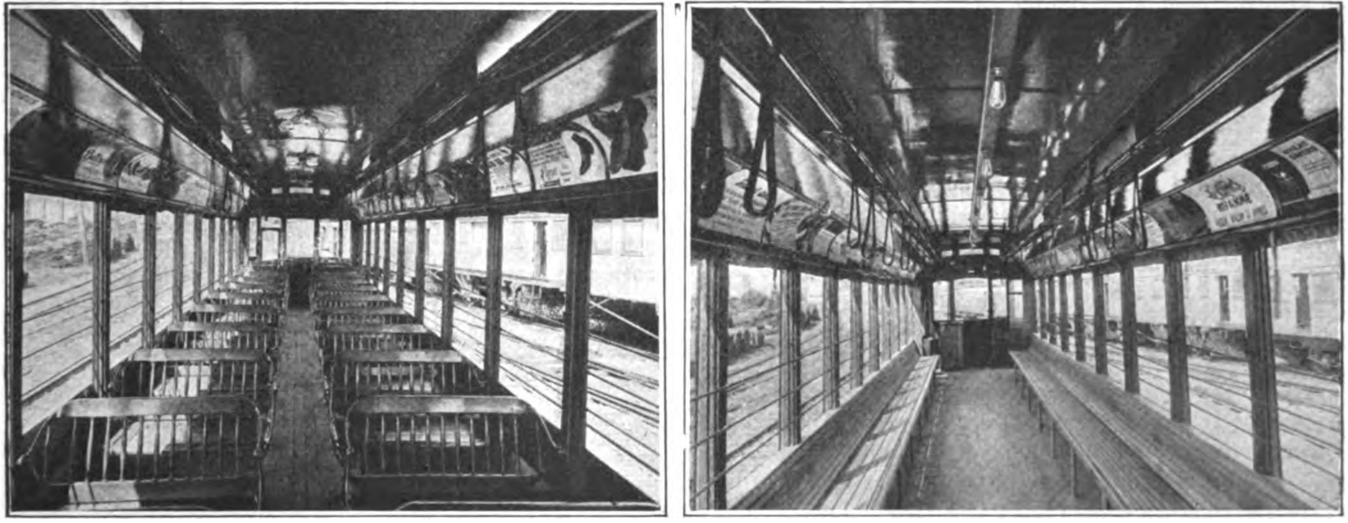
New Track Costs $75,000

The first change which was made was the relaying of the track on the arsenal grounds. This change is shown in the map on page 464. The heavy dotted line indicates the new track construction from point *A* up to Main Avenue, through the heart of the arsenal layout and down to point *B* where it connects with the former track. This new trackage consists of 2.4 single-track miles of 60-lb. T-rail laid on crushed stone ballast. The No. 00 trolley wire is supported by Bates expanded steel poles with mast-arm construction. Double track is laid between points *C* and *D*.

The company installed 1500 ft. of new No. 0000 feeder cable from Rock Island, and 300 ft. of 750,000-circ.mil and 150 ft. of 500,000-circ.mil feeder in the downtown loop district of Davenport. A 400-kw. motor-generator set was transferred from the Rock Island plant to Moline and replaced by a 1000-kw. rotary converter.

All track was bonded by the oxy-acetylene head-weld process, which included the rebonding of track from point *B* to Rock Island. The cost of this new track construction amounted to approximately $75,000.

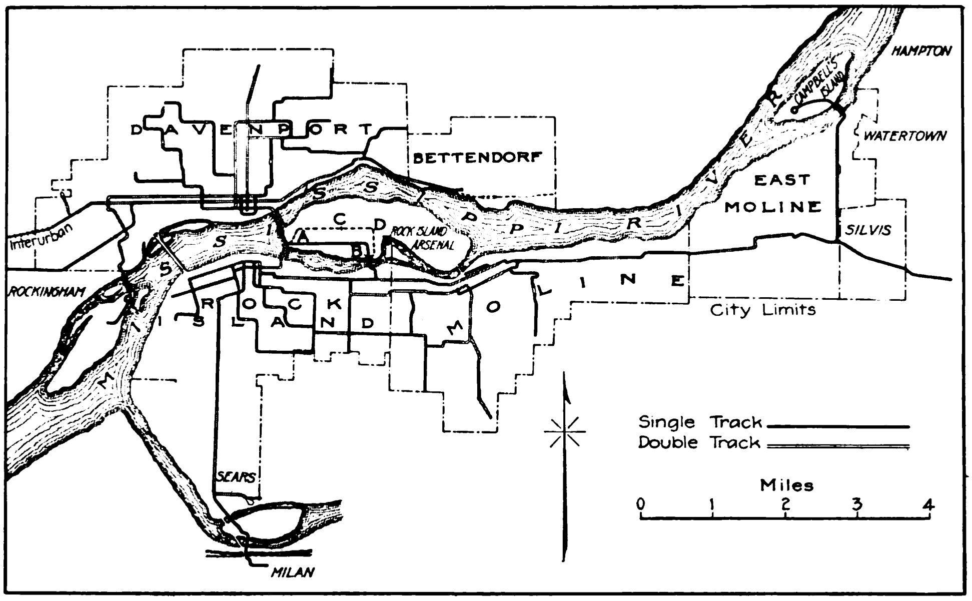
With the completion of the new track layout it was found essential to obtain additional car equipment. On



INTERIOR OF CARS USED IN TWO-CAR UNITS BEFORE AND AFTER INTERIOR REMODELING

Nov. 1, 1917, the arsenal traffic was handled by nineteen cars, six from Rock Island and thirteen from Davenport. These carried 1200 passengers, 400 from Rock Island and 800 from Davenport.

By June 1 the arsenal traffic had been so greatly augmented that thirteen cars now leave the arsenal at 4.30 a.m., seven going to Davenport and six to Rock Island, carrying away the night shift. At 7 a.m. forty-three cars arrive, fifteen from Rock Island and twenty-eight from Davenport. Between 7 and 8 a.m. fifteen-minute service is maintained across the arsenal grounds and from 8 until 5 p.m. thirty-minute service. At 4.30 p.m. eight cars leave the arsenal for Davenport, carrying the construction men who are not government employees, and, therefore, work only eight hours. At 5.15 seven cars, five to Davenport and two to Rock Island, carry out the office force of girls only. At 5.30 forty-two cars, fifteen to Rock Island and twenty-seven to Davenport, take out the day shift, the same cars bringing in the night shift from 5 to 5.15 p.m.



MAP OF TRACK LAYOUT OF TRI-CITY RAILWAY

In the evening the first car leaves the arsenal two minutes after the closing whistle blows and the others follow in rapid succession. It has been a problem to load the men fast enough. Double-end loading of single cars was first tried, but did not prove very satisfactory, and now queue loading has been voluntarily applied by the men. The load varies from eighty-five to 120 passengers per car, averaging 100 per car. This means that 63 per cent of the employees are now using the street cars.

To handle this traffic twelve new standard cars were purchased from the St. Louis and American Car Companies at a cost of $66,000. These were delivered the latter part of 1917. About February, 1918, thirty cars were purchased from the Chicago Surface Lines at a cost of $65,800. Twenty of these had formerly been open summer cars. Before delivery the running boards were removed and steel sheathing put on, so that when received at Davenport the cars appeared as shown in an accompanying view, and their equipment consisted of GE-57, 60-hp. motors, two K-11 controllers and Peckham maximum traction trucks with a 5-ft. wheelbase. Overall dimensions are: Length, 37 ft. 7 in., and width, 8 ft. Because of the shortage of trainmen and the crowded schedule necessary, it was decided to operate this equipment in two-car trains. The controllers were removed and one K-35-G-2 controller was placed on each car. Other changes consisted of removing the bulkheads and installing manually-operated folding doors, changing the cross seats to longitudinal slat seats and the lighting system from four 3-light clusters of 23-watt lamps to eight similar lamps in a single line down the center of the ceiling. There is now a compressor on each car, but both compressors are run on a single governor, and all connections for control, lighting, brakes, etc., are carried between cars by a tube fastened to the drawbar as illustrated. An interior of the cars before and after remodeling is also shown in an accompanying illustration. The cost of rebuilding these cars was $630 per train.

In addition to the rebuilding of the twenty Chicago surface cars, sixteen open summer cars from the Tri-City property are being made over into closed cars with longitudinal seats. This includes the same work as is being done to the Chicago cars, with the addition of removing the running-boards, building up the posts and putting on the body sheathing. Agasote is being used for this in place of steel.

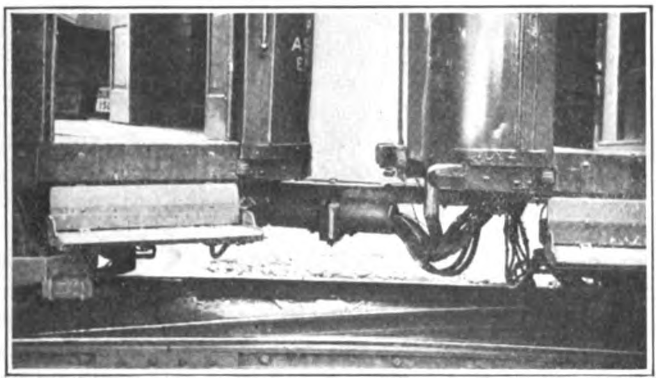
AVERAGE FARE ON ENTIRE PROPERTY IS 4.6 CENTS

Six classes of tickets are being used on the arsenal lines. This non-uniformity has been made necessary partly by government orders, partly because of interstate conditions, etc. The six classes are as follows: (1) First-class 10-cent bridge ticket, which entitles the holder to ride from any point in the three cities to the arsenal. This fare would ordinarily be 15 cents. (2) A special two-coupon ticket purchased only by the government at 5 cents for its employees and good between the arsenal and the loop districts. (3) A ticket good only for transportation across the government bridge and sold at ten for 25 cents. (4) Single-trip arsenal tickets sold for 5 cents to arsenal employees upon presentation of identification card properly signed and good for transportation between the arsenal and certain points in the Tri-Cities. (5) A $2 monthly ticket which entitles the holder to as many trips from any point in the three cities to the arsenal and return as there are weekdays in the month. Provision is made for thirty-one days, Sundays being punched out when the ticket is sold. (6) Cash fares.

ADDITIONAL POWER EQUIPMENT COSTS $650,000

Under former operating conditions, the arsenal took from 400 kw. to 500 kw. from the Tri-City Power & Light Company, while now 2500 kw. is being used. In addition to this there has been an increase of about 1000 kw. as a result of the heavy peak load caused by the arsenal rush-hour service and an increase in commercial consumption, due mainly to the added number of employees at the arsenal, of 25 per cent for the last six months of 1917, and of 25 per cent over that for the first four months of 1918.

To accommodate this large demand for energy, it has been necessary to increase the capacity of the plant 20,000 kw. A 20,000-kw. Westinghouse turbine was added, a new boiler room was built and three 1000-hp. Stirling-type boilers were installed, arranged for a 300 per cent rating. The total expense for this increase in plant capacity has been approximately $650,000.



CABLE CARRIER ATTACHED TO CAR COUPLER

WAGES AND LABOR

The high wages paid for both skilled and unskilled labor at the arsenal have had a disastrous effect upon the labor problem of the Tri-City Railways, and in spite of the four voluntary raises given by the company during the past year there is a considerable shortage of labor.

LETTER TO THE EDITORS

"Depreciation" Is an Impostor Term

NEW YORK, N. Y., Sept. 11, 1918.

To the Editors:

In an article in your issue of Aug. 24, entitled "Some Pitfalls in Regulating Depreciation," John Bauer, of Princeton University, asks:

> Are the reasonable present claims of the investors against the public any different, whatever further depreciation policy may be adopted? Why should investors get more or less whether the sinking fund, or the straight line method be employed? Are they not entitled to a fair return on a fair valuation? Should that not be the same by whatever way depreciation may hereafter be computed?

These words have an impartial sound, but careful reading of the article will disclose that Mr. Bauer holds no brief for public utilities. That he writes from the aloofness of university cloisters is no assurance that he has no interest in municipal ownership.

But what has depreciation to do with municipal ownership? The connection needs to be stated. The greater the amount of depreciation that can be imputed to a property, the less the base of return to the investor, the greater the difficulty in financing maturing obligations and the more likely the bondholders will be to scheme to have the property taken over. The greater the amount of depreciation, the greater will be the proportion of the utility's property which the municipality will claim already belongs to the public on the ground that some part of it is an invested depreciation fund, or assets owned equitably by the public to the extent of the credit to a depreciation reserve which is, or on some vague theoretical grounds ought to be, equal to "accrued depreciation."

Depreciation theories put public utilities on the bargain counter. They propose that the present generation of patrons shall pay more than the actual reasonable cost of their service through compulsory "depreciation allowances," in order that they may be acquired by the next generation at a substantially lower figure than would otherwise have to be paid. Or the depreciation doctrine more frequently asserts that part of the rates collected in the past were really "depreciation allowances" which have been paid out as dividends, and that consequently from a quarter to a half of the utility's property equitably belongs to the public, because it was bought and paid for by patrons of a past generation.

Mr. Bauer's article is a criticism of an opinion rendered by the Colorado Public Utilities Commission, on Oct. 8, 1917, in City of Lamar vs. Intermountain Railway, Light & Power Company, insofar as the commission there ruled that it would make no deduction "for depreciation" from original cost, which was taken as the rate base because original cost and cost of reproduction now would have been practically identical under normal conditions.

To begin with, he is a little unfair to the Colorado commission in questioning the sense of fixing the same basis of return to the investors whether the property is new, up to date and in every way suitable for its purpose, or whether it is old and worn and is extensively obsolete and inadequate. What the commission said is this:

> If in inventorying the property of a public utility, only such property as is in use and useful and in good service condition is included, the fair value of that property, for rate making purposes, may be arrived at without any determination of or deduction for accrued depreciation, provided the annual depreciation requirement is determined and set aside on the so-called sinking fund basis.

The one wise thing the commission did was to rule that no deduction should be made "for depreciation." It did not see its way clear to adopt any of the fanciful theories of valuation which involve confiscation of a substantial amount of property on the score of so-called "depreciation."

40 PER CENT DEPRECIATION FUND NOT NEEDED

But, in ruling that "the annual depreciation requirements will be determined and set aside on the sinking-fund basis," the commission erred. If its ruling shall be carried out to its conclusion, the company will eventually have a sinking fund which will approximate 40 per cent of the value of its property. What for? All the utility needs is provision for the maintenance of its property, which is an amount measured by its actual current requirements. By the new approved steam railroad contract, the government agrees to pay out for maintenance, repairs, renewals, retirement and depreciation such sums as may be necessary to keep the roads in as good condition as when received or to credit the roads with a sum equal to the "average annual expenditure" for that purpose. The theory of the contract is that the average annual expenditure will keep the roads in good condition forever. The government does not agree to accumulate a fund for depreciation or to reimburse the roads for any accruing depreciation, except that final "depreciation" which accrues coincidently with a retirement. The contract does not recognize any obligation to charge for progressive depreciation during the lifetime of railroad units, or any duty on the part of the roads to accumulate such a fund. That idea is right. The government perceives that it is right as soon as it ceases to be a regulator and becomes a manager.

This does not mean that the requirements of each year will always equal the average annual requirements of every public utility. Provision should be made for fluctuations, which will vary in degree among the different companies and will be most pronounced with the smaller companies. Each of the different alleged methods of computing depreciation and of determining amounts to be reserved against retirements, except the replacement method, will result in a greater reserve than necessary for its ostensible purpose. The reserve should be in the nature of a reservoir, into which will flow a uniform annual provision for the maintenance of the property, by renewals and replacements, and against which will be charged the book value of plant and equipment withdrawn from service. The amount of the reserve does not measure depreciation, nor is its function to make good any investment used up in service. It is for retirements, not for depreciation. It is not a partial return of capital, because it is a temporary quantity. There may even be a deficit in years of unusually costly replacements. Because of its transitory nature, the reserve presents to the utility no such hideous opportunity as shocks Mr. Bauer of making a return on more than the investment.

There is but one account in which a public utility can safely (in view of opinions of commissions in other jurisdictions) carry the earnings which it would withhold from distribution, and that is its "Profit and Loss" or "Surplus" account. If it is deemed necessary, for any particular purpose and as a matter of corporate policy, to segregate any of such surplus earnings, care should be taken to identify such segregated amount as a part of the undivided earnings belonging to the stockholders, so that it cannot be construed, on any theory, as a measure of impairment of the investment.

A balance to the credit of the reserve retirement account should not exceed what might be readily demonstrable as necessary for this current purpose. A company which does more than this displays a lamentable grasp of the problem of corporate financing and is in a fair way of having its reserve confiscated on the theory that it is public property. A utility officer who, after reading Mr. Bauer's article, would go ahead accumulating a so-called "depreciation reserve" through his operating expense account, would do so in utter disregard of the interests of the stockholders whom he represents and of the company with which he is but should not be identified.

What Mr. Bauer calls a "depreciation reserve" is actually a guise under which a substantial interest in the property of a utility may be acquired by the public. In his opinion, whether such a reserve is created on the straight line basis or sinking fund basis, if it be invested in plant and equipment (as he recommends that it should be) it must be deducted, in determining the investment upon which the utility is entitled to earn a return. He is quite frank about it, saying that, unless such deduction is made, "the investors will get a return also on the depreciation funds, contributed by consumers, through the rates paid for the service." He would be only a little more frank if he discarded the term "depreciation fund" and came out flat-footedly for a "partial piecemeal purchase fund."

Certainly, it goes without saying that no public utility cares to engage in the kind of partnership which Mr. Bauer's depreciation reserve involves, nor, for that matter, is there any public sentiment whatever favorable to the piecemeal purchase of public utilities by consumers through the return paid for the service. Such a plan, openly announced, would be rejected forthwith. It is only because of their apprehension that such a fate would befall it, if thus boldly announced, that its proponents camouflage it with the jargon of so-called "theoretical depreciation."

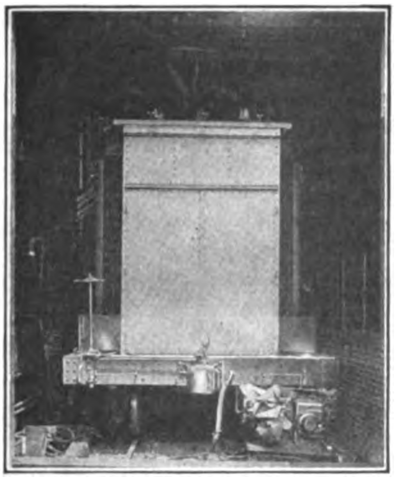
"DEPRECIATION" IS A POOR TERM

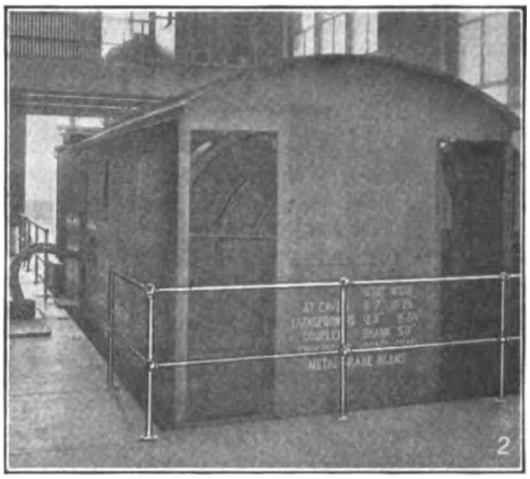
The word "depreciation" is too hazy to use in the terminology of a public utility. Without listing the dozen or more meanings which have been ascribed to it by more or less authoritative bodies, it is interesting to note that when the Interstate Commerce Commission tried recently to explain what Congress meant by "depreciation," in the railroad valuation act, it gave the word two different and inconsistent meanings on the same page of its opinion (Texas Midland case, p. 49) viz: "exhaustion of capacity for service," which is something physical, and "decline in value," which is something social and not physical at all.

"Depreciation" is a distorted and meaningless word. It is an impostor term. To the demagogue, it means anything he may wish it to mean, or he may use it as if it meant something when he has no idea of what he means. To one who seeks underlying principles of economics and sound finance, it means nothing at all. It should be discarded altogether.

There should be substituted for it an accounting title which will describe the intent and purpose of an account designed to carry, temporarily, the amounts provided for the maintenance of the property by renewals and replacements. Then, as stated, the provision for this purpose should not, by being excessive, furnish a basis for an attack by professional depreciationists seeking to impair the investment in plant and property devoted to the public service. LOUIS L. G. BENEDICT.

The Standard Oil Company has issued to its foremen some practical hints for the prevention of accidents, which have been reprinted by the National Safety Council. They are these: (1) Be fair. (2) Make few promises and keep them. (3) Don't waste anger—use it. (4) Always hear the other side. (5) Don't hold spite, forgive. (6) Never show discouragement. (7) Notice good work as well as bad. (8) Watch for special ability. (9) Take your full share of blame. (10) Prevent accidents.





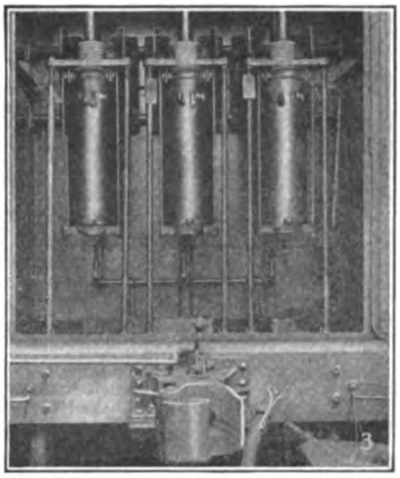


FIG. 1—TRANSFORMER END AND HIGH-TENSION CONNECTIONS. FIG. 2—PORTABLE SUBSTATION IN OPERATION AT HILLSIDE SUBSTATION. FIG. 3—VIEW OF OIL CIRCUIT BREAKER END

Largest Portable Substation Yet Produced

Long Island Railroad's 1500-Kw. Portable Substation Used in Parallel with Permanent Substations to Help with Excessive Loads or as Separate Substation

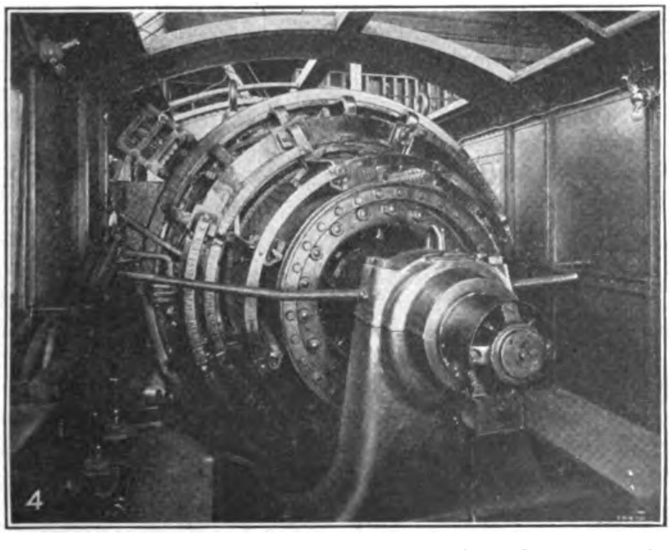
BY B. H. LYTLE
Power Department, Westinghouse Electric & Manufacturing Company

THE possession of a portable substation places a road in the enviable position of being able to render practically instant relief or assistance to other stations that may be temporarily put out of commission or called upon to carry a load beyond their capacity. Direct current can be obtained from the portable substation on very short notice, as its production involves only transferring the substation to the desired location, and connecting to the high-tension line.

The Long Island Railroad has the largest portable substation yet produced. It has a normal capacity of 1500 kw. and contains a 1500-kw., 650-volt direct-current, 25-cycle Westinghouse rotary converter; three 500-kva. combination oil-insulated self-cooled and air-blast single-phase, 25-cycle outdoor transformers; complete switching equipment and auxiliary apparatus. The transmission voltage is 11,000, but the substation is arranged for operation on 33,000 volts, which may be used in the future. The car is constructed for both indoor and outdoor service.

Many manufacturing difficulties were encountered due to restriction of the over-all dimensions of the car. The length was limited to 38 ft. since the permanent substations are equipped inside with railroad sidings of this length on which the portable substation is located when operating in multiple with the permanent units. The width and height were restricted by traffic regulations, the maximum width permissible being 10 ft. With these limitations the greatest possible capacity was required; and in addition, the apparatus had to be so distributed as to leave plenty of space inside the car for proper attention to the converter and switching apparatus.

The transformers presented the most difficult problem. In order to bring the height and floor space within the required limits, forced air cooling had to be provided to supplement the self-cooling properties of these units. A small motor-driven fan, housed inside the main cab which also contains the converter and switchboard, supplies the air. This is discharged into a duct surrounding the lower part of the transformers, where baffle plates and guides so direct it that an even distri-



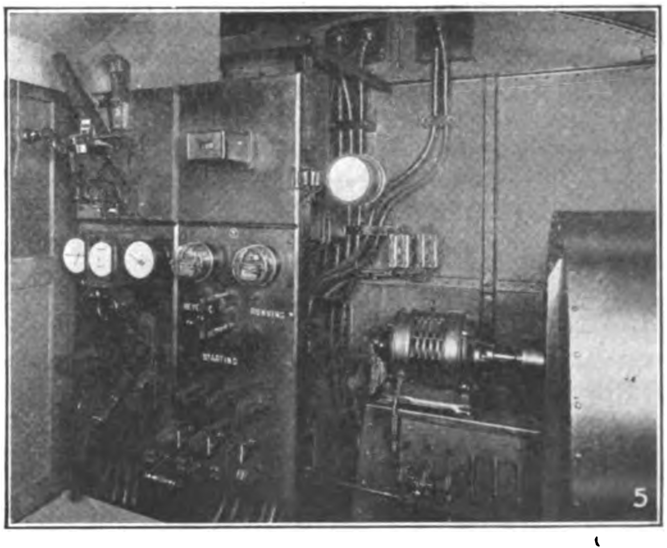
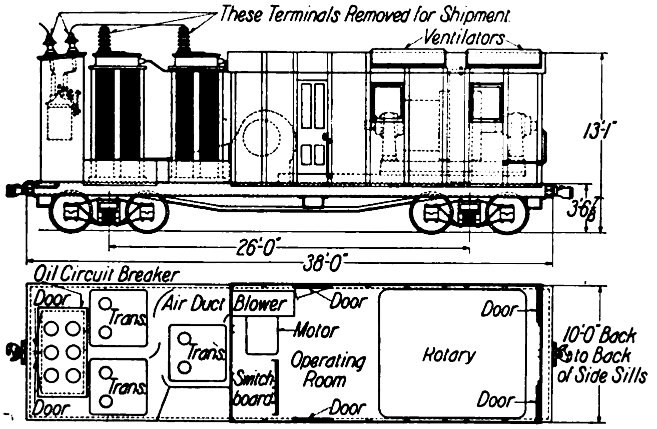


FIG. 4—VIEW OF CONVERTER SECTION. FIG. 5—CONVERTER SWITCHBOARD AND MOTOR-DRIVEN FAN

bution is obtained on all sides. The air is forced from the duct up between the corrugations, and although the duct is only 18 in. high at its lowest point, the air is carried to the top of the transformers. The normal radiation of the cases is thereby increased more than 25 per cent permitting a material reduction in the size of the tanks.

The converter is entirely standard in construction with the addition of a leveling device, the function of which is to keep the machine level in case the car is standing with its floor at an angle. Ventilation is provided by four trapdoors in the roof of the cab, each door being provided with a water-tight removable cover which is kept in place during outdoor operation. When the covers are removed, as they are for indoor service, a total opening of 75 sq.ft. is provided. Holes through the floor inside the converter bedplate provide ventilation in addition to the air which enters the doors and window.



GENERAL ARRANGEMENT OF APPARATUS IN PORTABLE SUBSTATION

ROOF OVER CONVERTER IS BUILT WITH REMOVABLE SECTION

To permit the converter to be placed in the car or removed from it, the roof of the cab over the machine consists of a removable section built upon a framework, so that it can be raised without injury. To indicate the closeness of the spacing, it may be noted that there was but ⅜-in. clearance on each side between the converter bedplate and the eaves of the car when the machine was being lowered into position.

The switching equipment practically follows the standard used for portable substations, except that instead of using Burke horn-gap high-tension switching, this car is provided with an oil circuit breaker, located in a separate housing at the end of the car opposite from the main cab. This arrangement permits of the high-tension current entering at one end of the substation and passing through the transformers, the final production of direct current by the converter being at the other end. The direct-current terminals are located at each side of the car in order more conveniently to make connections with the direct-current bus of the permanent station.

The apparatus is arranged so as to concentrate all available space near the center of the car to provide room for the operator; thus sufficient space is provided so that four or five men can be with the operator without interfering with his work.

CAR IS OF HEAVY AND RUGGED CONSTRUCTION

The car was built by the Railway & Industrial Engigeering Company and is of the most rugged construction. The frame is built with a solid box girder extending the entire length of the car. The girder is reduced to 12 in. over each truck, but at the center is 24 in. deep. The cross-bearers are so located that they relieve the ¼-in. steel floor of the support of the heavy equipment. Although the car is arranged so that jacks can be used at each corner to steady it during operation, it has been found that the method of supporting the equipment and the manner in which it is balanced give operation which is practically free from vibration without the use of the jacks.

The Long Island Railroad has its permanent substations constructed with a railroad siding entering each building. When one of these stations is about to be subjected to a long period of overload which is beyond the capacity of its converting apparatus, the portable substation is conveyed into the building, connections are made to the high-tension line, and the converter is paralleled with the permanent units. In like manner the portable substation is available to take the place of any permanent unit which may be temporarily out of commission. It can also be conveyed to any desired point along the railroad where the high-tension current is available and used as a separate substation during rush hours or holidays.

Collapsible Trolley Pole With Automatic Disconnecting Attachment

WITH the idea of preventing the trolley wheel from striking or catching in the overhead construction when it leaves the wire Jules Redon, engineer of the railway system at Lyons, France, and formerly chief of materials and traction of the Paris railway at Arpajon, has invented a collapsible trolley pole. It is made of two tubes which are held together by two bands or rings. Each tube carries one of these rings permanently fastened to the end of it, and is so mounted that the other tube can slide through this ring. When the pole is in the extended position it is locked by a clutch which acts on the lower ring. A cord connects the trigger of this latch to a collar mounted at the trolley base, and whenever the pole starts to rise this trips the clutch and frees the upper tubular element of the pole. The tubular element thus being released slides down the lower part giving a shorter over-all length so that it will not interfere with the overhead construction. A spring is provided to start the sliding together of the poles and when once started the upper part continues by its own weight. To restore the pole to its normal length it is only necessary to pull sharply on the trolley cord and to reset the clutch.

While a trolley pole of this type would probably not be favored for use in this country, due to its many parts and the liability of pitting action from carrying current, this particular type has been tried for several years on cars of the Paris railway at Arpajon and has given good results.

Line Truck on Ford Chassis Gives Efficient Service

Denver Tramway Builds a Truck with Hand-Raised Tower for $1,100—The Weight Complete Is 3850 Pounds

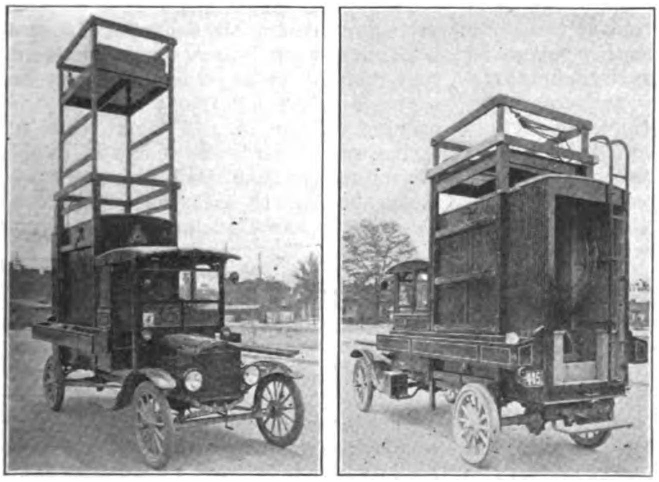
ALL of the overhead maintenance work and a large part of the overhead construction on the Denver Tramway System has been taken care of during the past two years by a 1½-ton line truck with a McCardwell tower. It was lately realized, however, that this truck could not handle the work of periodically overhauling all of the overhead lines to insure a safe condition, and in May of this year a 1-ton Ford worm-gear-driven chassis was purchased.

Due to a shortage of labor and the large amount of work being handled in the wood shops of the company, bids were received from outside contractors for the building of a suitable body designed by the company, as shown in an accompanying illustration. It was intended to have wire gates at the rear and to have the tower raised by a set of worm gears located under the body of the truck. About $125 was saved, however, by having an old set of hoisting gears fitted up and mounted on the rear end of the chassis. The wire gates at the rear were omitted and an iron ladder was mounted for access to the tower. The final cost of the truck complete was as follows:

One-ton Ford chassis, f.o.b. Denver	$648
Designing of body	50
Body complete	265
Painting	75
Miscellaneous	62
Total	$1,100

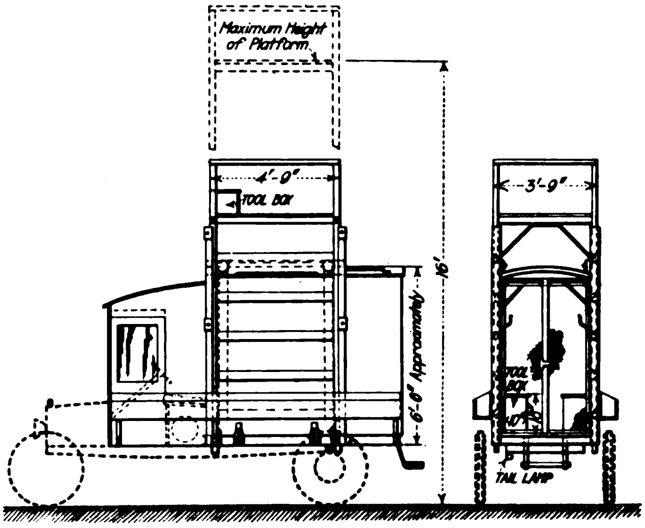
The chassis weighs 1500 lb., body 1550 lb., and the weight of the truck complete with tools and materials is 3850 lb. Three men comprise the crew, and as the truck is designed for a capacity of 4500 lb. it is never overloaded.

A 6-volt 80-amp.-hr. battery furnishes current for the side and tail lights, but the main headlights are run from the magneto, thus obviating the chance of having the battery run down and being obliged to travel without lights. A buzzer over the driver's head with push button on the platform for signaling and a receptable on the platform for plugging in a small portable lamp are also connected to the battery. These are improvements over the 1½-ton truck which is equipped with an oil torch for night work and a bell cord and motorman's signal bell for signaling. Two small mirrors are provided, one at the side to enable the driver to see traffic approaching from the rear and the other at the top of the wind shield to permit the driver to watch the linemen at work.



NEW ONE-TON LINE TRUCK FOR DENVER TRAMWAY

A Dayton Universal mechanical starter was installed on the new truck, and will materially cut down on the expense of operation as compared with the 1½-ton equipment. During 1917 an average of 3.38 miles per gallon of gasoline and an operating cost, not including gasoline and driver, of 0.3067 cent per mile were obtained with the 1½-ton truck. The cost is excessive, but may be explained by the fact that when overhauling lines the driver, not wishing to be cranking the machine all the time, made it a practice to allow the engine to run continuously while the car remained standing, and the total distance traveled might not exceed 2 miles per day. It is expected that with the starter the new truck will give an average of about 7 to 8 miles per gallon of gasoline with an operating cost of not more than 0.15 cent per mile. These figures are based upon the service rendered by several trucks of the same type in other departments.



ORIGINAL DESIGN FOR ONE-TON LINE TRUCK ON FORD CHASSIS

The new type of line truck has more room for tools and materials than does the 1½-ton truck, and both the tools and the men are kept dry going to and from work during stormy weather. The small cab windows in the front are removable, giving good ventilation in warm weather. A framed blueprint showing what materials and tools are to be carried is mounted in a convenient location in the truck, so that there is no excuse for any shortage of equipment. Broken or defective tools are replaced at the storeroom. Small tools used in changing gears, switches, crossings, etc., are carried in a tool box on the top platform and two pairs of small blocks are also carried on the top hooked into rings fastened to the railing of the platform.

The stability of this truck is much better than might be expected, and while not equal to that of the heavier 1½-ton truck, is a great deal better than the old horse-drawn type of line wagon.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE · PERSONAL MENTION · CONSTRUCTION NEWS

Amalgamated on Women

Ruling of the Executive Board on This Matter Stated in Letter to Local Division

The position of the Amalgamated Association of Street & Electric Railway Employees of America on the question of employment of women as conductors on electric railways was fully defined by the general executive board at the regular semi-annual meeting, held at headquarters, Detroit, Mich., Aug. 19-23, 1918. The policy of the association on this question, as laid down by the general executive board and approved by W. D. Mahon, international president, is defined in the following letter issued to all local divisions of the association:

TEXT OF LETTER

"The members of the general executive board of your association have had before them the question of the employment of women as conductors by the various street railways with which we have contracts. You are aware that the question of employing women as conductors was brought up by some of the companies as soon as the government declared war, and before a man had left our shores for Europe some companies were advocating that women be employed as conductors. Your association opposed this proposition, claiming that the time had not yet come for the employment of women as conductors upon the street and electric railways of America. These early agitations on the part of the companies for the employment of women were, in our opinion, an attempt upon their part to use women in order to reduce wages and demoralize, if possible, our organization. However, the situation has changed and many of the companies are now claiming that it is impossible to continue the operation of their cars unless we allow women to be employed.

CAR NO PLACE FOR A WOMAN

"We still contend that the position of conductor of a street or electric railway car is not the place for a woman, and that she should not be put in that position unless it becomes absolutely necessary. But in order to remove any criticism that may be placed upon our association, or any wrong impression that may be given the government as to the attitude of our association, we hereby instruct all of our local divisions as follows:

"That if it is necessary, during the period of the war, that women be employed as conductors on the cars, they be accepted into employment as follows:

"1. Where women are employed as conductors they shall be employed and enter the service the same as men were employed.

"2. They shall take their seniority, starting at the foot of the extra list and working up the same as men would work up in the employment.

"3. They shall be entitled to the same guarantees, the same wages and conditions that the men are entitled to.

"4. They shall, when employed on systems that require permits to be taken out, take their permits for membership in the organization the same as the men take permits.

"5. That when women do enter the service they shall become members of the organization, being entitled to the same protection, benefits and conditions that men are entitled to, coming under the working conditions and provisions of the agreement in the same manner."

Will Help on Questionnaire

To aid its employees in compiling their draft questionnaires, the Philadelphia (Pa.) Rapid Transit Company on Sept. 10 established a bureau at 1242 Land Title Building, that city, under the supervision of Ellis Ames Ballard, general counsel for the company, with C. B. Fairchild in charge.

In a statement to heads of departments, T. E. Mitten, president, said that the attitude of the transit company toward the new draft law "must be one of highest patriotism."

"The company, as well as its employees, must recognize the fact that the demand for man power to prosecute the war will come before all other considerations," Mr. Mitten stated.

"It will also be in order at this time to inform you that the Philadelphia Rapid Transit Company is an essential industry, the best evidence of which is the fact that the government has, during the past few months, advanced upwards of $4,000,000 to enable the company to improve and maintain transportation service to the important Government plants located here, and the management of the company will take proper steps to protect its men who are essential to the maintenance of good service from being transferred to other lines of industrial employment.

"Military service must come first. At the same time, essential industries must render effective assistance. Our men who secure deferred classification or are not called into active military service, should not leave their essential jobs with the Philadelphia Rapid Transit Company to seek service in other industries."

Women to Continue

Arbitrators in Cleveland Decide Upon This Course Pending Their Final Report on Question

H. B. Deihlman and Miss Margaret Russanowska, detailed by the Federal Secretary of Labor to investigate the necessity of employing women as conductors on the Cleveland (Ohio) Railway, announced on Sept. 9 that the women employed in this capacity may continue to hold their places during the investigation. One of the demands of the union was that they should be dismissed temporarily pending decision upon the main question.

INTEREST OF PUBLIC FIRST

In announcing their decision, the government agents said that the interests of the traveling public demand that the women shall remain at their posts until the main issue is settled. They said the withdrawal of the women at this time would cripple the service.

J. J. Stanley, president of the railway, announced that 115 women are now employed as conductors and that as many more are in training. The ruling of the government agents, he said, means that the rush-hour trips for the accommodation of the war workers will be continued.

The investigators began their work on the question of the permanent need of employing women on Sept. 10. They said that this subject will be held primarily in view, but at the same time their investigation would include general labor problems. It is expected that a thorough examination will be made of the rights of both the company and its employees, as they relate to the employment of labor.

ARBITRATION AGREED TO SEPT. 4

The agreement to submit the dispute to two representatives of the Federal Department of Labor for adjustment was reached by the company and the representatives of the union on the evening of Sept. 4, and the threatened strike was averted. Secretary of Labor Wilson named H. B. Deihlman and Miss Russanowska to act as mediators. They arrived in Cleveland on the morning of Sept. 5.

A. L. Faulkner, representative of the Federal Department of Labor in the Cleveland district, was instrumental in bringing about this plan of settlement. Mr. Faulkner contended that the question involved did not warrant a strike, as an investigation as to the need of employing women on the cars could be made while they were at work as well as if they were temporarily removed.

In Class Two Under Priority Order

Electric Railways and Manufacturers of Railway Apparatus Placed There by War Industries Board

Electric railways, electric light and power plants and other public utilities and plants engaged principally in manufacturing equipment for railways and other public utilities are all included in Class II in the preferential list of industries and plants compiled by the priorities division of the War Industries Board and made public on Sept. 9.

PREFERENTIAL LIST THE MASTER-KEY

The preference list of industries and plants is the master-key governing the flow of basic industrial elements to the industries essential to the war program. It supersedes all previous listing. It is the basis for industrial exemption from the draft and may be regarded as the governing factor in the distribution of labor, capital, facilities, material, transportation and fuel.

The priorities division has grouped major industries according to their relative importance into four great classes, consideration being given in this grouping to these factors: (1) Intrinsic importance of the product for use during the war and the urgency; (2) necessity for maintaining or stimulating and increasing the total quantity of production; (3) proportion of the capacity of the industry or plant devoted to the production of essential products. Each industry or plant is given a class number.

The inclusion of the industries and plants on this preference list does not operate as an embargo against all others, but the effect is to defer the requirements of all other industries and plants until the requirements of those on the preference list shall have been satisfied. The paramount purpose of priorities is the selective mobilization of the products of the soil, the mines and the factories for direct and indirect war needs in such a way as will most effectually contribute toward winning the war.

In listing industries as such or individual plants, while a number of factors are taken into account, the ultimate test is: To what extent, if at all, will according preference contribute directly or indirectly toward winning the war; and, if at all, how urgent is the need.

ALL PRIORITY RELATIVE

A high priority classification does not always mean that the product of the industry of plant so classified is of greater intrinsic importance than those of industries and plants in a lower classification or not appearing at all on the preference list, but that taking into account the urgency of the demand and the relation of supply to demand, it is in the public interest that the artificial stimulus of priority should be applied. All priority is relative and implies purposeful discrimination.

The decisions of the priorities board are subject to review only by the chairman of the War Industries Board and by the President.

For the guidance of all governmental agencies and all others interested in (1) the production and supply of fuel and electric energy, (2) in the supply of labor, and (3) in the supply of transportation service by rail, water, pipe lines or otherwise, in so far as such service contributes to production of finished products, preference list No. 2 has been adopted by the priorities board superceding preference list No. 1 adopted on April 6, 1918, and all amendments and supplements thereto.

The industries and plants grouped under Class I are only such as are of exceptional importance in connection with the prosecution of the war. Their requirements must be fully satisfied in preference to those of the three remaining classes.

Requirements of industries and plants grouped under Class II, Class III, and Class IV are to have precedence over those not appearing on the preference list. As between these three classes, however, there is to be no complete or absolute preference. The division into classes is for the purpose of presenting a composite picture of the relative importance of the industries and plants embraced within each group. It is not intended that the requirements of Class II shall be fully satisfied before supplying any of the requirements of Class III, or that those of Class III shall be fully satisfied before supplying any of those of Class IV. The classification does, however, indicate that the industries and plants grouped in Class II are relatively more important than those in Class III and that those in Class III are relatively more important than those in Class IV. It will often happen that after satisfying the requirements of Class I the remaining available supply will be less than the aggregate requirements of the other three classes, in which event such supply will be rationed to the industries and plants embraced within those classes. In determining a basis for such rationing the relative importance of each industry and plant, according to its class rating, must be considered. It has been found impracticable to prescribe for rationing purposes any general and uniform rule or formula, but the priorities board will from time to time, after conference, and in co-operation with each of the several governmental agencies charged with the distribution thereof, determine particular principles, values and methods of application which may be followed in allocating fuel, power, transportation and labor respectively, to the end that proper recognition and weight may as far as practicable in each case be given to the relative importance of Class II, Class III and Class IV.

Each plant listed as such shall not later than the fifteenth of each month file with the secretary of the priorities board, Washington, D. C., a report on P. L. Form No. 3 (a supply of which will be furnished on application) covering its activities during the preceding month. Any plant failing to file such report will be dropped from the preference list.

Priorities in the supply and distribution of raw materials, semi-finished products and finished products shall be governed by Circular No. 4 issued by the priorities division of the War Industries Board under date of July 1, 1918, and all amendments and supplements thereto or substitutes therefor.

No Referendum in Cincinnati

There will be no referendum vote on the revised franchise ordinance granted the Cincinnati (Ohio) Traction Company by the City Council. That was the decision of representatives of the citizens' committee, the city and the company at a conference in Mayor Galvin's office on Sept. 6. The proposition came from W. J. Schultz, chairman of the referendum committee of the citizens' committee. He first agreed to withdraw the committee's plan for a referendum vote on condition that Mayor Galvin issue a proclamation that the rate of fare will not exceed 6 cents during the period of the war and for one year thereafter. The Mayor said he could not issue such a fiat guarantee as that, since he could not tell what conditions will prevail after the war, but that he would issue such a proclamation with the following limitation: "Assuming that substantially normal pre-war conditions will be restored."

W. Kesley Schoepf, president of the Cincinnati Traction Company, urged all parties to get together on an agreement, after this proposition was made. He said: "Don't let us leave the building to-night without arriving at a solution that will be satisfactory to every one. There is no difference in principles between the company and its employees. They maintain that they are entitled to more pay. We admit that their position is justifiable. The only question is what amount of increase shall be granted, and I am sure that we can arrive at an agreement. Mr. Schultz's proposal suggests a solution, and I feel sure that it can be reached before the day is over. Let us recess for an hour and work out something that will be acceptable."

Representatives of the parties interested met during the recess suggested by Mr. Schoepf and formulated an agreement that was later adopted. This, it is believed, will do away with any further delay in an adjustment of the wage scale and it will put the company in a position to take care of its business with a certainty that it will receive proper protection. The revision continues over a period of thirteen years.

Seattle Matter Unsettled

The city of Seattle, Wash., through Mayor Hanson and the City Council has definitely refused to agree to the proposition offered by the United States Shipping Board representatives in Seattle, providing for the unification of the lines of the Puget Sound Traction, Light & Power Company, Seattle & Rainier Valley Railway and the municipal railway system, the operation of the lines by a committee composed of a representative each of the three interests, 6-cent fare for a straight ride, and 7-cent fare where transfers are required.

In refusing the offer, the city states that such a step would be illegal, and also that the joint operation of the cars by a committee in which the city would be the minority is inexpedient. The city, on the other hand, has sent to the officials of the Puget Sound Traction, Light & Power Company, its ultimatum in regard to the traction situation, demanding that the company accept the city's offer to lease its railway lines and equipment during the period of the war, and thus provide satisfactory service to the city.

The Puget Sound Traction, Light & Power Company and the Seattle & Rainier Valley Railway were prompt in accepting the offer of the Shipping Board to operate the railway lines under the plan suggested.

The Mayor and the City Council, in answering the communication of the Shipping Board, state that such a move as proposed would be illegal, and that the city is asked to assume authority which it does not possess, but which rests with the Public Service Commission, such as the granting of permission to increase fares, and delegation of authority to control the affairs of the municipal street railway. The city urges that the Shipping Board direct the railways to accept the solution offered by the city, namely, that of leasing the traction lines.

Wages Increased in New York

Increased wage scales for employees of the Interborough Rapid Transit Company, New York, N. Y., and of the New York Railways were made public on Sept. 10 by Theodore P. Shonts, president of both companies. The total increases granted the 22,000 employees of the companies aggregate $3,750,000 a year. Of this amount $2,500,000 goes to the 15,000 employees of the Interborough Company, and the remainder is divided among the 7,500 employees of the Railways Company. The average increase in wages amounts to 20 per cent.

In announcing the higher wages, Mr. Shonts said that they were granted in anticipation of receiving authorization to charge more for fares on all of the lines of both companies, which include the elevated, subway, and surface roads. He added that the expenses of operating railroads this year would probably be one-third more than last year.

News Notes

Next Winter's Snow.—Earl Godwin in his column in the Washington *Times* of Sept. 9 says that next winter's snow is bound to fall and recommends to the local executives that they paste in their hats the second paragraph from the editorial on snow fighting on the first reading page of the ELECTRIC RAILWAY JOURNAL for Aug. 31 and that they act on the advice.

Winnipeg to Arbitrate.—In connection with the demand of the union of employees of the Winnipeg (Man.) Electric Railway for increased rates of pay, viz., hour rates of 47 cents for the first three months' service; 55 cents for the next nine; 60 cents after the first year; time and a half for overtime, with the day as at present of nine hours, the committee announced on Sept. 3 that it had no desire to involve Winnipeg in the annoyance and general inconvenience of a strike, and with the object of amicable settlement it was decided by the union and the company to submit the matter to arbitration.

Michigan Men to Arbitrate.—Following a session on Sept. 1 of the joint advisory board of the trainmen of the Michigan Railway at which a proposition to submit the question of the legality of the findings of the arbitration board in the wage dispute to Messrs. Taft and Walsh, of the Federal War Labor Board, was presented by J. F. Collins, general manager of the company, it was decided to accept the plan. The trainmen, dissatisfied with the wage award of the arbitration board, had given notice to the company that unless some action was taken on their demands for more pay they would strike. The men asked that the question be submitted to the War Labor Board.

Capital Traction Increases Wages.—The Capital Traction Company, Washington, D. C., has followed the lead of the Washington Railway & Electric Company and has agreed to raise the wages of the men to a minimum of 43 cents and a maximum of 48 cents an hour. The present maximum is 38 cents. J. H. Hanna, vice-president and general manager of the Capital Traction Company, said a few days ago that the increase had been agreed upon but that the conferees of the union and the company were still considering certain matters of working conditions, which prevented an agreement on the whole. Whether or not his company would join the Washington Railway & Electric Company in a request for an increased fare, he said, was a matter that awaited the complete adjustment of the labor matters.

Wages and Fares Coupled in St. Louis.—A request for more wages made on Aug. 27 by employees of the United Railways, St. Louis, Mo., was refused on Sept. 4 by President Richard McCulloch, who wrote a letter to Anthony O. Piant, president of the employees' union, in which he gave the company's reasons. Mr. McCulloch says it would be futile to submit the wage matter to the National War Labor Board as that body has announced that it has no authority over revenues or rates of fare. He suggests that the association join with the company in presenting all the facts to the State Public Service Commission whenever that commission considers the present application of the company, so that the commission may be fully informed and may be in a position to pass both upon the fairness of the wages and the fairness of the rates of fare.

Short Strike in Champaign.—After a two-and-a-half day strike, precipitated by trainmen in the employ of the Urbana & Champaign Railway, Gas & Electric Company, service was resumed in Champaign and Urbana, Ill., on Sept. 5 pending consideration of a proposition to be submitted by the company within fifteen days from resumption of service. A portion of the employees of the company, which is included in the Illinois Traction System, are members of the Amalgamated Association and made demand on Aug. 28 for a number of concessions, including a "closed shop," nine-hour day, and wage scale of from 44 cents to 48 cents an hour, to replace the current scale from 32 cents to 36 cents an hour. Without notice the members of the organization failed to report for duty on Sept. 3. The company made no effort to run its cars, and Champaign and Urbana were without service for two and a half days.

Lexington Company States Its Case.—The Kentucky Traction & Terminal Company, Lexington, Ky., has given out a statement reviewing the refusal of the union to accept Mr. McElroy, the umpire appointed by Governor Stanley. This statement concludes as follows: "Under the agreement signed three years ago, it was stipulated that at the expiration of the present contract, which expired this July, if the company and the union could not reach an understanding, any controversy arising should be settled by arbitration, the company and the union to select an arbitrator and the Governor to name an umpire in case the representatives of each side failed to agree on the terms for a renewal of the contract. Mr. Sutherland (president of the union) was then a member of the executive committee, which signed that agreement, and the company stands ready to live up to it to-day, but the action of the arbitrator for the union and of President Sutherland in declining to enter into arbitration looks as if the union does not respect the provisions of that agreement."

Financial and Corporate

St. Louis Also Hit

Burdens of Higher Operating Costs Overwhelmed the Revenue Gains in 1917

The United Railways, St. Louis, Mo., is another company whose increases in operating costs in 1917 outran the gains in revenue. As shown in the accompanying statement, the passenger revenue for 1917 showed an increase over 1916 of $490,167 or 3.92 per cent. Other transportation revenue, however, decreased $403.57 or 1.34 per cent, while revenue from other railway operations decreased $5,497 and non-operating income increased $12,113. The gross operating revenue and other income gained $496,379 or 3.90 per cent.

COMPARATIVE INCOME STATEMENT OF UNITED RAILWAYS OF ST. LOUIS FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation	$13,038,622	99.3	$12,548,859	99.3
Revenue from other railway operations	86,937	0.7	92,434	0.7
Gross operating revenue	$13,125,559	100.0	$12,641,293	100.0
Current operating expenses	$7,625,827	58.1	$6,953,124	55.0
Depreciation	1,575,067	12.0	1,516,955	12.0
Taxes	853,161	6.5	821,684	5.5
Total	$10,054,055	76.6	$9,291,763	73.5
Income from operation	3,071,504	23.4	3,349,530	26.5
Non-operating income	94,702	0.7	82,588	0.6
Gross income	$3,166,206	24.1	$3,432,118	27.1
Interest and miscellaneous charges	2,523,230	19.2	2,544,613	20.1
Net income	$642,976	4.9	$887,505	7.0

Operating Expenses Up $730,814

The operating expenses (including depreciation) increased $730,814 or 8.63 per cent compared with 1916. Interest charges decreased $21,383 or 0.84 per cent, owing mostly to the retirement of $1,000,000 of St. Louis & Meramec River Railroad 6 per cent bonds which matured on May 8, 1916, and $299,000 of Southern Electric Railroad 5 per cent bonds which matured on Aug. 1, 1916.

The amount of money paid out in wages was $4,668,366, or 35.57 per cent of the gross operating revenue. The current operating expenses were $7,625,827, as compared with $6,953,124 in 1916, an increase of $672,702 or 9.67 per cent. The increases were as follows:

Way and structures	$44,234
Equipment	145,444
Power	105,522
Conducting transportation	274,437
General and miscellaneous	110,468
	$680,106
Less—decrease in traffic expense	7,403
Net increase	$672,702

The increase in operating costs is ascribed to the increase in wages. the rate of pay having been increased twice during the year, to the increase in the price of coal, the price averaging 53 per cent higher than in 1916, and to an increase in the price of all materials used in the operation and maintenance of the property. It is roughly estimated that of the increase in operating expenses, $350,000 was due to increase in rate of wages, $100,000 to increase in price of coal, and $200,000 to increase in price of supplies.

The total capital expenditures during 1917 were $293,495, with offsets of $158,340 for property retired or sold, leaving a net increase of $135,134. The car mileage in 1917 was 444,076,753 car miles as compared with 43,649,328 car miles in 1916. The passenger totals in the two years were 403,300,696 and 389,112,152 respectively. The percentage of revenue passengers using transfers in 1917 was 53.60, and the average fare per ride was 3.23 cents. The 1916 figures were 53.77 per cent for transfers and 3.23 cents for the average fare per ride.

Suspends New Security Offerings

The Capital Issues Committee, in Washington, has adopted a resolution announcing that during the period from Sept. 15 until after the close of the Fourth Liberty Loan campaign it would not pass upon any application respecting the sale or offer of new securities, excepting applications which the committee might regard as "urgently necessary."

Investment houses, brokers, corporations and others offering unsold portions of security issues heretofore passed by the Capital Issues Committee are asked to withdraw the same from public offering or solicitation during the period from Oct. 1 to the close of the Liberty Loan campaign. The committee announces that this action "is not intended to restrict counter sales or sales of listed securties made in ordinary course of business on stock exchanges."

Principal In Default

Eastern Power & Light Corporation Unprepared to Meet Collateral Trust Notes Maturing Sept. 1

Holders of the 7 per cent collateral trust notes of the Eastern Power & Light Corporation, New York, N. Y., due on Sept. 1 and the 5 per cent convertible gold bonds of that company which matured on March 1, 1918, have been asked to deposit their holdings with the Equitable Trust Company, New York, N. Y., under an agreement which makes provision for their exchange in return for negotiable certificates of deposit.

Personnel of Bond Committee

A bond committee consisting of O. B. Willcox, who is chairman of the board of the company; H. E. Cooper and H. C. Rorick has been formed. On March 1, 1918, an issue of $2,327,000 of 5 per cent gold bonds matured and their extension was provided for in the hope that some relief could be obtained from the War Finance Corporation. Ninety-two per cent of the bondholders exchanged their holdings for 7 per cent collateral trust notes due on Sept. 1, which the company in turn found itself unable to meet on maturity.

A stockholders' protective committee consisting of W. P. Bonbright, chairman; W. S. Barstow and George C. Lee has also been formed and holders of preferred stock and voting trust certificates for the common stock are asked to deposit their holdings with the New York Trust Company and receive in exchange transferable certificates of deposit.

In a letter summarizing the situation, J. B. Taylor, president of the company, points out that during the six months ended June 30 operating costs have been mounting out of all proportion to revenues. The cost of supplies has increased more than 100 per cent, and wages have risen 50 per cent in the last two years, half of the increase coming in the last six months. Further increases in operating costs can be expected in the future, according to Mr. Taylor.

$900,000 of Floating Debt

The company has a floating debt of $900,000 which must be met soon. This was incurred in making advances to subsidiary companies for extensions and improvements and is secured by notes of these companies. With some readjustments, Mr. Taylor believes some of the subsidiaries (power and coal companies) are capable of earning their own fixed charges and a surplus sufficient to meet fixed charges of the parent company.

Among the properties controlled by the company are the Reading Transit & Light Company, Oley Valley Railway, Neversink Mountain Railway, Claremont Railway & Lighting Company, Claremont, N. H., and the City Railway, Wheeling, W. Va.

Chicago Financial Program

Proposals for Readjusting Capitalization of Unified Companies Under Pending Resettlement Franchise

Considerable interest attaches to the financial provisions of the Chicago traction ordinance, summarized in the Aug. 24 issue of the ELECTRIC RAILWAY JOURNAL. While several steps are yet to be taken before the measure is certain of becoming effective, the extent of the financial program, involving the raising of about $500,000,000 during the life of the franchise, makes the plan unusually striking.

CAPITAL ACCOUNT $220,114,428

The recognized capital account of the combined surface and elevated companies as of June 30, 1916, is $220,114,428, and the present outstanding securities will have to be scaled down to this figure except for allowances for additions to capital approved during the past two years. The pending franchise provides that securities for 60 per cent of this valuation may be in the form of bonds with an interest allowance of 5 per cent, and the balance shall be covered by debentures having no lien on the properties and subject to payment from the proceeds of sale to the city. These debentures are to bear interest at 8 per cent up to July 1, 1932, and 7 per cent thereafter.

The Chicago Railways on Jan. 31, 1918, had outstanding bonds amounting to $96,241,465. There was also $100,000 of capital stock subject to 265,100 participation certificates of the predecessor company. It is expected that $55,655,000 of first mortgage bonds and $16,397,800 of Series A bonds will be fully taken care of under the city's guarantee. More than 84 per cent of the $16,936,475 of Series B bonds are also within the valuation and subject to working out of details which practically place the entire issue in a guaranteed position in the event of the city not purchasing the property. The Series C bonds, $903,336, will all be retired by the operation of a sinking fund. As to the remaining bonds, it is expected that if the city does not purchase the property and thus stop the income return on the agreed valuation, they will be subject gradually to retirement through amortization.

INTIAL RETURN 6.2 PER CENT

Under the old ordinance the life of all securities ended in 1927. The new franchise will give an average return of 6.2 per cent up to 1932 and 5.8 per cent thereafter. This guarantee is understood to assure full payment of 8 per cent on Series 1 participation certificates and approximately 3 per cent on Series 2 up to 1932. After that date both series will automatically disappear. Series 3 and 4, which have had no return under the present ordinance, will also be valueless under the proposed measure.

The Chicago City Railway had on Jan. 31, 1918, $33,900,000 of first mortgage bonds and $18,000,000 of capital stock. Of the latter, 94 per cent is pledged with the trustee of the Chicago City & Connecting Railways Collateral Trust. The Chicago City Railway bonds will have an assured guarantee as to principal and interest under the new franchise. The Chicago City & Connecting Railways issue of $21,456,000 of bonds will also be taken care of in full. The $25,000,000 of 4½ per cent preferred certificates of Chicago City & Connecting Railways stand to earn up to 1932 better than $3.50 a share and after that date better than $2.50 a share in perpetuity or until city purchase. The common certificates of $15,000,00 probably would have no value.

The Chicago Elevated Railways have a recognized valuation of $70,943,020 included in the total given above. The securities of the four elevated railway companies are held by the Chicago Elevated Railways Collateral Trust. The $14,000,000 of two-year notes of this voluntary association and the $7,000,000 of ten-year debentures, together with the floating debt, come within the agreed valuation. It is expected also that the $16,000,000 of preferred stock will receive up to 1932 a return of 4 or 5 per cent. After that date there will be a less return. It is not likely that the $25,000,000 of common stock will have any value under the new arrangement.

It has been stated that no effort will be made to agree upon a plan for the distribution of the new securities as between the various companies until after voters shall have passed upon the new ordinance at the referendum next November.

Receiver for Paducah Properties

Acting upon a petition brought by W. F. Bradshaw, of the Mechanics' Trust & Savings Bank, as trustee, upon failure of the Paducah Traction Company to meet interest on bonds of the People's Railway, Light & Power Company, Circuit Judge W. M. Reed has named Roscoe Reed as receiver for the Paducah Light & Power Company and the Paducah Traction Company.

The receiver has requested A. S. Nichols, present manager, to continue the operation of the properties pending further developments. The appointment of a receiver was not unexpected and is the direct result of conditions due to the war, attending the operation of the companies. High cost of material and labor, together with slender revenues, combined to force operation at a loss.

After a long fight the traction company was recently granted a 6 and 7-cent fare, but the added revenue proved insufficient to balance the increased cost of operation.

12 Per Cent Increase in Revenue

Kansas City Fare Increase Figures for First Four Weeks of Operation Show Interesting Facts

As has previously been announced in the columns of this paper, the Kansas City (Mo.) Railways began the collection of a 6-cent fare in Missouri on July 15. The accompanying figures present the statement of earnings beginning on that date and covering a period of four weeks. An analysis shows that, as compared with the week before the increase was put into effect, that being considered an average week as to earnings, etc., there was for the average of the four weeks a decrease in adult passengers amounting to 568,917 or 6.7 per cent and an increase in total cash fares equal to 11.5 per cent.

STATEMENT FROM KANSAS CITY RAILWAYS FOR WEEKS BEGINNING MONDAY, JULY 15, TO AUG. 11, 1918, COMPARED WITH WEEK BEGINNING JULY 8, 1918

	—Adult Passengers—		Passengers Carried on 2½-Cent Tickets			—Total Cash Fares—			
Week Ending	Weeks Since Increase	Week Before Increase	Weeks Since Increase	Week Before Increase	Passengers Affected by Increase	Since Increase	Week Before Increase	Per Cent Increase Week 7/8 to 7/14/'18	Per Cent Increase Over Week 7/16 to 7/22/'17
					MISSOURI				
July 21......	2,011,857	2,132,528	56,190	55,433	1,995,217	$121,949	$108,214	12.69	11.49
July 28......	1,967,914	2,132,528	55,795	55,433	1,946,053	119,251	108,214	10.20	9.02
Aug. 4......	2,012,971	2,132,528	59,641	55,433	1,990,262	122,042	108,214	12.78	11.57
Aug. 11.....	1,968,453	2,132,528	53,250	55,433	1,946,671	119,220	108,214	10.17	8.99
Total......	7,961,195	8,530,112	224,876	221,732	7,878,203	$482,463	$432,857	11.46	10.26
					KANSAS				
July 21......	483,135	443,690	5,444	5,746	242,936	26,722	22,328	19.68	23.04
July 28......	451,983	443,690	5,512	5,746	240,382	25,140	22,328	12.70	15.87
Aug. 4......	451,800	443,690	5,528	5,746	239,673	25,124	22,328	12.53	15.69
Aug. 11......	452,786	443,690	5,520	5,746	227,206	25,049	22,328	12.19	15.34
Total......	1,839,704	1,774,760	22,004	22,984	950,197	$102,037	$89,312	14.16	17.48

The fare increase has not been applied to Kansas City, Kan., riders who do not cross into Missouri, of whom the report shows there are 52 per cent, and there has been an increase in adult passengers in Kansas amounting to 3.7 per cent with a total increase in cash fares equal to 14.2 per cent—2.7 per cent more than in Missouri, where the 6-cent fare applies.

The increase in passengers in Kansas was found to be made up from part of the decrease in Missouri, the explanation being as follows: There is employment for a large number of men a few blocks from the State line on the

Missouri side. The majority of these laborers live on the Kansas side, and have, of course, been in the habit of paying fares in Kansas going to their work, and in Missouri going home at night. Since the introduction of the increase in fares, all cars going from Kansas to Missouri have been stopped at the State line and the extra cent collected by special collectors. Many of the laborers, some actuated by a saving instinct, but the majority probably feeling antagonistic toward the increase, got off at the State line and walked to their work, and in the evening walked to the State line before boarding the car. This took a number of fares away from the Missouri side and added them to the Kansas side. The outcome of this development may be indicated by the first column under the Kansas figures, which shows that the increase in adult passengers dropped from 8.9 per cent the first week to 1.9 per cent the second week. The remainder of the decrease in traffic on the Missouri side is attributed only in small part to a direct result of the fare increase, it being believed that severe weather conditions, a steady depletion of the riding man-power of the city, and several other local conditions, have exerted a greater influence.

The average increase in total cash fares for the four weeks period for Kansas and Missouri combined is approximately 12 per cent.

Financial News Notes

Public Sales of Notes Successful.—The Wisconsin Gas & Electric Company, Milwaukee, Wis., has recently sold $200,000 of five-year 6½ per cent notes over the counter and principally to its customers. These notes were issued in denominations of $50, $100, $500 and $1,000.

Car Bonds Authorized.—The public utilities committee of the Council of Seattle, Wash., recently voted to recommend the passage of the ordinance transferring $217,000 from the general fund for the purchase of cars for the municipal street railway, notwithstanding the veto of Mayor Hanson.

Abandonment Opposed.—Property owners of the Tal-Coe addition to the city of Temple, Tex., have organized for the purpose of opposing the removal of the tracks of the railway that serves that addition. This line forms a part of the Texas Traction Company, but the company ceased operating cars several months ago, and preparations had been made to remove the tracks.

Another Abandonment Planned.—The Fishkill (N. Y.) Electric Railway on Sept. 7 filed with the Public Service Commission of the Second District of New York notice that it has declared in favor of the abandonment of certain parts of its line as no longer necessary for the successful operation of the road and convenience of the public. The commission will order a hearing on the proposed abandonment of that part of the road in question.

Commission Approves Philadelphia Loan.—The Pennsylvania Public Service Commission has approved the contract between the Philadelphia Rapid Transit Company and the United States Housing Commission by which the Federal government, through the commission, will lend the company $1,740,000 to extend transit facilities for workers in war industrial plants. As outlined in the ELECTRIC RAILWAY JOURNAL for Aug. 17, page 303, the money will be used to purchase ninety additional cars and accessories.

Abandonment Meeting Called.—A special meeting of the stockholders of the Forty-Second Street, Manhattanville & St. Nicholas Avenue Railway, New York, N. Y., (Third Avenue Railway System) is to be held Sept. 24 for the purpose of ratifying the action of the board of directors in declaring abandoned the franchises to construct, maintain and operate street surface railrods in, upon and along certain streets, avenues and highways in the Borough of Manhattan, city of New York.

Wants $750,000 Issue.—The Eighth Avenue Railroad, New York, N. Y., a subsidiary of the New York Railways, has asked the Public Service Commission for the First District for authority to issue certificates of indebtedness for $750,000 for the purpose of discharging outstanding certificates issued in January, 1914. The company says in its application that it would not be able to pay off the certificates falling due, but expresses the hope that it will be able to meet the new ones before they mature. It is proposed to have the new certificates carry 6 per cent interest, payable semi-annually and to mature on Feb. 1, 1929.

Minneapolis Road to Resume.—Resumption of operation of the cut-off of the Minneapolis, Northfield & Southern Railroad from Auto Junction to Short Line Junction and thence over the Electric Short Line terminals to the station at Second Avenue N and Seventh Street in Minneapolis is planned as well as continuation of operation from Fifty-fourth Street station to Northfield. This was determined at the first meeting of stockholders in Minneapolis. J. H. Ellison, Minneapolis, temporary president, was elected to that office. The new directors are: H. A. Whittier, Northfield; W. F. Roche, Lakeville; John B. Irwin, Richfield, F. T. Day, Waseca; R. H. Benham, Orchard Gardens; W. O. Winston, J. H. Ellison, W. L. Harris, C. C. Wagner, A. D. Walker, Julius Rosholt, Minneapolis. Mr. Whittier was elected vice-president of the company, and Mr. Winston was chosen to fill the position of treasurer.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$77,978	*$48,825	$29,153	$19,884	$9,269
1m., July, '17	71,350	*41,322	30,028	18,794	11,234
12m., July, '18	917,483	*547,003	370,480	235,094	135,386
12m., July, '17	861,585	*490,717	370,868	222,633	148,235

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., July, '18	$145,541	*$115,479	$30,062	$32,017	†$1,955
1m., July, '17	139,345	*90,573	48,772	29,835	18,937
12m., July, '18	1,558,279	*1,379,122	179,157	369,556	†190,399
12m., July, '17	1,337,254	*932,375	404,879	357,145	47,734

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

1m., July, '18	$321,805	*$219,666	$102,139	$56,166	$45,973
1m., July, '17	320,953	*240,374	80,579	47,540	33,039
12m., July, '18	4,230,224	*3,063,517	1,166,707	624,337	542,370
12m., July, '17	3,781,218	*2,541,200	1,240,018	535,959	704,059

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY GRAND RAPIDS, MICH.

1m., July, '18	$1,793,536	*$1,218,365	$575,171	$506,737	$68,434
1m., July, '17	1,586,891	*958,491	628,400	445,400	183,137
12m., July, '18	20,996,644	*13,987,285	7,009,359	5,709,642	1,299,717
12m., July, '17	18,355,019	*10,773,757	7,581,262	5,138,542	2,442,720

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period	Oprating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$313,326	*$193,763	$119,563	$71,342	$48,221
1m., July, '17	308,571	*183,736	124,835	66,823	58,012
12m., July, '18	3,146,389	*2,169,782	976,607	851,150	125,457
12m., July, '17	3,019,819	*1,983,379	1,036,440	812,510	223,930

EAST ST. LOUIS & SUBURBAN COMPANY, ST. LOUIS, ILL.

1m., July, '18	$377,497	*$270,935	$106,562	$67,445	$39,117
1m., July, '17	314,202	*219,015	95,187	64,757	30,430
12m., July, '18	3,927,213	*2,862,830	1,064,383	804,305	260,078
12m., July, '17	3,418,246	*2,173,588	1,244,658	768,991	475,667

GRAND RAPIDS (MICH.) RAILWAY

1m., July, '18	$109,280	*$83,945	$25,335	$19,340	$5,995
1m., July, '17	113,390	*75,897	37,493	16,348	21,145
12m., July, '18	1,281,980	*950,427	331,553	229,874	101,679
12m., July, '17	1,302,532	*868,007	434,525	208,316	226,209

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m., July, '18	$659,379	*††$415,669	$243,710	$190,901	$52,809
1m., July, '17	511,624	*279,043	232,581	177,586	54,995
12m., July, '18	6,965,845	*††4,318,193	2,647,652	2,169,015	478,637
12m., July, '17	5,727,598	*3,093,915	2,633,683	2,169,583	464,100

* Includes taxes. † Deficit. †† For the month $19,781; and for twelve months, $310,293 included for depreciation.

Traffic and Transportation

Brooklyn Wants Ten Cents

Would Divide Surface Railway System into Two Five-Cent Zones and Reduce Transfers

New passenger tariffs filed with the Public Service Commission for the First District of New York on Sept. 10 by the Brooklyn Rapid Transit Company divided the surface lines of the company into two zones with a 5-cent fare for each zone or a 10-cent fare for a ride in both zones. They also called for a modification of the transfer system so that transfers would be confined to each zone. The plan provided for the operation of the new schedules in thirty days, but the commission, at a meeting held on the evening of Sept. 10, issued an order deferring the new schedules for sixty days. In the meantime the commission will hold public hearings beginning on Sept. 30 to determine whether to accept or reject the new plan.

FARE AUTHORIZED BY FRANCHISE

Accordingly, the petition of the surface companies sets forth that in the tariffs filed they have "followed the decisions and opinions of the commission, as expressed in the fare case hereinabove referred to, and each of said tariffs imposes no rate of fare in excess of that authorized to be charged by the franchise agreement between municipal governments and each of your petitioners respectively and by law. In many instances the said tariffs do not impose as high a rate of fare as your petitioners respectively are authorized to charge by such contracts and law."

The petition calls attention to the injurious effects of the order of 1911 upon revenues, the increased costs of transportation occasioned by the order, the war and other causes, and the diminished and confiscatory rate of return permitted by said order and existing conditions. It refers to the companies' previous request of May 23, 1917, for a partial modification of that order and asserts that the relief then sought for "is entirely insufficient to enable your petitioners properly to maintain and adequately to operate their properties, or to get any adequate return therefrom under existing conditions."

REVENUE FIGURES PRESENTED

The petitioners refer to the financial statements indicating the falling off in revenues on surface lines and the increased cost of transportation, and add:

"Since the close of the fiscal year on June 30, 1918, the passenger receipts of your petitioners have fallen off upward of $400,000 below the passenger receipts for the same period of the preceding year, while the operating expenses are constantly increasing, as indicated in the evidence before you, to which you are respectfully referred. Since Aug. 2, 1918, wages of employees have been raised to rates which will represent an additional yearly expenditure of considerably more than $1,000,000. This situation cannot continue without financial embarrassment and additional public inconvenience.

"Additional relief to that herein sought will be required, and this is being requested in an application before the Board of Estimate & Apportionment for the right to increase the unit of fare from 5 to 7 cents; but your petitioners ask as a measure of immediate justice the relief involved in the application hereby made, which is within the legal power of the commission to approve."

Under the new tariffs transfers will continue to be issued at about fifty-seven locations.

Court Hears Columbus Case

Federal Judge D. C. Westenhaver, of Cleveland, heard arguments in the legal fight between the Columbus Railway, Power & Light Company, Columbus, Ohio, and the city of Columbus during the week ended Sept. 7. The company has, as already stated, increased its rate of fare to 5 cents and is endeavoring to have its franchise abrogated, on the ground that the terms of the grant are confiscatory and that the company cannot operate under them without encountering financial trouble.

J. S. Clark, representing the E. W. Clark Management Company, operating the road, contended in court that the franchises granted in 1901 merely give the company the privilege of operating on the streets and that they may be terminated at any time by ceasing operation. On certain streets the company claims perpetual franchises, but on others it has only rights.

Henry L. Scarlett, city solicitor, accused the company of unfairness. He said that it was willing to operate during the prosperous years when profits were considered satisfactory, but wanted to surrender its rights when profits failed to materialize. He also claimed the company had failed to furnish the city with an appraisal of its plant, as requested. Judge David C. Pugh said the company sought to tear up it agreement with the city when it suited the company to do so.

It is said that a few people continue to ride without paying fare.

Only Legislature Has Power

In Matter Involving Tacoma's Seven-Cent Fare United States Attorney Holds Legislature Has Power

United States Attorney Robert C. Saunders on Sept. 5 stated in an opinion rendered upon request of the Attorney General at Washington, D. C., that the 7-cent fare now being charged in the city of Tacoma, Wash., by the Tacoma Railway & Power Company, is not legal.

OPINION BASED ON STATE LAW

Prosecutor Saunders' opinion is based on the State law, which says that fares in cities in Washington never shall be more than 5 cents, and also upon a decision of the State Supreme Court which says that the power to increase such tariffs is vested in the Legislature. Mr. Saunders expresses the same belief as that of Mayor Hanson of Seattle in his answers to proposals by the Puget Sound Traction, Light & Power Company to increase fares in Seattle to 6 or 7 cents.

Prosecutor Saunders stated that the Attorney General at Washington had also asked for an opinion from the United States Attorney of Oregon on the advance in city railways in Oregon.

It is stated by Mr. Saunders that the Attorney General asked for his opinion upon a request from Postmaster General Albert S. Burleson, who recently received a letter from Alice Thorsen, who is a well-known club woman of Tacoma, raising the question of the legality of the advanced fares in Tacoma. Miss Thorsen expressed the belief that the Government was being defrauded through the demand being made upon letter carriers for extra fare on Tacoma cars. Mr. Saunders said in part:

"Street car companies desiring to raise their rates in this State must seek their relief from the Legislature. The power to advance such rates does not rest with the city, the Public Service Commission or with the courts.

SAYS STATE LAW IS PLAIN

"The State law is plain. Section 25 of the Public Service Commission law, passed by the Legislature in 1911, says fares never shall be more than 5 cents for one continuous ride in any city in the State. This and other related matters last spring were tested in the courts. In the case of the State ex rel the Tacoma Railway & Power Company, the Supreme Court on April 7, 1918, held that the remedy for relief from franchise obligations on an application for increased fares, that it might give adequate and sufficient service, rests with the Legislature."

The 7-cent fare in Tacoma was authorized by the City Council on July 6. It was decided that the matter was one of a war emergency and should be put on that basis. The principal features of the ordinance were reviewed in the ELECTRIC RAILWAY JOURNAL for July 20, page 130.

Increases in North Carolina

Review of Fare Conditions in That State as They Affect the Railways There

A report from the North Carolina State Committee to the National Committee on Public Utility Conditions, Washington, made under date of Aug. 15, announced the following increases in fares:

Many Cities Affected

Tidewater Power Company, Wilmington, N. C., 7-cent cash fares and four tickets for 25 cents. Company may sell seventeen tickets for $1 effective latter part of June, 1918.

Carolina Power & Light Company, Raleigh, N. C., 7-cent cash fares and four tickets for 25 cents, with discretionary privilege of selling seventeen tickets for $1.

The Southern Public Utilities Company, Winston-Salem, N. C., 7-cent cash fares and four tickets for 25 cents, with discretionary privilege of selling seventeen tickets for $1.

The Southern Public Utilities Company, Charlotte, N. C., 7-cent cash fares and four tickets for 25 cents, with discretionary privilege of selling seventeen tickets for $1.

The Durham Traction Company, Durham, N. C., 7-cent cash fares and four tickets for 25 cents, with discretionary privilege of selling seventeen tickets for $1.

None of the companies is selling seventeen tickets for $1.

The increases were granted by the State Corporation Commission.

The Carolina Power & Light Company, Asheville, N. C., has eliminated all cut fares, and is on a strictly 5-cent cash fare basis. This was arranged locally at Asheville.

The North Carolina Public Service Company, operating in Greensboro, High Point, Salisbury-Spencer, and Concord, has eliminated all reduced rate tickets, and is operating on a 5-cent cash fare basis, pending a decision on its appeal for a 7-cent fare.

Two Small Companies Stay Out

This leaves the small companies at New Bern and Goldsboro as the only ones which have made no move for relief. Goldsboro is quasi-municipal. These cities only operate two or three one-man cars. In Gastonia the Piedmont & Northern Railway, which operates there, has obtained permission to charge 7 cents.

R. L. Lindsey, vice-president and general manager of the Durham Traction Company, chairman of the North Carolina committee, says that company's application for additional revenue included an appeal for relief from ordinances requiring the operation of cars with two men and fixing certain other standards. Its appeal to the commission in these respects resulted in a memorandum to the effect that the company should be allowed to operate on a schedule dependent on the amount of traffic and need for service in different parts of the city. The commission also said that it did not think that operation with two men should be insisted on in time of war. The city authorities have not repealed the ordinance, but since the fare hearing they have made no further attempts to interfere with the orderly operation of the company.

As noted previously in the Electric Railway Journal there was little or no opposition to the fare increases before the State Commission by the different city authorities affected.

Wants Increase on County Lines

The United Railways, St. Louis, Mo., applied to the Public Service Commission of Missouri on Sept. 4 for authority to increase the fares on its St. Louis County and St. Charles lines. It did not ask for a specified amount. It is said that the commission probably can entertain jurisdiction in these applications because Circuit Judge John G. Slate's judgment setting aside the 6-cent fare in the city upon the ground the commission exceeded its authority in granting them is not applicable to the county lines.

Providence Fare Hearing Sept. 16

The Public Utilities Commission of Rhode Island will on Sept. 16 begin its investigation into the new fare schedule filed by the Rhode Island Company, mention of which was made in the Electric Railway Journal of Sept. 7, page 434. When filed, the new rates were to go into effect Sept. 15, but the commission has ordered them suspended until Nov. 15, pending the investigation.

At the last session of the General Assembly the present zone system was adopted after much controversy, and was ordered into effect. The same law gave to the Utilities Commission authority to modify the system and regulate rates. Under that authority the company believes it has a right to increase fares if it can show necessity.

The present zone system established a 5-cent zone in Providence having a radius of about 2½ miles. Beyond that, zone limits were fixed approximately every 2 miles, and the fare in each of these outside zones was 2 cents for a through passenger, with a minimum of 5 cents as fare in all cases.

Under the new schedule filed the 5-cent zone in Providence is reduced in radius to about 2 miles, and the outside zones, while left practically the same in size, would be 5-cent zones instead of 2-cent zones.

The first point to be settled at the hearings, it is expected, is whether the company can raise fares under the law, and if that is found to be legal, the point will come up concerning the shifting of zone limits, which are named in the law. With the preliminaries out of the way, the procedure throws upon the Rhode Island Company the burden of proving that the new rates are reasonable and just.

2200 Women Workers

This Number of Women in Use on Brooklyn System in All Branches of Service

T. S. Williams, president of the Brooklyn (N. Y.) Rapid Transit Company, in the recent annual report of the company, commented as follows on the use of women by the company:

"In common with other railroad systems our companies have found it necessary to employ large numbers of women to do work formerly undertaken by men. While some mistakes have been made in selection, such as would naturally occur at this inception of any experiment so radical, it must be said for the great majority of women who have sought these new occupations that they have shown themselves to be efficient, faithful and above reproach.

"There are approximately 576 women now employed as guards on the subway and elevated trains; 252 as conductors on surface lines; 120 in light shop work, and 173 as car cleaners and porters. For a great many years women have been employed as ticket agents, and we have 1150 now acting in that capacity. The employment of women has presented some new problems, particularly with reference to suitable accommodations at depots and shops, and in respect to medical and moral supervision, but these problems are being solved.

"In no class of work in which women are engaged do the duties require unusual physical effort. There is no discrimination against them in the matter of compensation, and the wages paid are considerably in excess of what similar women have heretofore received or been able to get in their previous occupations. To many of them such occupation has been a great boon, for it enables them to support themselves and their families, while husbands or other family wage earners are fighting. Had it not been for the readiness of women to fill these places street railroad service would have been much more seriously handicapped during the past year."

Objects to One-Way Operation

An ordinance has been introduced in the City Council of Portland, Ore., providing for the routing of vehicular and electric railway traffic one way in the district between Taylor, Oak, Front and West Park Streets. The pedestrian traffic will not be regulated by legislation, but educational propaganda will be used in an effort to force the people to observe traffic officers' instructions. F. I. Fuller, vice-president of the Portland Railway, Light & Power Company, maintains that the plan would involve an expenditure of between $40,000 and $50,000 on the part of the company. He also objects to the plan on the ground that the company would lose one-half of track area now in use, and that the additional cars forced on one-way tracks would result in congestion.

Selling Transportation in Dallas

Conductors and motormen operating the cars of the Dallas (Tex.) Railways have orders to stop and wait for persons running to catch a car if such person is within reasonable distance. This order was issued by Richard Meriwether, general manager. Mr. Meriwether said:

"If a car gets under way, the motorman and conductor are not supposed to stop it to take on other passengers, but if either the motorman or the conductor sees a person coming to catch the car and the person is not too far away, it is the duty of the car crew to wait under most conditions. They are to use their best judgment under such circumstances. Sometimes a car will be late and the motorman can not afford to hold his car for the person to reach it. It depends somewhat, too, upon whether there are many cars running on the line. In cases where a person would be obliged to stand and wait ten or twelve minutes for another car to come along the motorman or conductor usually tries to wait for the passenger.

"In the downtown section it is frequently not practicable to hold cars to suit the convenience of persons approaching to board them. The car stops at an intersection, for instance, and takes on the passengers waiting there. The traffic officers turns his sign so as to permit the forward movement of the car. The motorman must move his car onward unless he is actually taking on passengers, for if he does not do so the traffic sign is soon turned the other way and the car is delayed two or three minutes, perhaps Of late we have shortened up schedules on some lines, thus reducing the running time. This has made it necessary to keep the cars moving without unnecessary delays. The public can assist us in having rapid transit in Dallas, if the people make it a point not to lose time in boarding cars and in alighting from them. Persons, as a rule take much more time in getting on cars than is necessary. If they would get on the cars promptly and then promptly move into them and get their seats, making room for those following them, the time lost would be greatly reduced."

I. C. C. Authorizes Increases

Authority to increase fares was granted by the Interstate Commerce Commission on Sept. 11 to a number of suburban and interurban electric railroads, the advances asked for by the roads being reduced in nearly every case. The orders include:

Union Traction Company, Coffeyville, Kan., increase not to exceed 2.6 cents per mile between Parsons and Coffeyville and Nowata, Okla., and intermediate points. The company asked for 3 cents a mile.

Alton, Granite & St. Louis Traction Company, Alton, Ill., increase to 2½ cents per mile plus Mississippi River bridge fare. The company asked for 3 cents a mile.

East St. Louis & Suburban Railway, East St. Louis, Ill., increase of 1 cent in the 10-cent fare between St. Louis and East St. Louis, Ill., and nearby points in Illinois.

Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., an increase in local fares to 2.6 cents per mile between Kansas City and Lawrence, Kan., and intermediate points. Three cents had been asked for.

The commission is also reported to have authorized the Aurora, Elgin & Chicago Railroad to increase its passenger rates 25 per cent.

Planning Cleveland's Subway System

The Cleveland (Ohio) Rapid Transit Commission on Sept. 10 approved a contract with Barclay Parsons & Klapp, New York, for a survey and preliminary engineering work in preparation for the construction of the proposed underground terminal and subway in that city. One of the questions the firm will be called upon to consider is the direction the growth of the city will take in the future, for the commission desires to plan in the first construction work for the extensions that are to be made later. The engineer will begin then on Oct. 1. The contract price for their services is $35,000.

Owl Car Receipts Fall Off

Figures submitted by the New York (N. Y.) Railways to the Public Service Commission for the First District of New York in announcing that it intended to cease operating surface cars from midnight to 6 o'clock in the morning, show that during the fiscal periods from 1913 to 1918, inclusive, the receipts from sixteen of the lines fell off a total of $1,867,088.

The only line which did not disclose a substantial decrease in returns was the Eighth Street line, where there was an increase of only $1,011 during the six-year period, or an average annual increase of only $168.

This table shows the comparative earnings of the lines in 1913 and 1918, according to the company's figures:

STATEMENT OF RECEIPTS

	1913	1918
Lexington Avenue...	$1,704,360	$1,237,569
Madison Avenue	1,923,645	1,869,219
Sixth Avenue	1,113,371	1,015 636
Columbus Avenue ...	1,714,249	1,275,718
Amsterdam Avenue .	730,021	611,944
Seventh Avenue	679,445	578,751
Eighth Avenue	1,556,960	1,315,803
Ninth Avenue	280,303	213,787
145th Street	90,449	79,929
116th Street	286,089	263,706
Eighty-sixth Street ..	298,939	280,875
Thirty-fourth Street .	672;150	571,674
Twenty-third Street..	777,879	646,224
Eighth Street	184,912	185,923
Canal Street	6,100	5,035
Grand total	$12,018,882	$10,151,793

The Public Service Commission is busy investigating the affairs of the company and separating those lines where the franchise terms prevent any curtailment of the service from those that are more or less within the company's control.

Basis for Rate Appeals Defined

The Public Service Commission for the First District of New York in an opinion prepared by Commissioner Kracke, has established a basis on which applications for rate increases must be made, and the precise facts that must be proved to the satisfaction of the commission's experts.

Mr. Kracke finds that where a company is earning a fair return on its investment it is not entitled to charge more for its product just because the costs of labor and materials have increased, and that permission to increase the rates must also be denied to those companies which have earned more than a reasonable return in the past and have comfortable balances at their disposal. These balances must first be exhausted before the company will have any standing as a suppliant for financial relief.

In his opinion Mr. Kracke says in effect that any relief granted must be within lawful and reasonable limits and must be because of conditions caused by the war which demand rate readjustments "as a sheer matter of conserving and continuing absolutely essential public services of heat, light, transportation, power, and communication." He says that when a change in the rate is imperative "it is important that the means be available of making the readjustment as expeditiously and economically as the facts warrant without in any way binding the companies, the consumers, or the commission as to the action which will be taken when conditions are again normal."

Entertainment for Tacoma Employees

The semi-annual dance and revue of the employees of the Tacoma Railway & Power Company was held at the Masonic Temple, Tacoma, Wash., on the evening of Aug. 29. The committee in charge of the dance and revue was composed of representatives of the transportation department and the power and equipment department. After the presentation of the revue, ice cream, cake and punch were served.

The dances were listed on the program as follows: Puyallup Hop, McKinley Flop, Traction Blues, Skip-Stop Trippers, One-Man Wiggle, Block Light Meet, Seven-Cent Waltz, Fern Hill Jazz, Spanaway Glide, Port Defiance Bumps, Tide-Flats Roughs, and the "K" Street Squeeze. There was plenty of good music for both the dance and the revue.

There is talk of having another entertainment of a similar nature. The next movement, however, will probably be that of getting an orchestra together, for in looking for talent for the revue it was found that there are enough talented employees in the service of the company to make a fine orchestra.

Many officers of the company were in attendance.

New Jersey Case Concluded

The hearing on the renewed application of the Public Service Railway, Newark, N. J., to the Board of Public Utility Commissioners of that city for permission to charge a 7-cent fare was concluded at a session in Newark on Sept. 5. The railway was represented by Thomas N. McCarter, president; E. W. Wakelee, vice-president; Frank Bergen, counsel, and L. H. D. Gilmour, solicitor. Mr. Wakelee summed up the company's plea for additional revenue. Chief Counsel Marshall Van Winkle, who has represented the League of Municipalities opposing the fare increase, was absent from the hearing. George L. Record was heard in opposition, however, but there seemed to be some question about his status. Finally Mayor Gillen of Newark declared that Mr. Record represented that city. Mr. Record said that he had no new evidence to offer because the case of the municipalities had been presented in the earlier proceedings and the League of Municipalities decided to stand by the testimony produced previously. The commission took the case under advisement. As a result of its original plea to the commission for relief, the company was allowed to charge 1 cent for each transfer.

New Buffalo-Niagara Falls Tariff

The new passenger fare tariffs just filed with the Public Service Commission for the Second District, containing increased fares between points on the Buffalo and Niagara Falls and the Buffalo and Lockport divisions and the company's high-speed line, are proposed as effective on Sept. 28. The increases proposed follow increased rates which went into effect on Aug. 22, when the one-way fares between Buffalo and Niagara Falls were increased from 35 to 50 cents and between Niagara Falls and Lockport from 35 to 50 cents. There were like increases between Buffalo and Lockport and between Lockport and Niagara Falls. On the Buffalo and Lockport division one-way cash fares between all points where the present fares are in excess of 5 cents are increased, the increases varying in amounts from 5 cents to 30 cents, and ticket fares between Buffalo and Lockport, Buffalo and Niagara Falls, and Lockport and Niagara Falls are increased 10 cents. The prices for monthly commutation ticket books between Lockport and Buffalo, and Lockport and Niagara Falls are increased from $8 to $10, between Lockport and Tonawanda from $6.90 to $9, and between Lockport and Paynes Avenue Junction from $5.50 to $7.50. The prices of school commutation ticket books are increased between Buffalo and Lockport from $6 to $7.50, and between Buffalo and North Tonawanda from $3.75 to $4.75, and between Pendleton Center and Lockport from $3.25 to $4.25. These are only a few of the changes, but they indicate the general trend of the tariff.

Transportation News Notes

Wants Six Cents in Topeka.—The Topeka (Kan.) Railway has filed an application with the Public Utilities Commission asking permission to establish a 6-cent fare in Topeka and Oakland.

Providence Service Cut.—Changes in the running time and terminals of certain lines and discontinuance of some service have been announced by the Rhode Island Company, Providence, R. I., in the hope of effecting additional operating economies.

Seven Cents Asked in Atchison.—The Atchison Railway, Light & Power Company, Atchison, Kan., has applied to the Public Utilities Commission for a 7-cent passenger fare in that city, and an increase of 20 per cent in its light and power schedule in Atchison.

Newark Would Abolish Owls.—The Public Service Railway, Newark, N.J., is considering the advisability of discontinuing all traffic in that city between midnight and 6 a. m. except on such lines as are used by the employees of industrial plants where war work is in progress.

Houston Fare Plea Filed.—The Houston (Tex.) Electric Company has an application pending before the City Council for a 7-cent adult fare and for a 3½-cent fare for school children. The matter of increased fares for this company was referred to in the issue of this paper for Sept. 7.

Wants Freight Increase.—The Elgin & Belvidere Electric Railway, Elgin, Ill., has petitioned the Public Utilities Commission of Illinois for an increase of 25 per cent in freight rates and an increase in express rates to conform with those now charged by the government-controlled express companies.

Harrisburg Companies File New Tariffs.—The Harrisburg (Pa.) Railways has filed with the Public Service Commission of Pennsylvania a tariff calling for a 6-cent fare from Oct. 1. The Valley Railways, operating in Lemoyne across the river from Harrisburg, has filed a tariff with the commission calling for a 7-cent fare from Oct. 1.

Fort Wayne Wants Six Cents.—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has petitioned the Public Service Commission of Indiana for permission to charge a straight fare of 6 cents in Fort Wayne and 3 cents a mile on the interurban lines. A straight 5-cent fare went into effect in Fort Wayne some time ago.

New Tariff for Connecticut Valley Line.—The Connecticut Valley Street Railway, Greenfield, Mass., has filed a tariff with the Public Service Commission effective on Nov. 4 proposing to increase the rate of fare. The system has been divided into zones each approximately 1 mile in length, the fare to be 3 cents in each zone with a minimum charge of 6 cents.

Five Cents Straight in Ottawa.—The Ottawa (Ont.) Electric Railway has raised its passenger tariff by abolishing the $1 books of tickets, and substituting ticket strips containing five instead of six tickets for 25 cents, thus establishing a straight 5-cent fare. No other change has been made in the tariff, the workingmen's, school children's and Sunday tickets remaining at the usual rates.

Los Angeles Suburban Fare Increase.—The Railroad Commission of California on Sept. 4 granted an increase in passenger rates to the Pacific Electric Railway, Los Angeles, which is expected by the commission to produce approximately 20 per cent increase in the gross revenues of the company. The increase is applicable to lines outside of Los Angeles only, fares within the city remaining at 5 cents. The company asked 7 cents in the city.

No Higher Fares as Yet for Boston.—Contrary to press reports, there is no prospect of any immediate establishment of fares in excess of the present 7-cent unit on the Boston Elevated Railway. The trustees are studying methods of increasing revenue, including possible zone plans, but until the War Labor Board issues its finding in the company's wage case, it will be difficult to determine the next step in fare studies. During the past month the 7-cent fare has increased revenue by about 23 per cent.

Commission Approves Denver Increase.—The Public Utility Commission of Colorado on Sept. 12 granted the petition of the Denver Tramway for emergency relief. This will render effective on Sunday, Sept. 15, on all city lines a 6-cent fare with no reduction in rates except a 3-cent fare for children. The City Council previously passed the 6-cent fare ordinance, thus establishing in Denver one of the first instances in the country, if not the first, where both the municipality and the State have joined in giving concurrent relief.

Abandonment of Owls Frustrated.—The plan of John Candler Cobb, Boston, Mass., to suspend the operation of all of the surface lines operated by the New York (N. Y.) Railways from midnight to 6 o'clock in the morning was overruled on Sept. 10 by the Public Service Commission for the First District of New York which adopted an order making it impossible for the company to curtail the present service. Mr. Cobb represents the income bondholders of the company. He is a member of the board of directors of the company.

Question of Authority at Montgomery.—Holding that it had jurisdiction over regulating fares in all municipalities of Alabama, the State Public Service Commission, in session on Sept. 4 set aside the 7-cent car fares granted the Montgomery Light & Traction Company on Sept. 3, by the City Commission. The company, already engaged in collecting the increased fares, when notified that each collection constituted an illegal act, discontinued the practice. The company had appealed to the commission for a 10-cent fare on its lines extending beyond the corporate limits.

Philadelphia Fare Policy Announced.—The Philadelphia Rapid Transit Company has announced that, should the Public Service Commission fail to ratify the pending contract between the city and the company for the operation of the city-built lines, it will, prior to Jan. 1, 1919, request the commission to establish a zone system of fares in Philadelphia. It is proposed to make the base fare 5 cents with an additional charge for passengers outside of the original zone. Notice to this effect was received by the commission on Sept. 10 in a letter from Thomas E. Mitten, president of the company.

"The Trollier" Discontinued.—The Rhode Island Company, Providence, R. I., announces the discontinuance of *The Trollier*, a weekly publication issued in the interest of the company and its employees. In the issue of the paper for Aug. 31 the company says: "For the last few weeks the serious financial condition of the Rhode Island Company has become more and more acute, but we have tried to hold all departments intact. After careful consideration and much regret the directors voted to suspend temporarily, we hope, the official organ that has done so much to bring us all into closer communion."

Yonkers Fare Plea Entered.—Leslie Sutherland, vice-president and general manager of the Yonkers (N. Y.) Railroad, appeared before the Yonkers Common Council on Sept. 9 to support a petition that the company's franchise be suspended for the duration of the war and one year afterward. Mr. Sutherland, who is also second vice-president of the Third Avenue Railway, New York City, would not state what amount of increase was desired. He did say, however, that unless the company was granted an increase it would probably have to suspend. The Council referred the petition to a sub-committee which will take the matter under advisement. This committee will probably report within a few days.

Wants Three Cents a Mile.—George Bullock, as receiver of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., on Sept. 7 filed an amended petition with the Public Service Commission for the Second District, asking authority to charge passengers at the rate of 3 cents a mile from the State line to the city of Buffalo, instead of 2¾ cents a mile. The petition says the employees have received a wage increase of approximately $75,000 in New York State and are demanding a further increase, facts regarding which were presented to Commissioner Barhite at a hearing in Buffalo on Sept. 4. There will be another hearing before the commissioner at Buffalo on Sept. 16.

More One-Man Cars for Seattle.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., will install one-man car service on two new routes, one from Columbia Street over the West Queen Anne and Kinnear lines to Second Avenue West, and the other on the Broadway line, from Union to Prospect Street, duplication of the Capitol Hill service now being given. The one-man cars will operate throughout the entire day, and will be in addition to the present cars. The company believes the Queen Anne Hill patrons will patronize the small cars in the rush hours, thus relieving the present overloading of the West Queen Anne cars, which cannot be increased in number, because of the counterweight limitations.

Additional Subway Service Ordered.—The inquiry which the Public Service Commission for the First District of New York has been making into the condition and operation of trains by the Interborough Rapid Transit Company resulted on Sept. 7 in an order increasing the service both as to the number of trains and the number of cars. Beginning Sept. 15, the company is directed to operate ten-car express trains on a two-minute headway during the rush hours on the west and east side subways, and six-car local trains on a three-minute headway in the same periods. To the end that the commission may know that the order is obeyed and maintained without interruption, it directs the company to file schedules covering service at all hours, exclusive of Sundays and legal holidays.

Oakland Company to Accept Bus Transfers.—The De Luxe Transportation Company has arranged with the Oakland (Cal.) Traction Company to deliver all passengers at Hayward to the electric system for transportation to San Francisco or East Bay cities. The bus service will also handle freight, baggage, express and mail. The De Luxe Company is to operate buses from San José to the Alameda County line, at which point passengers are to be transferred to the street cars. The schedule is every forty minutes during the rush hours and at hour intervals during the remainder of the day. The through rate (47 miles) is to be $1.10, and 85 cents is to be charged between San José and Hayward (31 miles). The passenger buses are to be lighted and heated electrically. Each will have a seating capacity for twenty-five passengers.

Six Cents for Fresno.—The Railroad Commission of California has authorized the Fresno (Cal.) Traction Company to increase its 5-cent fares to 6 cents, and its commutation fares 10 per cent. The company has operated with a deficit each year for the last four years. The company estimates a deficit this year, if the present rates were maintained, of $85,000. In the commission's judgment the public would favor any increase in rates, rather than a radical reduction in the service rendered. The relief sought by the company does not rest upon any demands for return upon invested capital, but only for sufficient revenue to meet operating expenses and fixed charges. According to the commission, this situation represents a war necessity. Any added revenue obtained from the increase in rates will be absorbed in increased compensation positively necessary to employees and for the purchase of materials.

Conference on Reading Valuation.—Another hearing was held in Reading, Pa., on Aug. 29 before the Public Service Commission, in the matter of increased fares which high operating costs have made necessary on the city and suburban lines of the Reading Transit & Light Company in Reading, Norristown and Lebanon. Contentions having been raised by the protestants, over the valuation which the company submitted at the first hearing some months ago, the commission ordered that an engineer representing the railway and another representing the protestants confer with one of the commission's engineers, with a view to having a valuation agreed upon, that can be used as a basis for the final disposition of the fare cases. There being nothing further to submit from the protestants, this ended the hearing. Another will be called as soon as the engineers have a report to submit.

Fares Fixed by Ordinance Must Stand.—A decision was handed down on Sept. 10 by Judge Chatfield in the United States District Court in Brooklyn in the case of the Gas & Electric Surety Company against the Manhattan & Queens Traction Corporation, New York City, in which it was held that it is not the province of the court to alter rates fixed by contract between a city administration and a private corporation, but a matter for legislation. The suit, brought in the Federal court because the defendant corporation is now in the hands of a receiver, is based on a plea for increase to a 7-cent fare and increases of wages of employees. The Judge said: "The receiver of a property can operate under the franchise or contract, but cannot disregard the essential limitations showing of what the property consists. Beyond the limits created by the franchise or contract the court has not the power to fix rates other than the city has already fixed." The case has been pending only a short time.

Legal Notes

FEDERAL COURTS—*Owner of Property Injured by Railway Construction Must Show Actual, Not Relative, Loss.*

The owner of realty injured by the construction and operation of an elevated railroad was not deprived of his property without due process of law in violation of the Fourteenth Amendment because benefits resulting from the increased travel were considered in determining whether the premises had been damaged, though other lands in the neighborhood were similarly benefited, for the right guaranteed is merely that the owner shall not be deprived of the market value of his property under a rule of law making it impossible for him to obtain just compensation, and there is no guaranty that he shall derive a positive pecuniary advantage from a public work whenever a neighbor does. (McCoy et al. *vs.* Union Elevated Railway, 38 Supreme Court Rep., 504.)

CALIFORNIA—*Penalty for Frivolous Appeal.*

Where the evidence in the opinion of the court showed that the defendant was extremely negligent and that the person killed was not negligent, an appeal on the ground that deceased was negligent as a matter of law and that defendant was entitled to a directed verdict, was frivolous, and a penalty of $100 was added to the damages. (Levings et al. *vs.* Pacific Electric Railway, 173 Pacific Rep., 87.)

INDIANA—*The Right of Way of Funeral Processions.*

In an action for damages in a collision between a street car and a hearse, where the company admitted that it was customary to give funeral processions the right of way, an instruction that although the driver had an equal right of way with the car, it was his duty on seeing the car to drive off the tracks, was improper, as ignoring the custom. (Beck *vs.* Indianapolis Traction & Terminal Company, 119 Northeastern Rep., 528.)

KENTUCKY—*Company Not Under Obligation to Complete Line.*

The making and filing of articles of incorporation for the construction of a railroad, which contain no covenant that the railroad will be constructed, do not impose any duty upon the corporation to construct the proposed road nor to complete its construction after it was commenced.

An electric line proposed to be constructed between two towns and completed only part of the distance, was not a street railway within Const. Art. 163, 164, requiring a franchise of not more than twenty years' duration to be acquired, and the fact that by organizing as an interurban line the company escaped the franchise cost of street railways did not obligate it to complete the line to the second city. (Bentler *vs.* Cincinnati, Covington & Erlanger Railway, 203 Southwestern Rep., 199.)

LOUISIANA—*Contributory Negligence to Stand on Platform of High-Speed Interurban Car.*

It is contributory negligence for a passenger on a fast-moving suburban train, when it was being operated outside of a municipality, to stand on the platform, particularly after being warned not to do so, and he cannot recover damages for injuries resulting to him from such negligence, although there was mutual negligence on the part of the employees of the railway company. (Louviere *vs.* Southwestern Traction & Power Company, 77 Southern Rep., 293.)

MAINE—*Who Are "Passengers"?*

A person who was injured by the opening of the front door of a pay-as-you-enter street car while passing by such door to enter the car at the rear door, held not a passenger at the time of the injury. (Murray *vs.* Cumberland County Power & Light Company, 103 Atlantic Rep., 66.)

MASSACHUSETTS—*A Collision with Unregistered Automobile.*

Less care is demanded of a motorman to avoid a collision with an unregistered automobile than with one which has complied with the law. To make the company liable he must inflict the injury intentionally or be so utterly indifferent to the rights of others that he acts as if such rights did not exist. Gross negligence alone will not suffice. (Wentzell *vs.* Boston Elevated Ry., 119 Northeastern Rep., 652.)

MICHIGAN—*City Order for Relocation of Street Car Tracks Should Be Obeyed.*

A city resolution ordering a change of location of street car tracks is not invalid because where the tracks cross a railroad they cannot be moved under the existing law without the consent and order of the State Railroad Commission, since it will not be assumed the Railroad Commission will withhold its consent, and, if it should, its failure to consent would be a good defense to an attempt to enforce the order. (City of Owosso *vs.* Michigan United Railways, et al., 167 Northwestern Rep., 920.)

MICHIGAN — *Workmen's Compensation Act—Definition of Injury "Arising Out of Employment."*

To entitle a claimant to compensation for an injury arising out of his employment it must be shown that the causative danger was peculiar to the work and not common to the neighborhood, and that it was incident to the character of the business and not independent of the relation of master and servant, and, while it need not have been foreseen or expected, it must, after the event, appear to have had its origin in a risk connected with the employment and to have flowed from that source as a rational consequence.

In a proceeding by a common laborer employed in the street track-laying department of a street railway for personal injury when a delivery wagon struck the boom of a concrete breaker and moved it toward him, a finding of the Industrial Accident Board, made the final arbiters of questions of fact, that he was sitting on the curb during a lull in the work, but on duty, when struck was sufficient, if warranted, to support an award, though against the weight of the evidence. Malone *vs.* Detroit United Railway, 167 Northwestern Rep., 996.)

New Publications

Grinding Wheels

No. 13 in the series of "Safe Practices" pamphlets issued by the National Safety Council, Chicago, Ill. Price, 10 cents.

Covers inspection, storage, mounting and safeguarding of abrasive wheels.

Measuring the Temperature of Gases in Boiler Settings

By Henry Kreisinger and J. F. Barkley. Bulletin No. 145 of the Bureau of Mines, Department of the Interior, Washington, D. C., seventy-two pages, paper. One copy free; extra copies, 15 cents each.

This bulletin contains the results of an experimental study of the subject, together with a description of the methods and apparatus used in the tests.

A Convenient Multiple-Unit Calorimeter Installation

By J. D. Davis and E. L. Wallace. This is a reprint of Technical Paper No. 91 of the United States Bureau of Mines, Washington, D. C., first printed last November; 48 pages. One copy free; extra copies 15 cents each.

This bulletin gives full information regarding the calorimetry practice of the Bureau of Mines and should be of value to anyone who is concerned with measurements of the heating value of fuels.

Scope and Application of National Electrical Safety Code

Circular No. 72 of the Bureau of Standards, United States Department of Commerce. 84 pages. Copies may be secured at 20 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C.

This new publication on the safety code has been prepared to bring the subject up to date, and it contains supplementary information based upon actual experience with the code. An interesting feature is a list of 100 typical electrical accidents indicating the need for a safety code. The circular should be read at once by all electric railway men who are concerned with the application of the code itself.

Personal Mention

C. H. Whitesell has been appointed master mechanic of the Wheeling (W. Va.) Traction Company. Mr. Whitesell has been in the employ of the company since 1901, during which time he has served in the capacities of carpenter, carpenter foreman, general carhouse foreman and inspector.

Walter J. Hodgkins, former manager of the construction department for the Ashland Light, Power & Street Railway Company, Ashland, Wis., has been made manager for the entire works, following the resignation of F. R. Winders. Mr. Hodgkins will have charge of all the work of the company, which includes interests in Ironwood, Bessemer, Wakefield, Hurley and Washburn.

Walter Hedley, son of Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, New York, N. Y., and the New York Railways, has been decorated with the Croix de Guerre. He was one of four members of United States Ambulance Unit No. 592 to be so honored. The citation of the unit for bravery and gallantry under fire was made after its members had completed their first year of service in practically every sector on the western front from Ypres to Lorraine.

Pitt F. Drew has been elected president of the Middlesex & Boston Street Railway, Newtownville, Mass., to succeed James L. Richards, resigned. Mr. Drew was born in Lancaster, N. H., on Aug. 27, 1875, and was educated at Phillips Andover Academy, Dartmouth College and Harvard Law School. He has practiced law in Boston since 1902. He is the son of Irving W. Drew, recently appointed United States Senator from New Hampshire, and brother-in-law of Edward K. Hall, vice-president of the Electric Bond & Share Company. He has no other corporate affiliations of general interest.

Guy E. Tripp, formerly colonel in the United States army and head of the production division, has been made brigadier general in the United States army, and placed in offices having charge of the production of ordnance material in their respective sections of the country. The district chiefs will report direct to General Tripp, who is succeeded as head of the production division by Col. C. C. Jamieson. Previous to his connection with the ordnance department, General Tripp was chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, with headquarters in New York.

John A. Dewhurst has recently resigned from the Twin City Rapid Transit Company, Minneapolis, Minn., to become connected with Day & Zimmerman, Inc., engineers, Philadelphia, Pa. Mr. Dewhurst was with the Twin City Rapid Transit Company three years. Before that he was with the railway and traction engineering department of the General Electric Company. While at Minneapolis he was engaged on transportation problems, having had charge of the schedule department part of the time and being assistant to the general superintendent during the rest of his service with that company.

T. F. Johnson, superintendent of transmission and distribution of the Georgia Railway & Power Company, Atlanta, Ga., has been appointed assistant general superintendent of the electrical department. Mr. Johnson has been with the company eight years. He was graduated from Georgia Tech. in 1908, and in 1910 took his engineering degree, joining the company that fall. He started in rolling a wheelbarrow at the Fulton plant, went to Morgan Falls, worked with the Northern Construction Company on the big Tallulah power development and rejoined the Railway & Power Company as head of the transmission and distribution department. The position of assistant general superintendent has just been created.

James L. Richards has resigned from the presidency of the Middlesex & Boston Street Railway, Newtownville, Mass. Mr. Richards has been at the head of the property for about ten years, succeeding Adams D. Claflin. He is president of the Boston Consolidated Gas Company and until the taking over of the Boston Elevated Railway by public trustees was a member of the executive committee of the board of directors of the Boston Elevated Railway. He has long been identified with the movement for securing higher fares on street railways in Massachusetts and was one of the first financial executives in the East to recognize the abilities of M. C. Brush, now president of the Boston Elevated Railway and formerly associated with Mr. Richards in the management of the Middlesex & Boston road.

Richard H. Wheeler has recently been appointed traffic manager of the Hercules Powder Company at the Nitro plant, Nitro, W. Va. Mr. Wheeler was assistant designing engineer of the electric locomotive department of the General Electric Company in 1911-1912. From 1912 to 1915 he was assistant electrical engineer of the electrification of the Mount Royal tunnel and terminal project of the Canadian Northern Railway at Montreal From 1915 to 1917 he was assistant engineer of the Shawinigan Water & Power Company at Montreal. From 1917 to 1918 he was designing engineer with Ford, Bacon & Davis, New York, and from February, 1918, up to the time of his appointment to the Hercules Powder Company he was assistant manager of the powder apparatus department for the Thompson-Starrett Company, construction engineers, building the United States government explosive plant "C."

Obituary

Edward E. Potter, superintendent of transportation of the Houston (Tex.) Electric Company, died suddenly at Houston on the evening of Sept. 7. Mr. Potter had been connected with Stone & Webster properties in various parts of the country for many years. His former home was at New Bedford, Mass., where his widow and one son now reside. He was formerly general manager of the Seattle (Wash.) Electric Company. Later he was transferred to the home office of Stone & Webster at Boston.

Robert C. Green, superintendent of equipment of the Lehigh Valley Transit Company, Allentown, Pa., and the Easton Transit Company, died suddenly on Aug. 31 after returning home from the theater with his wife where they had been members of a party which included President Harrison R. Fehr of the company and Mrs. Fehr. Mr. Green was born in Memphis, Tenn., thirty-four years ago. He received his preliminary training under the tutelage of his father, Alfred C. Green, of the Galena Signal Oil Company, when he was master mechanic of the shops of the Rochester (N. Y.) Railway. Robert Green attended a technical school in Rochester, from which he was graduated a mechanical engineer. He was employed for some time by the Public Service Corporation, Newark, N. J., and later by the Metropolitan Street Railway, New York, N. Y. In September, 1912, he entered the employ of the Easton Transit Company, and eighteen months ago he was given full charge of equipment on all lines of the Lehigh Valley Transit Company, which position covered the superintendency of the shops at Allentown, Easton, Souderton, Slatington and other points on the system. The latest type of equipment used by the Lehigh Valley Transit Company is the design of Mr. Green. He also designed the all-steel double-truck, center-entrance cars, known as No. 900, and the standard passenger car of the system. The snowplows and service cars are also of his design. He was generally recognized as possessing exceptional ability in the solution of mechanical engineering problems, and his death closes a career which promised to have been a brilliant one had he lived. Mr. Green is survived by his widow and twin daughters.

Construction News

Construction News Notes are classified under each heading alphabetically by States. An asterisk (*) indicates a project not previously reported.

Recent Incorporations

***Indian Creek & Northern Railway, Fairmont, W. Va.**—Incorporated to construct a line from Lowesville to Blacksville. Capital stock, $50,000. Incorporators: J. W. Devison and C. A. Philippi, Granttown and S. D. Brady, James Close and James A. Meredith, Fairmont.

Franchises

Newark, N. J.—The State Board of Public Utility Commissioners has approved the application of the Public Service Railway for ordinances of the Newark Board of Street and Water Commissioners adopted May 23 granting permission to the company to construct a new line in Newark called the Port Newark extension and also an extension connecting the tracks of the company in Chestnut Street, Newark, through Gotthardt Street to Hamburg Place, a distance of less than a mile and a half. Each franchise is to run for fifty years. The Port Newark line is an extension from the tracks in Hamburg Place east of Avenue L and through Hamburg Place and Avenue R over the bridge of the Lehigh Valley Railroad Company and the Pennsylvania Railroad between Astor and Murray Streets, Newark. The plan includes a bridge over the Central Railroad crossing with approaches. The extension is to constitute a separate fare zone of 5 cents for each person unless the general rate of fare is increased beyond 5 cents. It is to be operated under the agreement of the Public Service Railway entered into with the United States Shipping Board Emergency Fleet Corporation, March 7, 1918.

Track and Roadway

***Los Angeles, Cal.**—Plans have been completed by the city of Los Angeles for the construction of a new electric railway system between Redondo Beach and Torrance, about 4 miles, to provide adequate transportation facilities for workers employed in the various shipbuilding and war plants in the vicinity of San Pedro. The work is estimated to cost about $100,000.

San Francisco - Oakland Terminal Railways, Oakland, Cal.—The San Francisco-Oakland Terminal Railways has filed with the Railroad Commission of California an application for authority to buy from the Emergency Transportation Company $10,100 capital stock of the latter company. The payment for the stock is to be in materials and labor furnished to the Emergency Transportation Company in the construction of a single-track railroad on Chestnut Street from Eighth to First Streets, with station spur tracks at the foot of Chestnut Street. The San Francisco-Oakland Terminal Railways intends, with the consent of the commission, to lease the complete railroad from the Emergency Transportation Company.

Winnipeg (Man.) Electric Railway.—An extension will be built by this company on Sargent Avenue.

Bay State Street Railway, Boston, Mass.—According to a finding of the Public Service Commission of Massachusetts, the Bay State Street Railway is not required at present to build an extension costing $35,000 in the Ayers City district of Lowell, Mass. Citizens of Lowell petitioned the board to order the company to build the extension, a grant of location having been made in 1901 with the proviso that the construction should be completed within two years.

Kansas City (Mo.) Railways.—A loop will be constructed by the Kansas City Railways on Monroe Avenue between Nicholson and Garner Avenues between the Missouri Pacific and Kansas City Southern shops, and a "Y" will be built at the west terminus at Thirteenth Street and Central Avenue, Kansas City, Kan.

Southwest Missouri Railroad, Webb City, Mo.—Work will be begun at once by the Southwest Missouri Railroad on the construction of an extension of its line on Main Street south from the present terminus to connect with the Joplin-Picher line.

Cincinnati, Ohio.—Director of Street Railroads Culkins is working out a plan for connecting the east end of the city with Cumminsville by establishing a cross-town line through Hyde Park, Oakley, Norwood and Bond Hill.

Guelph (Ont.) Radial Railway.—This company is constructing 3000 ft. of track on Garden Street, Guelph.

Toronto (Ont.) Suburban Railway.—The Toronto Suburban Railway has been granted an extension of time until Nov. 30 within which to construct, equip and put in operation its extension on Davenport Road east of Bathurst Street to the northern limits of the city.

Rio Grande Valley Traction Company, El Paso, Tex.—It is reported that extensions to its system are being contemplated by the Rio Grande Valley Traction Company.

Shops and Buildings

Public Service Railway, Newark, N.J.—An addition will be built by the Public Service Railway to its workshops at Newton and States Avenues, Camden.

Richmond Light & Railroad Company, New York, N. Y.—The Public Service Commission for the First District of New York has ordered the Richmond Light & Railroad Company to make extensive improvements in its shops, etc., and overhaul its rolling stock, to provide for increased operation.

Cleveland, Ohio.—Plans have been revived for the construction of a new combined steam and interurban passenger station to face the Public Square at Cleveland, Ohio. The Cleveland Union Terminals Company was recently incorporated with a capital stock of $10,000 by John L. Cannon and Charles W. Stage, attorneys.

Power Houses and Substations

New York, New Haven & Hartford Railroad, New Haven, Conn.—Approximately 18 acres of land have been acquired by the New York, New Haven & Hartford Railroad along the west bank of the Mianus River to provide additional water supply for its power plant at Cos Cob.

Syracuse & Suburban Railroad, Syracuse, N. Y.—It is reported that in connection with the reorganization of the Syracuse & Suburban Railroad it is planned to make extensive improvements in the power plant and system.

Bartlesville (Okla.) Interurban Railway.—In order to meet the increasing demands on the electric plant of the Bartlesville Interurban Railway, new generating, condensing and boiler equipment is now being added which will be in service early in the fall. The new equipment consists of a 1250 kw. Westinghouse turbine and LeBlanc jet condenser, a 3600 g.p.m. spray pond and a 300 hp. Heine boiler. A reserve supply of fuel oil to protect against gas shortage this winter will be made available by the installation of a 3000 bbl. steel tank. John Strom, Joplin, Mo., is in charge of new construction work.

Monongahela Valley Traction Company, Fairmont, W. Va.—Plans are being made by the Monongahela Valley Traction Company to construct a gas producer plant and lay 8 miles of 5- and 6-in. pipe line.

Manufactures and the Markets

D.SCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

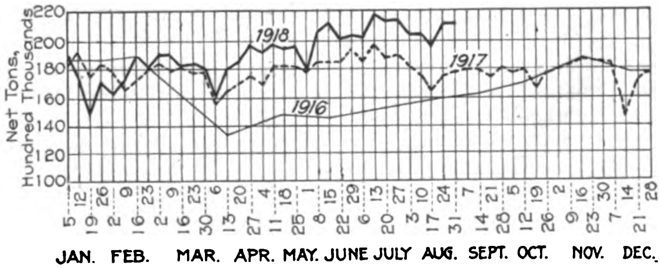
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Coal Production Up to Last Week's Record

Output of Mines Must Be Maintained At High Level in Order to Keep up to Schedule

The output of bituminous coal in the United States during the week ended Aug. 31 was approximately the same as the week preceding, according to the regular weekly report of the Geological Survey. Estimates place production during this week at 12,642,000 net tons as against 12,620,000 net tons during the week of Aug. 24 and 11,056,000 net tons during the corresponding week of 1917.

The average production per working day for week ended Aug. 31 is estimated at 2,107,000 net tons, an increase over the corresponding week of last year of 14 per cent and over the average daily requirements for the coal year of 4.7 per cent. The schedule of the Fuel Administration, however, calls for an increased rate of production during the six months beginning with April, and production in the first five of these six months has been nearly 13,000,000 tons below this figure. To overcome this apparent shortage it will be necessary to maintain the average daily rate of production during the seven months remaining in the coal year at 2,037,000 net tons or 2.9 per cent in excess of the average daily production in the five months, April to August. In the period beginning with the second week of June to the last week of August, the average daily rate of production has been approximately 2,061,000 net tons, compared with an average daily rate in the period from the first of April to the first of June of 1,864,000 net tons. It is thus evident that only by maintaining production at the level of the last three months through the good weather portion of the coming seven months of the coal year, will the estimated requirements be met. These figures of estimated requirements are based upon 628,000,000 tons per year for the year, divided between fifty-two weeks of six working days each, with no allowance for national holidays.



ESTIMATED AVERAGE COAL PRODUCTION PER WORKING DAY OF BITUMINOUS COAL, INCLUDING COAL COKED

Production of anthracite in the United States during week ended Aug. 31 is estimated at 2,259,715 net tons, an increase over the week preceding of 125,716 net tons or 5.9 per cent, and over the corresponding week of last year of 268,228 net tons or 13.5 per cent. The daily average during the current week is estimated at 376,619 net tons as against 338,677 during the coal year to date, and as against 329,923 net tons during the coal year of 1917. The total production for the coal year to date is estimated at 44,028,000 net tons as against 42,890,000 or an increase of 2.7 per cent.

Car Window Glass Higher

Supply Short and Still Falling Off —Mills May Not Open Before December

By reducing the discounts on car window glass from 80 per cent to 77 per cent on quality A first three brackets, single strength and from 82 and 3 per cent to 79 per cent on AA quality, double thickness, the manufacturers have succeeded in raising prices. The supply of glass is becoming shorter each day with the government as the largest buyer. The mills have been shut down for some time and the indications are that they will remain closed until early in December. Ordinarily the mills opened early in the fall when the furnaces had all been fixed and the hot weather over.

In order to obtain a supply for the winter street railways may find it best to anticipate their needs. There are no reasons why the price should be lower but rather some of the recent activities in the market might be forerunners of still higher prices. Besides, the supply is so low that it might be found advantageous not to have to rely on any outside stocks.

Tungsten Lamps To Replace Carbons and Gems

Fuel Administration Announces Plan for Conservation—Little or No Effect on Railway Market

The Fuel Administration has announced the adoption, effective on Sept. 15, of a plan contemplating the gradual elimination of the carbon and gem lamps and the substitution therefor of the tungsten lamp. Inasmuch, however, as the electric railways are now almost universally using the tungsten lamp the plan will not affect their supply except perhaps to increase it.

The supply of lamps last winter became very low in certain parts of the country, and while a generally very good condition at present, there is a feeling that another shortage may develop this winter. The release of factory space and of glass should help to minimize any shortage.

Changes in Brill Organization in St. Louis

A change in the personnel of the American Car Company of St. Louis, one of the subsidiary companies of The J. G. Brill Company, occurred on Sept. 1, when George H. Tontrup, for many years general manager, and E. L. Bronenkamp, Southern sales agent, severed their connection with the Brill organization to enter into an enterprise in St. Louis mentioned in another column. Ford A. Richards, for several years the representative of the Brill organization on the Pacific Coast, has been made general sales manager, and Wirt L. Haymond, for many years associated with the business department of the American Car Company, has been made assistant sales manager.

Program for Semi-Annual Meeting of A. G. M. A.

An interesting program is being arranged for the semi-annual meeting of the American Gear Manufacturer's Association, which will be held at the Onondaga Hotel, Syracuse, New York, Sept. 19, 20 and 21.

A portion of the program has been announced as follows:

"Priority," by Charles A. Otis, of the Priority Committee.

"What Is the Possibility of Women Becoming a Permanent Factor in the Gear Industry?" by W. H. Diefendorf.

"Trade Acceptances," by C. E. Crofoot.

"The Outlook of the Steel Supply," by C. E. Stuart, secretary-treasurer Central Steel Company, Massillon, Ohio.

Conditions Right for Purchase of Shop Tools

Although Prices Are High, the Savings Effected Show a Quick Profit on Investment

A survey of repair-shop conditions on electric railways indicates that there never was a time when the discriminating purchase and supervised application of high-class tools would pay a better return upon the cost of such equipment than now. The price of material and supplies under war conditions is so high that waste of stock must be cut to the minimum, and anything which increases production reduces the amount of material held in reserve at the expense of the country's resources at large. The present and prospective cost of labor for some time to come put a premium on time-saving methods, and a good deal of spasmodic buying in the tool market has lately been due to this cause.

It is true that the shipyards and munitions plants have consumed tools in enormous quantities and that as long as the war lasts this condition may be expected to continue. In many cases electric railways have postponed machine tool purchases on account of revenue being below that required to meet the fair cost of service, including maintenance on a liberal program. Deliveries, also, have been seriously affected by the demands of the plants engaged in immediate war service. The cost of a machine tool installation capable of working a substantial change for the better in repair-shop service is not very great in proportion to the benefits at once made possible.

Prices are high, and many managers hesitate to tie up money in tools which cost from 50 to 100 per cent more than before the war, thinking mainly of the perpetual fixed charges thus set in motion. If the service possible by such tools is viewed from the standpoint of production, however, the investment cost shrinks in importance. Where it can be shown that a machine tool will pay for itself in a year or two after installation and perhaps show a handsome profit besides, it is a conservation step to secure it if the work of some munitions plant or other gilt-edged priority concern will not thereby suffer. Without the service of the electric railway, the work of many a munition plant would go lame indeed, and there is reason to believe that tools which can be shown to be essential to better transportation service can be procured if the railway manager and purchasing agent go about the matter promptly with the government authorities.

Master mechanics of railway companies do not need to be told that there is a field of almost unparalleled opportunity in their jurisdictions for the increase of shop efficiency through improvements in tool service. It is significant that a good deal of machinery has been going into railway shops in the past few years despite the handicaps of inadequate revenue. The market has not been developed to anything like its possibilities, however. This is partly due to the absorption of the machine tool builders in filling orders outside the electric railway field, and is also due in part to a feeling that until enough money is available to build new and sorely needed shops designed along the most modern ideas, there is not much use in spending funds for high-class new tools on any comprehensive scale. Last winter's experience, however, has taught not a few roads that a first-class tool may be worth far more than its cost in a single period of traffic interruption due to storms, if by its use cars get back into service a day or more earlier than would be possible with the older shop methods of equipment maintenance.

The market for electric motors in sizes up to 50-hp. rating is in a better condition to-day than for some time, owing to the efforts of the motor manufacturers to expand their production and accumulate at least moderate reserve stocks in the smaller units. Control apparatus also can be secured on about as favorable deliveries as motors. Railway companies which have paid some attention to modernizing their shop facilities during the last few years have reaped the reward of their efforts in not a few cases, and in view of the essential character of electric railway service, it is none too early to see what can be done toward improving this branch of shop facilities. Electric railway repair shops have not worked direct connection of motors to anything like its possibilities, and as a fuel-saving measure the problem of tool service betterment deserves consideration as well as from the standpoint of labor and material economy. The necessity for efficient shop operation was never so keen, and the cultivation of the field of improved tool applications is bound to yield results next winter which will be helpful to the railways and advantageous to the industrial and general public if the operating companies stand on their base as essential utilities and seek government co-operation in rendering better service.

G. H. Tontrup Forms New Company

The National Safety Car & Equipment Company, 418-419 Pierce Building, St. Louis, Mo., has been incorporated by George H. Tontrup, formerly for many years general manager of the American Car Company. Mr. Tontrup is president and treasurer, and associated with him as vice-president is Edward T. Bronenkamp, who was Southern sales agent of the American Car Company.

The new company will make a specialty of selling complete Birney safety cars and has made arrangements with the Cincinnati Car Company to build these cars. In addition the company will handle a general line of electric and steam car supplies.

Track Material Demands Increasing

Higher Fares, Government Financing and Prospects of Peace All Indicate Large Demand

While the demand for track and roadway specialties has not been very great since the spring months, the outlook for future orders never was brighter. Manufacturers who have made careful surveys of the existing conditions have found that while the needs for track renewals and track extensions are very pressing, there has been a persistent tendency on the part of the electric railways to mark time. This cannot be continued indefinitely and the very fact that little material could be bought during the past months indicates that with the very first assurance that permanent peace is about to be culminated, there will be an overwhelming demand for materials with which to construct long-needed extensions and essential maintenance repairs.

Daily developments steadily increase the list of railway companies granted financial relief by fare increases and the list of those seeking such relief. Many properties have found themselves facing the disagreeable fact that delay in repair work has passed the point of economy and each additional day is adding to the final reckoning, but credit conditions have not permitted of any intervention. As soon as necessary financial assistance assures the proper credit it is believed that rush orders will be placed for track materials.

We have already had several examples of government financing of railway extensions. The most recent which has come to notice is the financing by the United States Housing Corporation of 2 miles of track for the transportation of munitions workers on a Middle Western property. Indications are that there may be considerable of such government assistance given for extension and repairs necessary for the various war industries.

Except for priority orders it will be a case of first come first served. Even in case of an early peace present prices would not be materially reduced for say a year after the final settlement. It is therefore highly advisable that those companies which feel confident of relief in the near future place their orders for track materials without delay.

Rolling Stock

Springfield (Mo.) Traction Company has received word that the twelve new pay-as-you-enter cars being built by the American Car Company will be ready for shipment about Sept. 15. Upon arrival the older type of cars now in use are to be taken to the repair shops and equipped as pay-as-you-enter cars.

Trade Notes

Galena Signal Oil Company has cut its quarterly dividend from $3 to $1.50. A letter sent to the shareholders said that the reduction has been deemed necessary because of current high costs of labor and materials, which had reduced earnings.

Warren C. Drake, who for the past twelve years has been connected with the stoker-engineering department of the Westinghouse Electric & Manufacturing Company, New York, has entered into partnership with H. S. Sleicher, and has opened an office in New York, under the firm name of Sleicher & Drake, for the handling of power-plant equipment.

Lakewood Engineering Company manufacturer of cranes and hoists, announces the opening of new offices in Chicago, in the Lumber Exchange Building. Announcement is made also that the Charles T. Topping Machinery Company has merged its interests with the Pittsburgh office of the Lakewood Engineering Company, 411 Fulton Building.

Bate's Expanded Steel Truss Company, Chicago, Ill., sole manufacturer of the one-piece expanded steel poles for utility transmission and electric railway service, is distributing a handsome glass desk paper weight to its customers and to inquiring friends. An illustration on the paper weight shows a typical Bates pole in combination with transmission, telephone, trolley and street lighting service. This souvenir is accompanied with an announcement that the paper weight is intended as a perpetual reminder of the utility of Bates poles.

New Advertising Literature

Independent Pneumatic Tool Company, Chicago, Ill.: Four-page folder discriptive of Thor pneumatic and electric tools.

R. H. Beaumont Company, Philadelphia, Pa.: Catalog 38, describing and illustrating the Beaumont drag scraper system for the ground storage of coal.

Electric Arc Cutting & Welding Company, 222 Halsey Street, Newark, N. J.: A circular giving advantages and uses of its alternating-current electric arc cutter.

H. W. Johns-Manville Company of New York City.: A comprehensive booklet on "Fuel Waste in the Power Plant." The booklet discusses the subjects of where to look for fuel losses and how to reduce and improve power-plant efficiency. It lists certain common but preventable causes of fuel wastage which can be corrected by the use of Johns-Manville or similiar material.

National Tube Company, Pittsburgh, Pa.: A paper entitled "The Preservation of Hot Water Supply Pipe in Theory and Practice" presented at the annual meeting of the American Society of Heating and Ventilating Engineers by F. N. Speller and R. G. Knowland.

Fisher Governor Company, Marshalltown, Ia.: A catalog describing and illustrating special governors, stop valves, reducing valves, back-pressure valves, balanced-lever valves, float valves, tank controller and other governors and regulating devices for pumps. In addition to the above the catalog also describes and illustrates other power-house specialties.

Wheeler Condenser & Engineering Company, Carteret, N. J.: Bulletin 112-A, just published, deals with condensers, pumps, cooling towers, etc. Under the head "Choice of Kind of Condenser" the two general classes of condensers are discussed. The remainder of the bulletin illustrates and describes other Wheeler condensing machinery in detail. The bulletin embraces large and small surface condensers, showing typical complete installations, rectangular and cylindrical types, jet condensers, barometric condensers, air pumps, rotative dry-vacuum pumps, the turbo air pumps, centrifugal pumps for circulating water and natural and forced draft cooling towers. In addition, a page is devoted to the feed-water heater and two pages to multiple-effect evaporators and dryers.

NEW YORK METAL MARKET PRICES

	Sept. 4	Sept. 11
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.50	9.75
Tin, Chinese*, cents per lb	....	....
Aluminum, 98 to 99 per cent., cents per lb	†33.10	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Sept. 4	Sept. 11
Heavy copper, cents per lb	23.50 to 24.50	23.50 to 24.50
Light copper, cents per lb	21 to 21.50	21.00 to 21.50
Red brass, cents per lb	23.50 to 24.50	23.00 to 24.00
Yellow brass, cents per lb	16 to 16.75	16.00 to 16.50
Lead, heavy, cents per lb	7.50 to 7.75	7.50 to 7.75
Zinc, cents per lb	7.50 to 7.75	7.50 to 7.75
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton.	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton..	$60.00	$60.00
Machine shop turnings, Chicago, net ton.	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	Sept. 4	Sept. 11
Rubber-covered wire base, New York. cents per lb	30 to 37	30 to 34
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40 to 36.75	32.40 to 36.75
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, rdger (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3½	*3½
Tie plates (brace type), cents per lb	*3½	*3½
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3½	*3½
Angle plates, cents per lb	*3½	*3½
Angle bars, cents per lb	*3½	*3½
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount†	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	11½ to 22	16 to 40
Waste cotton (100 lb. bale), cents per lb.	13 to 13½	12 to 13
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.90	$1.90
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.92	$1.92
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	65½	66½

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, September 21, 1918 *Number 12*

Liberty is Asking for Billions of Dollars

OUR poster this week tells its story. Now is the time, when the enemy is faltering and falling back, to emphasize the determination of America to use "force to the uttermost" to settle the questions involved in the war, since this is the only kind of argument which the Hun understands. Every electric railway manager should ask himself this coming week: "Is my organization prepared in the best possible way to assist all of its employees to subscribe to Liberty bonds?" Every individual should raise the question in his own mind: "How large a subscription can I make to help bring this war to a victorious conclusion?" The poster which accompanies this issue has been drawn especially for the McGraw-Hill Company by the same artist who was responsible for our previous war posters. We suggest that each subscriber put it up in some place where in his opinion it will do the most good.

Government Gives Car Standardization a Boost

THE announcement last week that at the request of the United States Housing Corporation a number of car design experts are getting their heads together to evolve a design of car which can be used in locations in which the corporation is interested deserves more than passing notice. It is a step, although possibly but a short one, in the direction of ultimate general standardization.

The impelling reasons for standardization in this case, however, are different from those which are effective in normal times. Ordinarily the arguments which are germane are that standard cars ought to be cheaper than others, and that it should be possible to procure them more promptly because the manufacturing operations are standardized and the parts can be kept in stock. In the present instance the government is purchasing cars, directly or indirectly, on large scale. These are for the transportation of war industry workers. They may or may not be needed at the close of the war on the properties now operating them. These cars should, therefore, be of such a type or of such types as readily to be available for use on other properties.

Regardless of the purpose of the present proposed standardization, however, such standardization cannot but be of value to the industry as an object lesson. It will, if successful, indicate what could be done on a larger scale if the necessary centripetal force could be brought into action. There is too much individuality still in car design, but the tendency is to swing away from it. We cannot afford it. At the same time it would not be safe to ignore the importance of keeping the inventive talent stimulated. There must be a "happy medium" between stagnation and non-essential variation. The Housing Corporation's committee may help us in finding this.

Save Paper and Gas the Hun

THE War Industries Board has issued an urgent call to this country to economize in the use of paper. All magazines, including the ELECTRIC RAILWAY JOURNAL, have been instructed to reduce their consumption of paper 10 per cent as compared with last year but with no guarantee of adequate supply under the reduced tonnage. The War Industries Board has also formulated a number of regulations designed to promote economy in the use of paper by magazines, such as discontinuing exchange and complimentary copies of the paper, stopping all subscriptions promptly at the date of expiration unless the subscriptions are renewed and paid for, and other rules. All of these regulations this paper is pledged to carry out and it is glad to do so. But it believes that by the arrangements which it has made it can fulfill all these rules without impairing in any way the service which it is giving to the electric railway industry.

Economy in the consumption of paper is desired for many reasons. In the first place, paper making requires a large amount of fuel, labor, capital and transportation space, all of which can be used for war purposes. Paper manufacture also requires chemicals, notably sulphur in the form of SO_2, and there should be no shortage of sulphur because it is used in great quantities in the manufacture of war munitions, especially of poisonous gas. Hence, economy in paper will help this country to carry on its gas warfare against the Germans and thus turn their original invention against themselves.

But magazines and newspapers are not the only consumers of paper. It is being used far more extensively than ever before by all of the government departments in the form of stationary, posters, and boxes for shipments of munitions, foodstuffs and other supplies over seas. It is important for all users of paper, whether publishers or others, to keep all paper waste to a minimum Electric railway companies may not be as great consumers of paper as many other corporations, yet they also should see what they can do to limit the amount actually used and to conserve the paper not actually employed by seeing that it is sold to the junkman and thus made available for reuse. Perhaps the most extensive use of paper by electric railway companies is for transfer tickets. On the largest properties the number of transfer tickets printed for each day's use runs into the millions, but of this number only a portion are actually issued. Paper is going to be more expensive in the future even than now, so that each company has a material object in reducing waste as well as a patriotic motive to help the rest of the country. Examination should be made also to determine whether all of the forms employed in tabulating operating records are necessary. There may be a chance here for economy as well as in the use of stationary by single spacing typewritten letters, using both sides of the paper for carbon copies and in other ways.

Let the slogan be "Save waste paper but don't waste paper."

High Rentals Do Not Mean An Excessive Rate of Return

COMMISSIONS, like individuals, are human, and consequently they sometimes say and do strange but excusable things. In general, however, regulation has reached such a state of development that it is extremely difficult to excuse any evidences of a misunderstanding or lack of understanding as to simple fundamentals.

We are led to enter upon this discussion by the following remarks of the Board of Public Utility Commissioners of New Jersey in its recent decision covering the Public Service Railway fare case:

> Should, in future proceedings, an investigation be made to ascertain the fair value of the property and the return received by the petitioner, undoubtedly the underlying leases under which the petitioner operates will be and should be carefully analyzed and the rentals paid thereunder investigated, for in ascertaining the fair return upon the property not only would the return received from the rates of fare as at present charged be pertinent, but it should also be determined whether the fixed charges are excessive.

Zounds—words almost fail us! Why must fixed charges be considered in connection with the determination of a fair return? Courts and commissions without number have ruled that a utility is entitled to charge rates sufficient to pay a fair return upon property used and useful in the public service. Once a fair valuation is made—which the New Jersey commission presupposes—fixed charges or any phases of corporate capitalization have nothing to do with the determination of a fair return by the commission.

The reasons are so simple that it seems a waste of time to state them, but apparently it must be done. The Public Service Commission for the Second District of New York in the recently decided fare case of the United Traction Company had the basic point in mind when it remarked: "It makes no difference in fixing rates whether a road was built with the proceeds of bonds or altogether by the sale of capital stock." It might with equal truth have added: "or whether it is operated under lease or directly by the owner." For if a fair return is allowed on the value of the used and useful property, it is none of a commission's concern whether this return goes to many bondholders and few stockholders, or to few bondholders and many stockholders, or mostly to lessors and little to security holders.

Property operated under a long-term lease is valued along with property built by means of money from stocks and bonds. Perhaps the rental is high, in the light of present utility conditions, but that has no bearing upon a fair return on the property as a whole. If the lessors are receiving too much and security holders too little, that is a problem for the company and its owners to work out. For a commission to interfere in the internal affairs of a utility and refuse a fair return on the property because of believed inequities in the corporate financial structure would be a lamentable usurpation of authority.

But suppose no detailed valuation is made and the commission is considering the grant of emergency rates. Should the fixed charges then be scrutinized? Yes, but two cautioning remarks should be made. First, if the bondholders seem to have received a high return; if the lessors seem to have been likewise favored—these facts mean nothing by themselves. The vital point is this—have all the security holders combined been receiving too high a return on a reasonable estimate of the value of the utility property? Second, if the utility has presented an appraisal estimate by a competent engineer, a commission has no moral right to disregard it utterly. It should be willing to accept every reasonable indication of utility value and grant provisional relief pending later examination, if such is needed.

The public does not yet understand the simple basis of rate-making. Hence, when it hears tales of leases with high rentals, it jumps to the conclusion that it is being robbed. It can be taught differently in time, but the work would be easier if regulatory bodies did not sometimes do such muddled thinking.

Every Shop a Reclamation Shop—But Not a Factory

IN THESE TIMES of shortage and expensiveness of materials needed in the electric railway maintenance shop it is no wonder that reclamation work is more conspicuous than in normal times. Some things must be done now that might not have been economical before. At any rate, every master mechanic in these days is lying awake o'nights in order to scheme out ways of making existing equipment and supplies go as far as possible.

In the issue of this paper for Aug. 31 there appeared an account of a centralization of reclamation work which had been brought about on the property of the Connecticut Company. The principles involved in the plan were not novel, but the ways in which they were applied in this case were interesting and suggestive. On every live property, large and small, something of the same kind is going on. The principal lesson from the Connecticut Company's experience, it seems to us, is the importance of developing what might be termed "reclamation specialists" who can apply, to the local work in hand, the best reclamation methods which are available to him.

There is plenty for a reclamation specialist to do in keeping up with the very rapid progress in this work in all fields. He can learn from manufacturers as well as from maintenance men, from shipbuilders, from locomotive repair shop men. Take, for example, this matter of gas and electric welding and cutting. What a world of progress has been made in the past few years! "There is nothing new under the sun," at least very little, in this field as in others, yet it has taken the present crisis and the conditions immediately preceding it to get engineers really to appreciate what could be done with this form of concentrated heat. Now any master mechanic will tell you that it is a "life saver" for him.

At the moment unusually rapid progress is being made in this art under government stimulus, and some one in every electric railway shop organization ought to be keeping up with it. The technical papers of all countries are full of the subject, and there has just been published by the Emergency Fleet Corporation an elaborate report on electric welding, under the auspices of its electric welding committee. This report covers resistances, spot and arc welding.

Welding has been mentioned specifically as an illustration of reclamation work, but it is only one of several means at hand to the reclamation specialist. Nothing will reflect greater credit upon the master mechanic on any property than the effective use of all of these means for saving something.

But right here we feel impelled to suggest another but kindred line of thought, namely, that a maintenance shop should not also be a factory. There is a great and apparently an increasing tendency on the part of mechanical departments to manufacture things. Now there is a danger here that we shall fall into the pernicious practice of the jitney—to take off some of the cream of the manufacturing business, leaving skim milk to the legitimate manufacturer. We do not refer to the making of patented articles, a practice which is beneath the dignity or the principles of a railway company, although occasionally indulged in. We have in mind the making of supplies in a field well covered by responsible makers of equipment.

This paper has always stood for any shop practice which is for the long-run good of the electric railway. It is for this good that we condemn competition with manufacturers where these are satisfied with a reasonable profit, considering all proper charges. Such charges include allowances for development work, fixed charges, selling cost and something for the manufacturer himself. Company bookkeeping in this regard is apt to be like municipal bookkeeping in connection with utility operation, namely, in the ignoring of charges which are really part of the manufacturing cost. Where a railway company, which is not organized for manufacturing and can do so on only a small scale, estimates that it can manufacture supplies, all things considered, cheaper than a manufacturer who is organized for just that work can sell those same articles, the chances are that something is wrong with the estimate. In such a case we advise the company to search diligently for bookkeeping entries in which some "overhead" has been omitted.

But even if some articles can be made for less than they really cost to buy in finished form, it is a fair question as to whether it is even then the best policy to make them, unless an extortionate price is asked. Manufacturers who enjoy a good trade with a company on a variety of articles on which a reasonable profit is made are more apt to put themselves out to supply some special demand of that company, if one should be made, than if the railway came to them only when it had a favor to ask.

Nearly Time to Shift the Clock Hands Back an Hour

LITTLE more than a month remains of the operation of the "daylight-saving" law. On Sunday, Oct. 27, the clocks which were turned ahead one hour on March 31 last will be set back and Mr. Average Citizen can stretch his limbs for sixty minutes longer in the morning and gradually get back into the habit of turning in an hour later at night.

This measure, passed after long debate in Congress, has undoubtedly been very effective in conserving the health, wealth and mineral resources of the nation. While no dependable figures are available on the total fuel saving resulting therefrom, it has been estimated that this law will have been responsible for the conservation of from 1,000,000 to 1,500,000 tons of coal during the seven months of its operation. Electric railways have had some of the benefit of this economical measure, and the people as a whole probably have profited to an unappreciated degree by the enjoyment of extra leisure during daylight hours.

The fundamental principle or purpose of the daylight-saving plan is to synchronize the period of work with the rising of the sun rather than with the time (noon) when the sun reaches its meridian, so that during the summer when the days are long, the period of recreation after work can be taken while there is natural light rather than during a time of artificial light. As the sun rises some three hours earlier in June than in December in the latitude of New York, the present plan, in which work is begun only one hour earlier in summer than it is in winter, does not fully make up for this variation in the time of sunrise. However, it does so to some extent, and as well as could be done with any system involving only two changes of time, one in the spring and the other in the autumn.

The suggestion has been made by some enthusiasts for the present daylight-saving plan that it should be continued throughout the year. They believe that people are now so accustomed to rising an hour earlier than they otherwise would that they would continue cheerfully to do so during the winter. These advocates however, overlook the fact that such a plan would require most people to get up a considerable time before sunrise. They would thus have to use artificial light in the morning instead of in the evening so that there would be no saving. Moreover, such a measure would be very unpopular because while most people do not object to sitting up in the evening with artificial light they do object to being obliged to use it after rising in the morning. We are afraid that if the plan were followed throughout the year the tendency in winter would be gradually to delay the times for beginning and ending work, and the hours being thus fixed for winter conditions could not easily be changed back during the summer.

Another point worth mentioning, a psychological one, is that if people used much light in the morning they would forget to turn off this light until some time after the necessity for it had ceased. They could not be expected to keep the matter constantly on their minds; hence another incidental advantage and economy in shifting the clock hands back to their normal place in the winter time.

Some Practical Points in Pole and Tower Erection and Support

By Charles R. Harte
Construction Engineer The Connecticut Company,
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These Points Have Particular Reference to Erection in Marshy Ground and Also Cover the Procedure in Raising Steel Towers of Different Types

IN THE cases of pole settings described in a previous article it has been assumed that the soil is of reasonable bearing capacity, at least ½ ton per square foot. It is generally a very good investment to go around any area of softer ground that cannot be "jumped" by a long span. When, however, the difficulty must be met directly, special construction is required.

The simplest plan is to attach the poles to a trestle or bridge, but frequently there "is no such animal," and where there is one, if it is owned by other parties there is often refusal to permit its use, or a prohibitory rental is demanded. If the structure and the line are built at the same time, as is often the case where they are for the same property, it is a simple matter to provide for the pole attachment, but if the structure already exists it may be difficult to get clearance. Sometimes this latter is effected by leaning the poles outward. With pin insulators this tends to lower the wet weather resistance; with suspensions it may necessitate special construction to maintain the normal clearance.

Setting Poles in Soft Ground

When the line must stand on its own feet the treatment depends primarily on the character of the soft ground to be crossed. With open water, or in a swamp of some depth and lacking a firm top, practically the only possible treatment is to use piling, to which the pole is bolted either directly or through some intermediate structure. How to handle the piling is often a very serious question. It is surprising with how light a hammer a pile can be "worried down" into soft material, and with but a few inches of open water a light-draft barge can be rigged up that will serve every purpose. It is of chief importance to give the piles holding power against a pull or push on end, for three piles which sway greatly at a touch, if they have a batter of 3 in. or more to the foot, can be tied together at the tops to form an exceedingly firm support.

Where there are only a few poles to be driven, it is often possible to work them down by setting them in place, loading them as heavily as possible, and then, by means of several lines tied to the top with a man on the other end of each line, rotating the top in a small circle. There are two difficulties to look out for. So long as the motion continues the pile will go down, unless of course it has reached hard bottom other than sand, but if it is allowed to stand for a short time the material settles back and makes further "driving" all but impossible. The other point is the danger of an upset in the early stages if the load is very heavy and the head is pulled much out of plumb. This method can sometimes be used to advantage in the case of soft swamps which cannot be navigated by scows, but on the other hand are too soft to carry the pole on surface supports. Incidentally, it will often permit the putting down a pile or a pole in a sandy bottom under water which would completely resist driving by hammer unless a water jet was used.

Special Treatment Needed on Long Stretches of Marsh

It should, of course, be understood that these treatments are particularly for the cases where the stretches of bad ground are comparatively short, and separated from each other by some distance. If the adverse conditions are extensive the situation will warrant some study and often considerable investment in plant specially designed to meet the case.

Many swamps have firm bottom overlaid by "mush" of no stability whatever. Single poles rested on this firm base will be perfectly good against the load so long as they stand plumb, but unless their penetration into the hard material is practically to the depth which would be given in setting them on dry land, or other preventive treatment is given, they are very apt to sway badly in the wind and presently to overturn. Such poles may be steadied by guys, with concrete, stone or metal anchors, in which case the guys must be of such material or so protected as to guard against corrosion.

Of higher first cost, but usually much cheaper in the end, is the use at each pole of three piles, battered at least 3 in. to the foot, 120 deg. apart and projecting about 8 ft. above normal water level. At their tops these are bolted to the pole, the butt of which rests on and is bolted to a framework carried by the piles just above water level. An experienced crew finds little difficulty in driving batter piles, though the pile driver may not have been built for such work, but where the men are all green a plumb structure may be used, the piles forming a triangle or square about 12 ft. on a side. In this case the piles should extend roughly one-third of their length above the water and the adjacent ones should be tied together by X-bracing for this length to prevent swaying. The pole may be carried as in the case of the battered triangle, or it may rest on the top platform and have braces from the pile tops to a point near the bottom crossarm.

Some Meadows Are Particularly Treacherous

Morasses of the open water type are obviously danger points, and while their treatment may require quite a little study they are not at all likely to be overlooked.

"Cats of entirely different color" are the meadows with a more or less firm top covering all sorts of iniquity. If the crust is thin the treacherous character is fairly evident, but when, as is often the case, the crust is firm to a depth of several feet, it is easy to make the mistake of supposing that the firmness holds all the way down, with consequent later regrets. Swampy character of the surface and the presence of black or brown soil are always a warning to test with a sounding rod. For pole-line purposes a few short lengths of ½-in. iron pipe with a solid point to screw on the end are excellent. With a solid surface 3 ft. or 4 ft. thick, a pair of sections of old pole 8 in. or more in diameter and 8 ft. or 10 ft. long, or their equivalent, (a pair of railroad ties are excellent) bolted through the center to the pole at ground level, will give the necessary additional support. For thinner crusts the bearing area needs to be correspondingly increased. Specifically, the probable maximum dead weight is that of the pole, the attachments and the half spans each side, with the ice load for the district. The area of support must be such as will give a pressure per square foot on the surface covered not over one-fourth the pressure the surface can stand.

SUCCESSIVE STEPS IN THE ERECTION OF A TRANSMISSION LINE TOWER

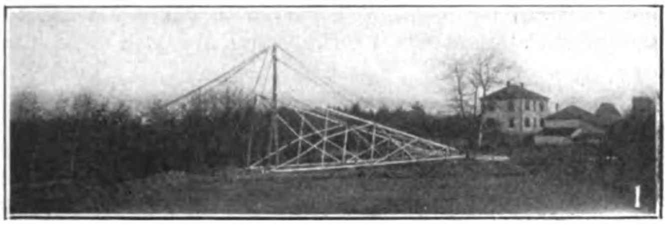
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Fig. 1—Ready to start.

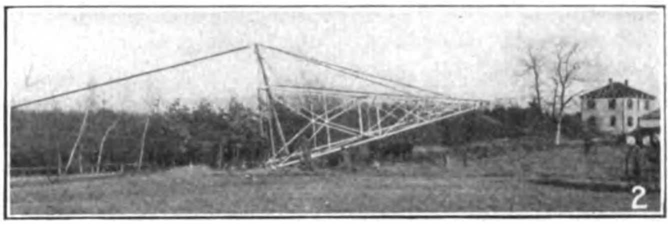
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Fig. 2—Tower being lifted, gin pole acting as a lever.

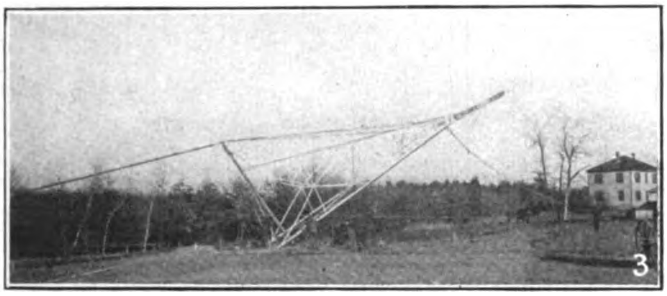
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Fig. 3—Gin pole practically at the end of its duty.

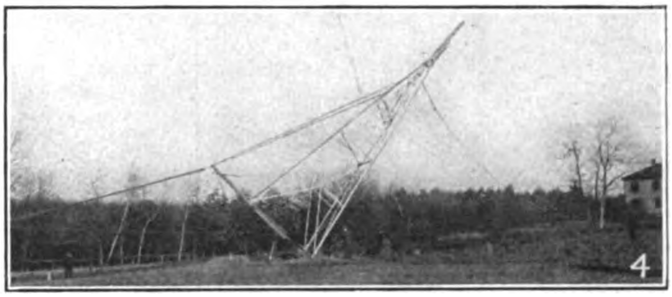
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Fig. 4—Gin pole pulling away as the attachment at the top gives greater leverage.

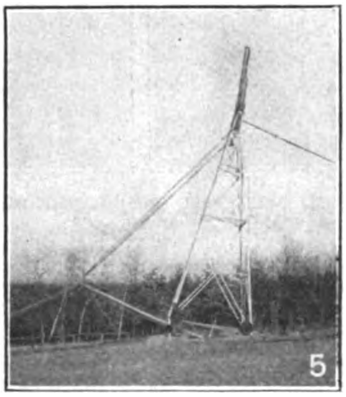
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Fig. 5—Holding back the top while a man adjusts the foot connections.

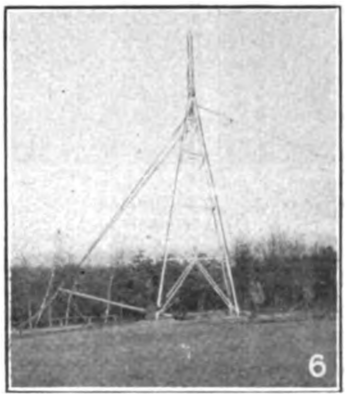
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Fig. 6—Tower up, foot connections being bolted up.

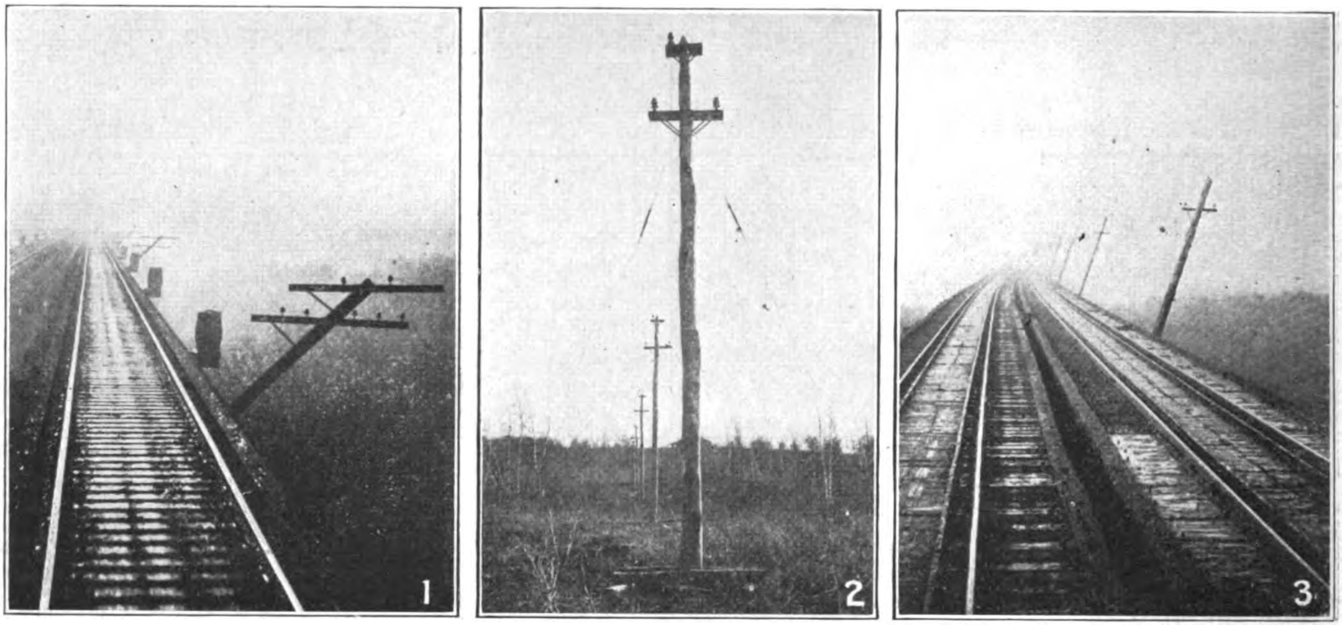
What that pressure may be can be roughly determined by loading a 6-in. x 6-in. stick held vertically by small guys. The weight which forces this through the crust is approximately the pressure allowable per square foot. In making such a test, enough time must be allowed to bring out the facts. Marsh crusts will usually carry for a short period a load much in excess of that which would break through in a longer time. A fair procedure is to add 50 to 100 lb. each time, and to allow three or four days to elapse between successive additional loads. If, however, time does not permit this, daily loads of 200 lb. each will give fair indications, and will be on the safe side.

The purpose of the support arms is particularly to give support to the vertical load, and whenever practicable guys should be used to prevent overturning. The crust of a meadow owes its strength very largely to the network of living roots of the plants growing on it and, like a piece of cloth carrying a load, fails badly as soon as any break occurs in the fabric. If support arms are relied upon to take the place of guys, the pole, tending to turn at the ground line, throws the entire effort on the end of the arm. This gives a pressure which is equal to the bending moment of the pole at the ground line in pound-feet divided by the distance from the pole to the end of the arm in feet. (It will be remembered that the bending moment at the ground line is the sum of the resultants of each element of pressure multiplied by its distance above the ground line.)

This arm pressure tends to force the end of the arm into the earth, increasing the area pressed, and at the same time to lift the pole bodily, the arm end acting as a fulcrum, until the forces balance. The fulcrum can be given sufficient area to bring the pressure per square foot within safe limits by putting cross timbers or mudsills under the arm ends. But in choosing these the cross-section must be not only strong enough to transmit the load from the arm to the surface without breaking when new, but must have a large factor of safety to cover the reduction of strength which is apt to be rapid because of the conditions.

Where the arms are depended upon for cross-line support, they will usually be 3 in. x 8 in. or larger, in pairs, through-bolted to the pole, which should be slightly flattened to give a good bearing. Paired diagonal braces, 2 in. x 6 in. or heavier, and making an angle of 60 deg. or more with the horizontal, have their tops through-bolted to the slightly flattened sides of the poles. The lower ends go between the arms close to the ends and are there bolted, a block of the proper thickness being used to fill any space left between them. The bottom of the arms should be about 1 ft. or the thickness of the mudsills, if these are used, above the meadow surface, and particularly if arms or braces are less than 4 in. wide filler blocks should be bolted between at intervals of about 5 ft. All parts of these frames, as well as the pole to a point above the upper brace attachment, should have some form of preservative treatment, and particular attention must be given surfaces in contact and to holes or cuts made after treatment, to insure that they are properly closed.

Sometimes 1-in. or 2-in. plank is driven under and at right angles to the mudsills. It is a question, however, if this really protects the bottoms of the mudsills proper from decay, and if the latter are not of uniform thickness they are worse than useless until the uneven pressures are balanced, this generally occurring by breaking the heavily loaded planks.



FIGS. 1 AND 3—POLES ATTACHED TO TRESTLE AND INCLINED OUTWARD TO SECURE STABILITY. FIG. 2—POLE IN SWAMP WITH TIE SUPPORTS AT BASE

In the long run it will almost invariably pay to use piling for the support of the ends of the arms, in which case the latter are framed and through-bolted into the piles. Good results, however, may be had with mudsills, which should be 6 ft. to 8 ft. long, with a vertical thickness of at least as many inches as the length in feet.

Concrete poles in firm soils are set to about the same depth as wood poles, but their weight and the impossibility of using ordinary pike poles practically compels the use of a derrick. In moderately soft earth a concrete footing is used, a plain or reinforced slab of sufficient strength to carry the weight of the pole and its loads being first cast in the bottom of the pole. If practicable, this is allowed to set for at least ten days before the pole is placed on it. The writer has not had personal experience with concrete poles used in very soft ground, but it would seem that conditions which warranted the use of a concrete pole line across such territory would also warrant the use of piles and brackets similar to these for wood poles but in reinforced concrete.

Steps Involved in Putting Up the Steel Tower

Tower erection usually involves three steps; placing the footings, assembling the tower and, finally, erection proper.

The early towers followed windmill practice, and employed masonry or concrete footings extending from below the frost line to at least 6 in. above the surface, and carried anchor bolts by which the tower base plates were held rigidly in place. The top, for an area of that of the base plate, was level with edges beveled to shed water. Footings of this type are still used for anchor and other special towers but require much accuracy in location. For the smaller towers, because of the large *relative* amount of forms and the small amount of concrete, they are very costly. Where they are used a "wrinkle" from steam-engine practice can be borrowed to advantage. Instead of placing concrete close around the bolts, a piece of tin rain leader of diameter 2 in. or 3 in. larger than the bolts, and of proper length to reach to the top of the footing, is slipped over each bolt, resting on the big washer at the bottom. The bolts, with these sleeves centered on them, are then hung from the templates and the footings are poured. The tops of the bolts can then be moved to meet any lack of agreement between tower base and template up to the limits of the large hole in the concrete, which is grouted full after the tower is bolted down.

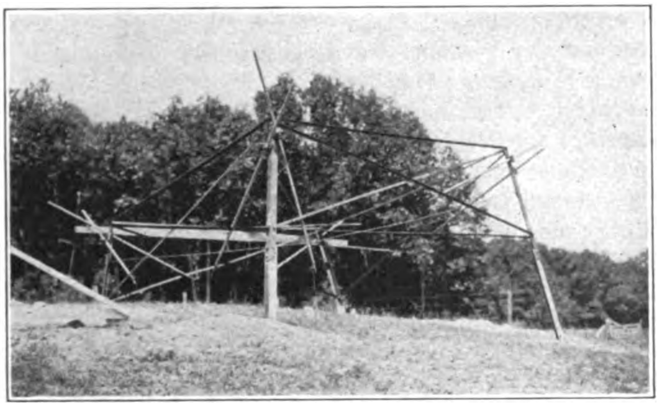
The next step was the substitution for the base plate of the tower and the anchor bolts, of an extension of the tower legs to which the tower proper was spliced. At first this extension was bedded in the heavy form of footing, but very soon the latter was cut down to a sort of mushroom anchor. On at least one good-sized line these were cast in yards and after curing were teamed to the points of use. While this effected a large economy in labor costs it was found that unless the coating was reinforced, in which case the saving was largely lost, it cracked off in handling.

To-day for good soil it is very general practice entirely to omit the concrete. The ground stubs, as they are generally known, consist of about 8 ft. of the section used for the tower leg, with a crossbar about 3 ft. long at right angles to it on the bottom. This stub should be protected with a heavy galvanizing or other treatment, although many are actually set with only the shop coat of paint.

Do Not Neglect Proper Refilling of Foundation Holes

It is essential that the refilling be of good material, preferably with some heavy pieces of rock on top of the crossbar, and if the setting is carefully done no difficulty need be feared. There occurred, however, a very costly failure on a Western line as a result of poor judgment of material. The line in question crossed a flat valley having a soil which, while very hard when dry, lost all strength when wet. The holes, dug in dry weather, were blasted out, and the hard lumps were used as filling without ramming. When a little later a heavy rain flooded this low land, the lumps melted down like soaked sugar, and a long stretch of line went down, tower after tower, merely from the pull of the conductors.

Pre-cast foundations and ground stubs are usually set by template. One of the best forms consist of a square or rectangle, having at its corners short sections of the same angle as is used for the tower legs and at the same inclination, together with a pair of rods or pipes in clamps. The angle sections are drilled as are the tower legs, and extend such a distance below the sides of the rectangle that the tops of the sides are an even number of feet below the lowest conductor, while from diagonal braces is hung a plumb bob at the center. The template is centered on the tower center by the bob, squared with the line by center marks on the two sides, leveled at the proper height and supported on the adjustable rods. The template shown in an accompanying cut has pointed rods, which have to be well driven to prevent later settlement. A flat foot about 6 in. square is better but, of course, in such case care must be taken that the material beneath is reasonably firm and that any moss, leaves or the like have been removed. Incidentally, flat-footed supports readily permit the recentering and relining which is almost invariably necessary after leveling up. The footings are now bolted to the template legs, the holes for them having been dug before the template was set. The holes are then filled in and tamped, keeping the refill at about the same stage in each hole and working completely and uniformly around the stubs to avoid springing them out of place.



TEMPLATE FOR SETTING TOWER FOOTINGS
Note paired support at each leg, now lifted, on which the template is adjusted before the footings are set

PRE-CAST MUSHROOM TYPE FOOTINGS
Note how the concrete has broken off in handling

By having the sides of two overlapping parts suitably drilled, the size of the rectangle can be adjusted for a very considerable range of tower heights, while the substitution of leg sections with base plates properly drilled makes it available for such foundations. In the best form of base plate the anchor bolt passes through the base plate proper and extends up through a second plate or bracket nearly a foot above, thus obviating the tendency to bend the bolt in the threaded portion, and this long bearing in the template holds the bolt against displacement as the concrete is poured. If the base is of the older type, in which the bolt extends only 2 in. or 3 in. above the top of the concrete, it will pay to have temporary extensions, readily made from heavy pipe, to screw onto the bolts, and fitting in guides on the template to hold them firmly in place. As they are vertical, they can hang from the template without such control and if sufficient care is taken there will be no trouble. With the bolt firmly held, however, displacement is practically impossible except by deliberate intent, and the insurance is well worth the trouble.

Towers Are Usually Tipped Up Into Place Complete

Although there is pretty wide diversity in tower design, the shipment, assembly and erection of the types differs comparatively little. The flexible forms are usually shipped complete, and rigid types are shipped knocked down, the parts for each tower together. Bolts and small parts are bagged; other members are tied in bundles. Each bag or bundle is marked with the tower number and the nature of its pieces, and each piece with its erection mark. It is therefore a simple matter for the checker to make sure that, barring a shortage of parts in a bundle, all the material for any tower is on the ground.

The assembly gang, following the men setting foundations, usually set up opposite sides flat on the ground. They first lay out the two adjacent legs the distance apart they will be and at the angle they will make when assembled, with the bottoms close to the foundations, then set the other leg of each side and finally put in the diagonal. In the case of those towers which, like the Milliken, have legs which are pyramids, the entire half tower can be so erected. With towers having long connections from leg to leg only the sides are first set up. The parts are then turned on edge and the assembly is completed. Moderately high towers are often put up in two sections; heavy towers are almost always erected piece by piece in place.

The earlier method of erection was by some form of gin-pole or derrick which lifted the tower bodily into place, but to-day the practice of tipping it up on its base is almost universal. Certain designs have the necessary stiffness; for the others temporary wooden braces are fastened between the legs. A cable is then made fast near the top of the tower and to the top of a tilting pole set up at the tower base. This pole is about one-third as long as the tower height and, in addition to the cable back to the tower top, it has fast to its top the hoisting falls which lead to an anchorage about the tower's length from the foundation. A hold-back from the tower top to a good "snub" or anchor completes the rig.

When all is ready two men "stand by" at the foundation and one at the snub; a pull on the falls tips down the top of the tilting pole and through the cable tilts up the tower until falls and cable are in the same line. After this the tilting pole simply hangs on the line and the pull is directly on the tower. As the latter comes near the vertical it is checked by the snub until what have been the upper two legs can be connected to their stubs by one bolt each. The tower is then rotated on these bolts as pins until the other legs can be connected to their footings, when all are bolted up. With foot-plate foundations, if the tower is tilted up it is necessary to put blocking to the level of the bolt top and then to lower the tower after it has been lined up. General practice, however, confines foot plates to towers which are built in place or to those which, as when along a railroad or highway, can be handled bodily by a derrick. Where free access can be had to the foundations a truck or car derrick is by far the best device for erection. As a rule, however, much of the line comes where a derrick cannot be readily taken. The labor of handling and guying a gin pole of sufficient capacity makes it less economical than tilting pole.

Towers so heavy as to require piece by piece erection follow ordinary structural steel erection practice with riveted connections throughout. The smaller towers—except the A-frame or flexible type, which are usually riveted in the shop—are almost invariably bolted together.

Ventilation of Manholes

Every manhole built by a certain Middle Western company is fitted with at least one opening for ventilation. The smallest manholes measure 5 ft. x 7 ft. x 6 ft. high. Holes of this type in which there are no transformers or which contain units of small size are equipped with a 10-in. tile running to the nearest pole, and an 8-in. pipe is then extended from the tile up the pole. For manholes containing transformers rated at 25 kw. or more two such ventilating openings are installed. In this case one vent opens near the top of the hole and one near the bottom, and on the pole the openings are at different levels to create a temperature difference and cause circulation of air.

"Jenney" Versus "Deadman"

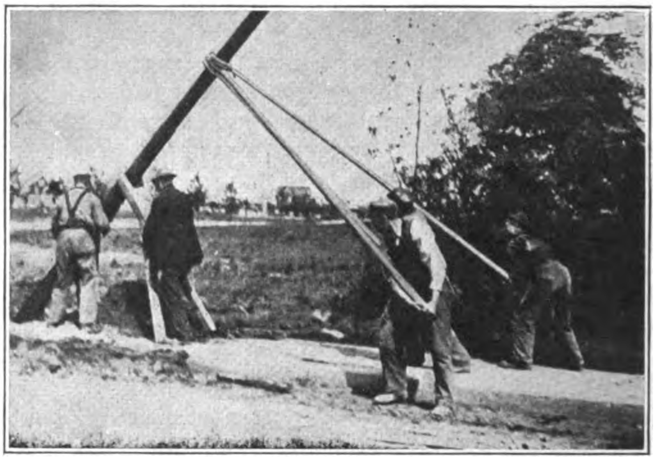
Convenience Should Be Sacrificed to Safety in Raising Poles

By G. H. McKelway

Engineer of Distribution, Brooklyn Rapid Transit System

In THE Aug. 17 number of the ELECTRIC RAILWAY JOURNAL, Charles R. Harte continued the series of admirable articles on overhead construction which he has been contributing by explaining the proper way to set wood poles. I have found these articles the best and most helpful that I have ever seen on the subject.

In the latest article he mentions the "jinny" as a "substantial prop of Y-shape about 7 ft. long." While that name may be the one commonly used for the tool in Connecticut, it is a misnomer so far as some other parts of the country are concerned. In order to assure myself of the fact, I looked the tool up in several catalogs of line material which are distributed over all of the United States, and found that in them the "jenny" or "jenney" is made in the shape of an X rather than a Y, and is therefor built to rest with two feet on the ground.



SETTING A STEEL POLE WITH A "JENNEY"

The prop of Y-shape is generally spoken of as either a "mule" or, more commonly, a "deadman." While the latter is the more universally used, principally because of its greater convenience, yet the other type, which is not mentioned in Mr. Harte's article, is the safer, though undeniably the more clumsy. With the ordinary deadman there is always the possibility of a pike or piker slipping or something else occurring, which will throw the entire weight of the pole to one side. In such a case it is very difficult to keep the deadman upright and there is great liability of the pole tumbling to the ground and seriously injuring one of the men who are attempting to raise it. When the jenney is used the occurrence of such an accident is practically impossible, because the two feet when resting on the ground brace it from both sides so that it is very difficult to overturn.

Owing to the fact that one or two serious accidents occurred while poles were being raised with deadmen, their use was forbidden several years ago on the railway system with which the writer is connected. Since then there have been no such accidents.

Subsoil and Its Important Relation to Track Construction

By R. C. Cram

Assistant Engineer, Way and Structure Department, Brooklyn Rapid Transit Company

The Author Analyzes Track Development Since the Beginning of Electric Railway Operation—He Explains Why Subsoil and Ample Drainage Are Prime Requisites in Track Construction

> Among the many depraved traits that inanimate matter possesses, none has caused greater surprise or reflected more severely on the skill of engineers than the behavior of rails and joints since they were made to do service under electric cars, and notwithstanding that a great amount of inventive genius and experimental effort has been expended in improving details of foundations, ties, rails and joints, street railway companies everywhere feel more or less solicitude lest they fail to secure the highest standard of excellence desired.
>
> Although no construction with which we are acquainted meets all requirements in a fully satisfactory manner under all conditions, great advances have been made, and this line of engineering, which heretofore has been considered an humble branch of the profession, is now receiving the attention of the best engineering talent in the country, and some of the modern arrangements represent notable and important improvements over former practice.

THE foregoing quotation might have been written yesterday in comment on present-day track construction, but it really was written in 1892 by the late C. B. Fairchild in his memorable work on "Street Railways."

An editorial in the ELECTRIC RAILWAY JOURNAL not long ago commented upon the important report recently submitted by the committee on stresses in track of the American Railway Engineering Association as follows:

> It is well known that railroad track is a structure which has been evolved from previous practice and experience rather than from study and experimental data along scientific lines. It has remained for this committee to earn the enduring regard of the engineering profession through its demonstration that track is subject to known laws and scientific treatment in common with other engineering structures. The proof that track is an elastic structure acting in accordance with Hooke's law is of itself a material contribution to the sum of engineering knowledge.

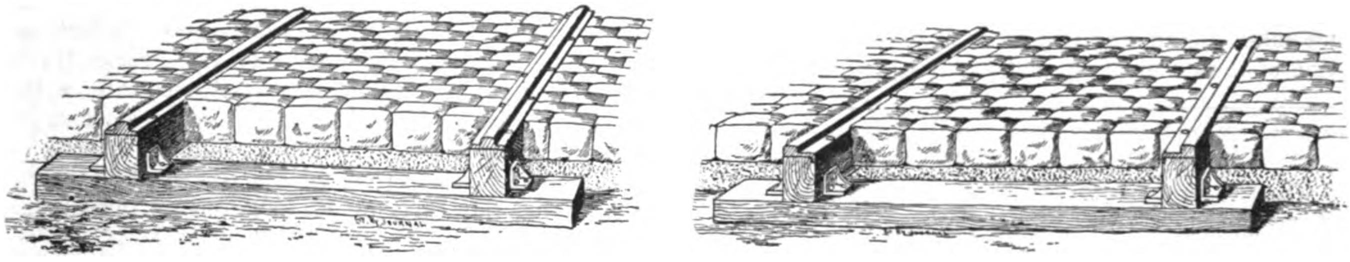


FIG. 1—ORDINARY STRINGER CONSTRUCTION FOR HORSE CAR LINES, WITH CENTER BEARING AND SIDE BEARING TRAM RAIL

In the light of this editorial statement we may judge that electric railway engineers need not feel that there is so much reflection upon their skill after all, since it has taken steam road engineers such a long time to discover some of the fundamental laws governing their track construction.

Study of Strength of Materials Necessary in Track Design

At last the fact is becoming recognized that the design of tracks is not a simple matter, whether they are located on private right-of-way or in paved streets. On the contrary, their design calls for the exercise of extreme care and engineering skill in the selection and utilization of a number of different materials which must be united in one structure, just as a great office building must be assembled with materials from many sources. In order successfully to design either a building or a track structure there must be an appreciation of the qualities and strengths of materials combined with the knowledge of their performance under varying conditions which mainly comes with long experience. The principal materials in a track structure before assembly are: Soils, gravel, crushed stone, sand, cement, timber, iron and steel, together with a multitude of paving materials such as granite, wood block, brick, sandstone, slag-brick, pitch and various combinations of bitumen with stone. Some of these items, such as rails, ties, concrete and pavements, assume the position of added items when considered in their assembled state.

It will be the purpose of this and subsequent articles to consider these materials in their relation to the track structure.

Modern Track Dates from the Beginning of Electric Operation

Street railway tracks have been in process of development for more than eighty years, and during the first half of that period progress was exceedingly slow. In fact, there was no radical change in the construction of tramway tracks during the period extending from the introduction of horse cars (about 1832) to the important change in motive power from horses to electricity which began about 1888. With the advent of electric power came the real beginning of the change in track construction which led to the generally accepted types of track in use to-day. It is of interest to note that even in 1892 the main features of the present type of construction were advocated and used to some extent. In fact, a report on proper track construction was presented to the American Street Railway Association in that year which, if it were edited a bit, could just as well bear this year's date, since it pointed out practically all the essentials which are considered valuable to-day.

We may think we are very modern in our use of concrete in track construction but it was used with tramway tracks in Great Britain thirty or more years ago (see Fig. 5). Even the steel anchor chair for a concrete base, which has been used in the past by the surface lines in Philadelphia, had its predecessor in tracks in Bristol, England, as early as 1892 (see Fig. 6).

The American Street Railway Association report herein referred to also settled the mooted question of "Use of T-rails in paved streets" by saying that they were the best rails to use and should be adopted wherever municipalities would permit. Even the matter of standardization of rails was considered in that year, and it was suggested that there was no need for more than six different rail sections, but it was not until 1914, twenty-two years later, that the association finally adopted four standard girder rails, two guards and two tangent rails. Truly the mills of the gods grind slowly. What a long time the rail mills were occupied in rolling "personal" rail designs for street railway engineers!

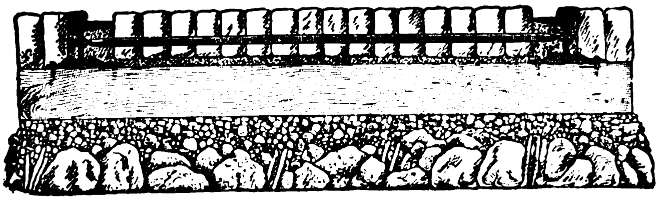


FIG. 2—EARLY ELECTRIC TRACK CONSTRUCTION; STONE BALLAST, 6-IN. RAIL SPIKED TO TIES

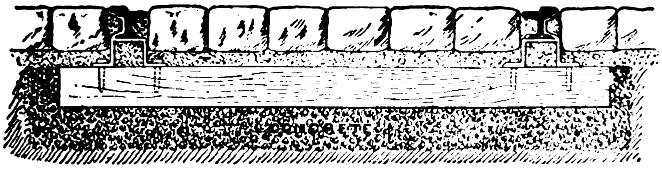


FIG. 3—EARLY ELECTRIC TRACK CONSTRUCTION, 6-IN. RAIL ON CHAIRS, CONCRETE BALLAST

Wherever we see a track which is giving good service, we cannot learn why it does so from a casual examination of it as a unit, especially if it is in a paved street. It is necessary to inquire into the details of construction which are combined in the unit. From this detailed examination we may learn how the various elements are combined and we soon find that there are quite a number of factors which have an influence in the design of track structures. Most of them will be found essential in the consideration of both open and paved track, but those which apply to paved track only will be easily recognized. The following list of factors of design is taken from the 1914 report of the committee on way matters of the American Electric Railway Engineering Association upon the subject of proper foundation for tracks in paved streets.

TABLE I—BEARING VALUES OF SOILS
(Compiled by American Concrete Institute, 1914)

Material	Safe Load in Tons per Square Foot
Quicksands and wet soils	0.1 to 1.0
Dry earth according to depth below surface	1.0 to 3.0
Moderately dry clay, confined	2.0 to 4.0
Dry, stiff clay	4.0 to 6.0
Sand, confined	2.0 to 6.0
Sand, compact and cemented	4.0 to 8.0
Gravel, cemented	8.0 to 12.0
Rock	25.0 to 200.0

TABLE II—CLASSIFICATION OF SOILS
(Compiled by United States Department of Agriculture)

Key	Material	Size mm.	Size mm.	Screens Pass through	Screens Retain on
1	Fine gravel	2.	1.	No. 10	No. 18
2	Coarse sand	1.	0.5	No. 18	No. 32
3	Medium sand	0.5	0.25	No. 32	No. 70
4	Fine sand	0.25	0.10	No. 70	No. 160
5	Very fine sand	0.10	0.05	No. 160	No. 230
6	Silt	0.05	0.005	.....	.....
7	Clay	0.005	0.000	.....	.....

By the number of sieve is meant the number of meshes per lineal inch, of wire cloth, woven from brass wire, having the following diameters for

	Diameters
Sieves Nos. 10 and 18	0.0165 inch
Sieve No. 32	0.0112 inch
Sieve No. 70	0.0045 inch
Sieves Nos. 160 and 230	0.0024 inch

"*Factors Influencing Design*—From Report of Committee on Way Matters, 1914; (1) Character of subsoil. (2) Bearing power of soils. (3) Drainage of subsoils. (4) Effect on electrolysis. (5) Forms of substructure. (6) Live and dead load to be carried. (7) Forms of track superstructure. (8) Pavement. (9) Headway and speed of trains. (10) Street improvements. (11) Subsurface structures. (12) Street and car traffic."

No. 7, forms of track superstructure, is subdivided into five factors which have a further influence upon design; these are: (a) Ties; (b) rail; (c) rail fastenings; (d) rail joints, and (e) pavement.

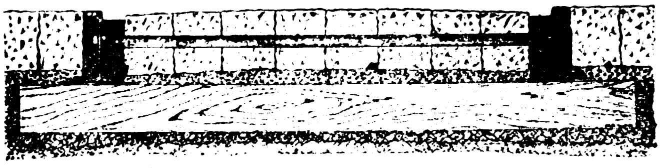


FIG. 4—EARLY ELECTRIC TRACK CONSTRUCTION (ABOUT 1892), 9-IN. TRAM GIRDER RAIL SPIKED TO TIES

There is little question but that the most important items are those relating to character, bearing power and drainage of subsoil. The 1914 way committee report above mentioned classified subsoil as the controlling factor in design and submitted a table giving data on the bearing values of soils (see Table I). In 1915 the committee again emphasized these factors and presented a classification of soils (see Table II), as determined by the Department of Agriculture, with a conclusion that the classification of soils found in city streets is desirable. Meanwhile the committee on stresses in track of the American Railway Engineering Association was carrying its experiments forward and now has in preparation a report on bearing values of soils which should be of great service.

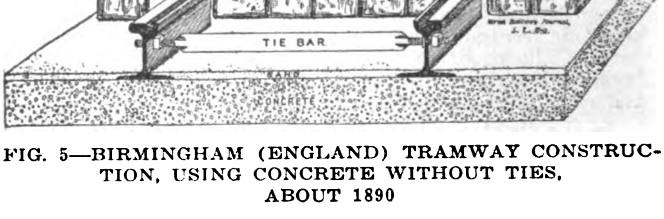


FIG. 5—BIRMINGHAM (ENGLAND) TRAMWAY CONSTRUCTION, USING CONCRETE WITHOUT TIES, ABOUT 1890

The 1892 report presented to the American Street Railway Association previously mentioned had the following to say in regard to subsoil and drainage:

> The depth of the excavation must be determined by the depth of the rail and tie, plus the space allowed for tamp-

> ing. The condition of the soil must govern the latter exclusively, but in the reconstruction of the roadbed, where the operation of cars will permit, and in all new work, unless the soil is of sandy character, the following plan will not only provide suitable subdrainage but will also insure permanency: Remove earth to a depth of 8 in. below bottom of tie; roll thoroughly with a heavy horse or steam roller; spread a layer of cinders, crushed rock, gravel or furnace slag 6 in. to 8 in. in thickness and again roll until same is well bedded and leveled. . . . The fact that the material so placed provides a splendid subdrainage is the best argument in its favor and will commend its adoption where soil demands it; for it must be remembered that it is far more expensive to open up and retamp poorly-constructed track than to properly construct and provide subdrainage at the outset.

We would not think of constructing a building of importance without determining beforehand the nature of the soil upon which we were to lay the foundation. If it is good practice to do this in connection with the design of a building, it is no less so when the design of tracks is under consideration, and the premature failure of many miles of so-called permanent track in the past may be laid to either the lack of information relative to the subsoil conditions or to the failure fully to appreciate such information as was obtainable. The fact that tracks designed with due regard to meeting all the controlling elements of design have been made to stand up, after reconstruction, in places where earlier tracks had failed before their time is sufficient warrent for the foregoing statement. However, some consideration must also be given to the not infrequent situation which formerly obtained wherein the funds provided for original construction were not sufficient to permit the engineers to incur the expense which would have been necessary fully to meet the conditions.

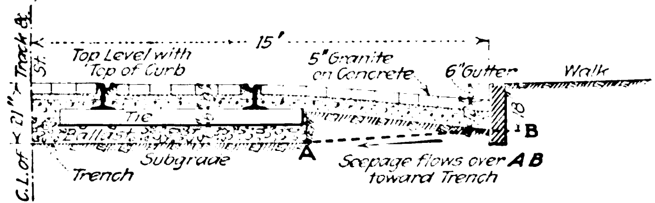

C.L. of St.
Track ℄
15'
Top Level with Top of Curb
5" Granite on Concrete
6" Gutter
Walk
< 21" >
Tie
Ballast
8"
B
A
Subgrade
Trench
Seepage flows over A B toward Trench

FIG. 7—HOW A TRACK TRENCH MAY RECEIVE WATER FROM ADJACENT ROADWAY

Ample Drainage Prime Requisite in Track Construction

Ample drainage is the prime requisite in track construction. This must be provided not only for the subsoil but for the surface in order to prevent infiltration of surface water. Moisture in any form is the chief enemy, and water and frost will cause more damage to tracks than any other agency, bad joints not excepted. It should not be forgotten that the track trench takes on the form of a drainage ditch for the rest of the street, even though it is backfilled with the track structure and paving materials. This trench usually has a depth of from 15 in. to 21 in., depending upon the depth of the rails and ballast, and it will be seen from Fig. 7 that the bottom of the trench may be 9 in. below the bottom of a 6-in. macadam or other shallow pavement even at the gutter. With deeper pavements this depth becomes less, but even with a 5-in. granite pavement on concrete, and 7-in. rails, wood ties and 6 in. of ballast, the difference in levels may be at least 1 in. Hence, there is great opportunity for stray water from the surrounding surface of the street and adjacent property to seek the track trench.

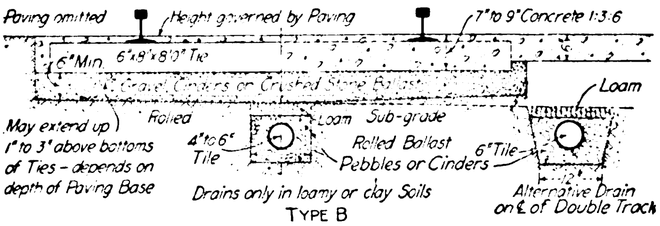
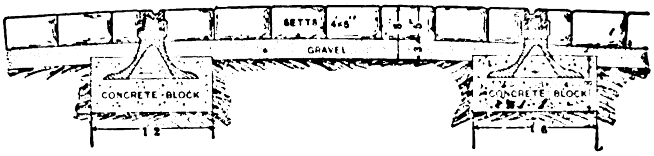

Paving omitted
Height governed by Paving
7" to 9" Concrete 1:3:6
6" Min.
6"×8"×8'0" Tie
Gravel Cinders or Crushed Stone Ballast
Loam
Rolled
Loam
Sub-grade
May extend up 1" to 3" above bottoms of Ties - depends on depth of Paving Base
4" to 6" Tile
Rolled Ballast
Pebbles or Cinders
6" Tile
12"
Drains only in loamy or clay Soils
Alternative Drain on ℄ of Double Track
TYPE B

FIG. 9—TYPE B—BALLASTED TRACK CONSTRUCTION RECOMMENDED BY THE AMERICAN ELECTRIC RAILWAY ENGINEERING ASSOCIATION


SETTS 4×6"
GRAVEL
CONCRETE BLOCK
CONCRETE BLOCK

SECTION THROUGH CHAIRS

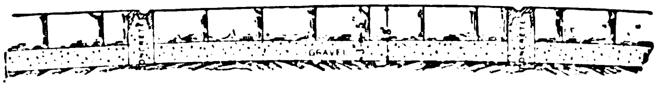


FIG. 6—EARLY USE OF STEEL YOKES OR RAIL ANCHORS IN CONCRETE IN BRISTOL, ENGLAND

How much water actually reaches the trench in this way is dependent upon the character and condition of the pavement and of the soil. How much of it stays in the trench also depends first upon the soil and then upon the drainage provisions. A comparatively inexpensive scheme for preventing seepage of surface water to the track trench from the adjacent roadway surface where the latter is not paved and the soil is known to be a water-retaining clay, is shown in Fig. 8. This consists of a dependent curb constructed as a part of the concrete base for track pavement and extending about 8 in. below the level of the bottom of the ties. In the particular instance shown it was not thought necessary to use ballast upon the subgrade, but the precaution was taken to consolidate it thoroughly by rolling with a 10-ton roller.

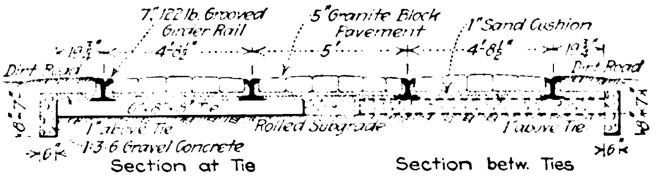

7" 122 lb. Grooved Girder Rail
5" Granite Block Pavement
1" Sand Cushion
19¾"
4'-8½"
5'
4'-8½"
19¾"
Dirt Road
Dirt Road
8"-7"
7"-8"
1" above Tie
Rolled Subgrade
1" above Tie
1:3:6 Gravel Concrete
6"
6"
Section at Tie
Section betw. Ties

FIG. 8—A METHOD FOR PREVENTING DAMAGE TO ROADBED FROM SEEPAGE OF WATER

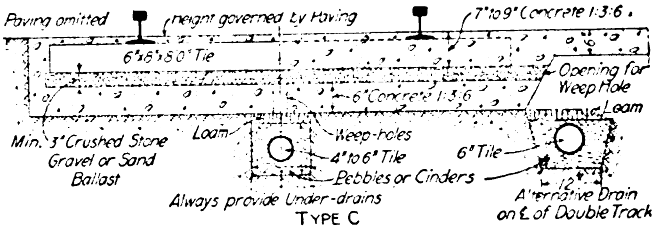

Paving omitted
Height governed by Paving
7" to 9" Concrete 1:3:6
6"×8"×8'0" Tie
Opening for Weep Hole
6" Concrete 1:3:6
Loam
Min. 3" Crushed Stone Gravel or Sand Ballast
Loam
Weep-holes
4" to 6" Tile
6" Tile
Pebbles or Cinders
12"
Always provide Under-drains
Alternative Drain on ℄ of Double Track
TYPE C

FIG. 10—TYPE C—CONCRETE SLAB SUB-BALLAST TRACK CONSTRUCTION PROPOSED FOR USE WITH VERY POOR SOILS

In most cases where the soil is of such a character that ballast of gravel or crushed stone must be used, it will also be found that the ballast alone should not be depended upon to provide sufficient under-drainage.

If the ballast is well compacted, especially by rolling, water will not flow through it readily. Furthermore, the soil works up through it more or less after a time and tends to prevent the passage of water. It is for these reasons that most of the designs for modern ballasted tracks now make due provision for subsoil drainage by means of tile drains. It will be seen from the foregoing discussion of drainage provisions that dependable data upon the bearing value of soils will be of great assistance in connection with the design of tracks. Meanwhile, the classification of soil by mechanical analysis combined with the tentative bearing values of soils now available should be used by track engineers in every case where there is any doubt as to how to meet uncertain soil conditions.

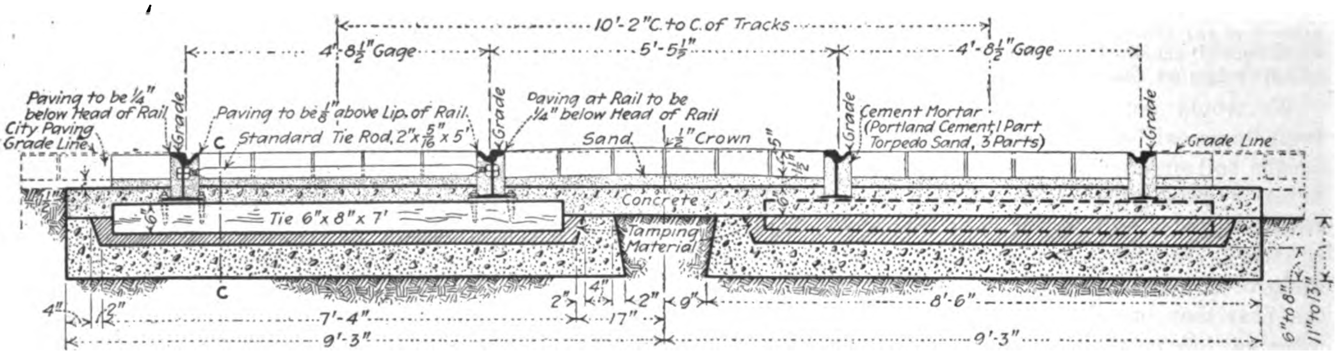

10'-2" C. to C. of Tracks
4'-8½" Gage
5'-5½"
4'-8½" Gage
Paving to be ¼" below Head of Rail
City Paving Grade Line
Grade
Paving to be ⅛" above Lip of Rail
C
Standard Tie Rod, 2"x 5/16" x 5'
Paving at Rail to be ¼" below Head of Rail
Sand
½" Crown
5"
Cement Mortar (Portland Cement, 1 Part Torpedo Sand, 3 Parts)
Grade Line
Concrete
Tie 6"x 8"x 7'
Tamping Material
6"
C
4"
2"
7'-4"
2"
4"
2"
17"
9"
8'-6"
9'-3"
9'-3"
6" to 8"
11" to 13"

FIG. 11—CROSS-SECTION OF TRACK CONSTRUCTION ON TWELFTH STREET, CHICAGO

In treating subsoil preparatory to laying the tracks, it will often be found that the practice of rolling will be of material assistance. It is stated by the way committee that a more even distribution of load is effected, that the bearing power of the subsoil is increased, that rolling should be done wherever practicable under working conditions and warranted by the kind and condition of the subsoil, and that it is especially desirable wherever there has been much disturbance due to sewers and cross trenches under the tracks. Since uniformity is desirable in the track structures as a whole, it seems to be a fundamental principle of track design that the first place to secure uniformity is in the subgrade upon which the track is to be founded. There is no question but that this can best be done by rolling, with most soils. Occasionally it is necessary also to add broken concrete upon which to operate the roller. Even where the ballast is to consist, in part, of a concrete slab as sub-ballast, the rolling is just as essential in order that the slab will obtain a uniform bearing throughout. It should not be forgotten that even though the subsoil can be stabilized by rolling, it is essential that it be kept in this state by ample drainage provisions.

An example of the type of track construction wherein drainage is properly provided is shown in Fig. 9, which is the recommended, type B design as adopted by the American Electric Railway Engineering Association in 1915. In the meantime the way committee presented another design known as type C, utilizing a concrete slab sub-ballast with similar provision for underdrain, as shown in Fig. 10. It was intended for use on very heavy water-retaining soils and other uncertain ground.

The Engineering Association did not care to adopt this as a recommended design, although its merits were recognized, because of the fear that it might be forced upon railway companies by municipal authorities in many instances where such an expensive construction would be unnecessary. However, it is a type which is used voluntarily to a considerable extent under soil conditions which almost demand its use. Thus the concrete slab feature was employed recently in Chicago, as will be seen from Fig. 11, which is reprinted from an article describing its use, which appeared in this journal for March 30, 1918. The article in question, unfortunately, does not state what provisions were made for under-drainage other than to say that the construction was built upon a lake sand fill about 9 ft. in depth which was used to fill up cellars of houses over which, through a street-widening scheme, it was necessary to lay the tracks.

Standard Rail for Australia

American Association Form of Groove and Guard Adopted—Rails to Be Rolled in Australia

A CONFERENCE of Australian electric tramway engineers was held during May, 1918, in Sydney, N. S. W., to consider the adoption of a standard grooved girder tramway rail for use by electric tramway undertakings in the Commonwealth. Owing to the difficulty—due to the war—of importing rails from overseas, the manufacture of rails in Australia has become necessary.

The Broken Hill Proprietary Company, Ltd., which has steel works and rolling mills at Newcastle, N. S. W., has stated that it will consider the installation of a plant to roll grooved girder rails if a standard is adopted.

The conference passed the following resolutions:

1. That a standard girder rail be adopted for the tramways of the various states of the Commonwealth.
2. That the weight of the girder rail for tangent track shall not be less than 90 lb. per lineal yard, the exact weight being subordinated to the design.
3. That the height of the girder rail be not less than 6 in.
4. That the width of the flange shall not exceed the height of the rail by more than ½ in.
5. That the conference is agreed that the form of groove and guard of the rail should take the form of the present standard of the American Electric Railway Engineering Association.
6. That the tread of the proposed section of rail shall approximately conform to that shown in blueprint No. 3365 of the Adelaide Municipal Tramways Trust.
7. That Mr. Cowdery, engineer for permanent way

New South Wales Government Tramways, be asked to get from the manufacturers the chemical and physical tests of steel that they can guarantee for tramway purposes, and that it be left to him to design a rail in conformity with the resolutions of the conference.

The tread referred to in resolution 6 is struck to a radius of 12 in. with a $\frac{5}{16}$-in. radius on the running edge, which the conference believed would tend to give a longer life both to wheels and rails.

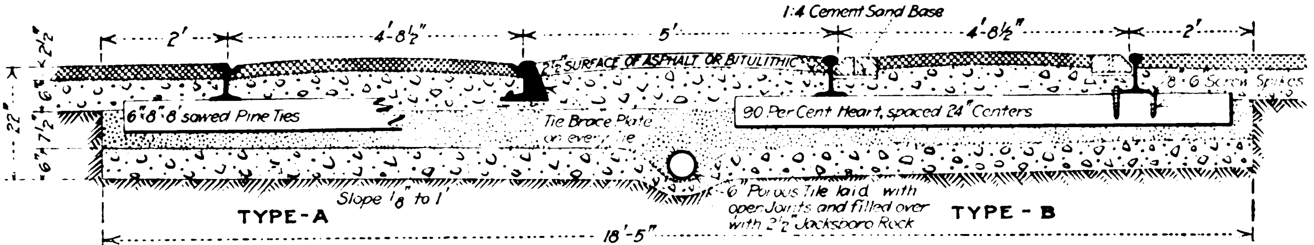
New Ballasted Track Standards and Construction at Dallas

Company Has Already Spent $200,000 for Rehabilitation Under Service-at-Cost Plan—More Work Is Now Under Way

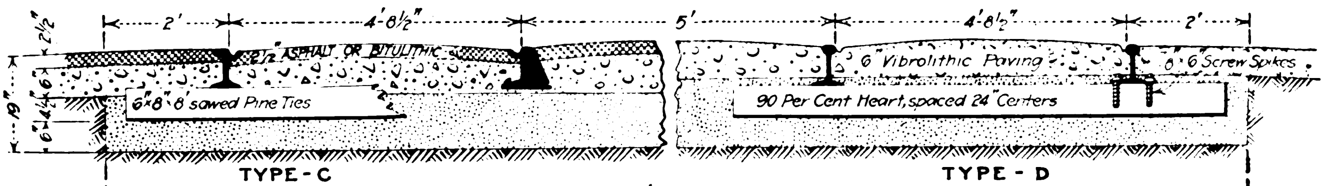
THE Dallas (Tex.) Railway, under the immediate direction of B. R. Brown, engineer of way and overhead construction, is employing about 250 men to rebuild 8 miles of track, construct 5 miles of extensions and also carry out various special work betterments.

For these activities the company since Oct. 1, 1917, has adopted a new series of constructions designated as types A, B, C and D in the accompanying illustration. In these a concrete sub-base is favored only where the soil is waxy or treacherous; with good sand or loam a 6-in. coarse gravel ballast is favored. The first construction of this latter sort consisted of 1000 ft. of double track put down on Elm Street between Ervay and Harwood. This track has held up so well that up to May, 1918, it received no other attention than the use of a reciprocating grinder to remove a little cupping.

Still more conclusive evidence to the company of the merits of ballasted construction for Dallas was its experience with a big piece of special work put down at Elm and Lamar Streets, one of the busiest sections of the city. The material used was simply gravel ballast, wood ties and creosoted pine blocks on a mortar cushion. When this had to be disturbed late in May to weld a broken frog, the fastenings of the intersection as a whole were found in excellent condition.


1:4 Cement Sand Base
2'
4'-8½"
5'
4'-8½"
2'
2½"
6"
7½"
6"
22"
2½" SURFACE OF ASPHALT OR BITULITHIC
6"×8"×8' sawed Pine Ties
Tie Brace Plate on every tie
90 Per Cent Heart, spaced 24" Centers
⅝"×6" Screw Spikes
Slope ⅛" to 1'
6" Porous Tile laid with open Joints and filled over with 2½" Jacksboro Rock
TYPE-A
TYPE - B
18'-5"

End Elevation


2'
4'-8½"
5'
4'-8½"
2'
2½"
6"
4½"
6"
19"
2½" ASPHALT OR BITULITHIC
6"×8"×8' sawed Pine Ties
6" Vibrolithic Paving
⅝"×6" Screw Spikes
90 Per Cent Heart, spaced 24" Centers
TYPE-C
TYPE - D
18'-5

End Elevation

NEW TYPES OF CONSTRUCTION IN PAVED STREETS OF DALLAS

It will be observed that tile drains are used with the concrete sub-base types and that brace plates go with girder sections. Type D T-rail construction is handicapped by a monolithic, aerated concrete called "Vibrolithic." This is a local paving favorite which the railway is obliged to use. Obviously the company would be better off were it permitted to use blocks of some kind, even only as headers, for rail vibration is likely soon to break up the paving and so put the railway to much costly maintenance which was beyond its control to avoid.

REMOVING OLD SINGLE TRACK FOR NEW DOUBLE TRACK ON COLUMBIA AVENUE IN DALLAS

The following is a list of some of the rehabilitation and new work which has been completed or is in process in Dallas:

Rerouting for South Belt cars on Second Avenue and building of Second Avenue extension with rearrangement of Fair Park Terminal, costing $121,000.

Special work changes at Cantegral and Bryan Streets to permit trailer operation over the Bryan Street line, costing $12,805.

Special work changes at Cantegral and Live Oak Streets.

Removal of single track and installation of double track on Columbia Avenue, costing $76,860.

Installation of special work at Commerce and Lamar Streets, to permit the running of Oak Cliff cars on crosstown routes, costing $20,720.

Several hundred Apex welded joints have already been installed with an Indianapolis welder, and about 2000 of these joints are on hand or on order. All concrete work is done with the new 13-ft. Koehring mixer.

To date about $200,000 has been spent for track rehabilitation under the Dallas service-at-cost plan.

Diagnosing and Correcting the Causes of Low Vacuum

By Hartley Le H. Smith
Chief of Testing Bureau
Brooklyn Rapid Transit System

Eternal Vigilance in the Matter of Maintenance of Surface Condensers and Auxiliaries Is the Price of Keeping Up a Good Vacuum and Therefore of Getting Good Results in the Turbine or Engine Room of the Power Plant

THE task of the power-plant engineer who is charged with the maintenance of high vacuum in surface condensers is one requiring attention to maintenance, day in and day out. He must apply in performing his task a combination of scientific diagnosis of the causes of variation from the best vacuum practically attainable, and he must also prescribe the best lines of attack in correcting abnormal conditions. He must also secure the co-operation of skilled maintenance men who can, with minimum waste of effort and time, reach the offending parts and radically better their performance. The whole matter seems to me to be analogous to the dual rôles of the medical specialist who excels in diagnosis and the practicing physician whose field is that of medicine.

Good Vacuum Means High Turbine Economy

It must be kept in mind that the best obtainable vacuum in any plant and with any definite type of equipment varies very greatly throughout the year. In a former article I pointed out that the only vacuum worth anything in a turbine plant is the vacuum in the turbine exhaust nozzle. It is this vacuum, and this alone, which affects the turbine economy. Of course, there is no other object to be attained in vacuum maintenance than the keeping up of high turbine economy.

Turbines differ from engines in that they actually do expand the steam down to the vacuum in the exhaust nozzle. Steam engines do nothing of the sort. The maintenance of a given vacuum in an engine exhaust means nothing but that the back pressure on the exhaust stroke is thereby established. The ratio of expansion during the working stroke, which is the most important factor in steam economy, is left entirely unaffected in any direct manner. With a steam turbine this is not the situation, for the ratio of expansion is the ratio of the absolute pressure on the turbine side of the governor valve to the absolute pressure in the turbine exhaust.

Having noticed the close relationship of the turbine exhaust vacuum and its relation to the turbine economy, we may pass on to another point. The turbine economy itself is determined partly by the design of turbine and condenser, and partly, and secondarily, by the standard of maintenance.

For instance, if a power plant had in it two turbines and two condensers of the same size, and if the condensers were of identical design but one of the turbines was of an older pattern while the other was modern, the modern turbine would show the higher vacuum in its exhaust nozzle, even though the standard of condenser maintenance were the same. This would be due to the fact that the modern turbines possess characteristics due to the accumulated experience of the designers.

From the above facts it is evident that before the quality of a vacuum can be judged properly it is necessary to accumulate and to analyze the records of actual vacuum performance of *each* turbine, or at least each type of turbine and condenser of identical joint design. Thus, as these data accumulate, the performance of a machine may always be judged against the *best performance previously attained.*

The Turbine Load Affects the Vacuum Also

In considering steam turbine exhaust vacuum not every engineer gives adequate weight to the effect of the turbine load at which the vacuum is measured. All other conditions being equal, the vacuum in a turbine exhaust falls off at an increasing rate with increasing loads.

If the vacuum is plotted against the load the resulting curve will be seen to have the form of a parabola. Those mathematically inclined will recognize this in the form of the following formula:

$$V = a - bL - cL^2$$

In this formula V is the vacuum (corrected for standard barometric pressure), L is the generator load in kilowatts, and a, b and c are coefficients determined by experiment.

The numerical values of b and c for a typical turbine and condenser, the condensing equipment being in first-class condition, with respect to supply of ample condensing water and properly low entrance temperature, normal air leakage, and excellent air removal, would surprise anyone not conversant with the matter.

Of late years turbine and condenser contracts have taken this rapid falling off of vacuum into account, but at one time not so long ago they did not do so.

I call attention to this matter of relation of vacuum to load, although in practical, every-day work in the power plant, while the relation outlined is well understood, it is customary to make observations at some standard load when possible. When this is not possible the engineer approximates the condition as nearly as he can, and then allows for the unavoidable (but not too great) variations from the standard load.

What Is the Best that the Condenser Can Do?

Without desiring to go into the theory of this subject unnecessarily I think that it will be well to consider briefly the ideal performance of a condenser, that is, the degree of vacuum beyond which it is impossible to go. This condition is shown by what is known as the elementary heat balance equation of the turbine and condenser as a combined unit. Let us look at this equation a moment.

In order that we may write it, let us use the following abbreviations:

S = steam consumption of turbine, in pounds per hour.
L = turbine load, in kilowatts.
W = quantity of condensing water, in pounds per hour.
H = total heat above 32 deg. Fahr. in steam delivered to the turbine in B.t.u per pound.
t_1 = entrance temperature of condensing water, deg. Fahr.
t_2 = discharge temperature of condensing water, deg. Fahr.
t_3 = temperature of water leaving condenser hotwell, deg. Fahr.
E = combined electrical and mechanical efficiency of the generator and the mechanical efficiency of the turbine, expressed as a fraction.

With these symbols we may write an equation, putting on the left an expression for the total heat entering the condenser and on the right the total heat removed from the condenser, using as a basis the quantities corresponding to one hour of time. It will be remembered also that one kilowatt-hour is equal to 3412 B.t.u. The heat equation is then:

$$\left[SH - \frac{3412}{E}L\right] + W(t_1 - 32) = W(t_2 - 32) + S(t_3 - 32)$$

In this equation SH is the total heat entering the turbine, and $\frac{3412}{E}L$ is the total heat converted first into mechanical energy at the turbine shaft and later, for the most part, into electrical energy. The difference between these two terms is obviously the total heat delivered by the turbine to the condenser. The remaining term on the left-hand side of the equation is the total heat brought into the condenser by the entering condensing water.

The terms on the right-hand side of the equation are the total quantities of heat rejected from the condenser by way of the condensing water discharge and the hotwell discharge.

The left-hand side of the equation, therefore, represents the total heat entering the condenser, while the right-hand side represents that leaving it. If we neglect the amount of radiation from the turbine and the condenser, a negligible quantity, the amount of heat which enters the condenser must be equal to that which leaves it and the possibility of writing the heat balance equation is established.

The great significance of an equation representing on one side all of the heat entering a condenser and on the other side all of the heat leaving a condenser, hardly needs to be emphasized.

By simple algebraic transformation the equation may be written in the form:

$$S[H - (t_3 - 32)] - \frac{3412}{E}L = W(t_2 - t_1)$$

This is a very useful form of the equation. The right-hand member represents the total heat transmitted through the tubes from the steam to the condensing water. This form of the equation is also useful under certain circumstances for calculating the quantity of condensing water which is circulating.

The main point to be emphasized, however, is the very great significance of the temperature of the condensing water as it enters the condenser. The variation in this temperature, t_1, is the most important element in influencing the working performance of the condenser, as is evident from the heat balance equation in the form first written above.

This fact may be made clear by considering the term $W(t_1 - 32)$, appearing in the equation in its first form, and the term $W(t_2 - t_1)$ appearing in the equation in its second form.

The first term is the total heat brought into the condenser by the entering circulating water; the second term is the total heat transmitted through the condenser tubes by reason of the condensation of the steam and absorbed by the circulating water. It is true, although not often realized, that the first heat quantity exceeds the second heat quantity during the greater part of the year. That it actually does so is evident from a comparison of the terms $(t_1 - 32)$ and $(t_2 - t_1)$. As W is common to both terms, it cancels out.

For example, suppose that in summer the maximum value of t_1 is 78 deg. Fahr., and that in winter the minimum value of t_1 is 36 deg. Fahr. Also assume that the mean temperature of the entering water throughout the year is halfway between these two values, that is, 57 deg. Fahr. Assume further that the value of $(t_2 - t_1)$ is 17 deg. Fahr. This difference may, for the purpose of the argument, be considered as independent of the season of the year, and it does, in fact, undergo but little seasonal variation throughout the year.

Then at the maximum in summer $(t_1 - 32) = 46$ deg., at the mean temperature of the year it is 25 deg., and at the minimum temperature in the winter it is 4 deg. At the maximum temperature in summer and during the greater part of the whole year it very much exceeds the value of $(t_2 - t_1)$ which has been assumed equal to 17 deg., and is not affected by seasonal variation, whereas at the minimum temperature in winter it is very much less than $(t_2 - t_1.)$

This great fluctuation in relative magnitude of the total heat brought into the condenser by the circulating water and the total heat transmitted through the tubes and absorbed by the circulating water gives to the entrance temperature of the circulating water, t_1, the rôle of premier variable in the entire condenser performance.

Entrance Temperature of Circulating Water Is of Prime Importance

For the reasons outlined, the principal guide in studying the vacuum in a power plant, for the purpose of maintaining it at the highest possible value, is the relation of turbine exhaust vacuum and entrance temperature of circulating water. These variables should be plotted against each other over one, two, three or more years and should be given first consideration in judging of any one day's performance.

This graph establishes the best performance so far attained at every entrance temperature of circulating water, and also indicates the numerous performances in which the record is not the best at the same temperatures. With each new day's observations before him, the engineer asks: "Does this vacuum, considering the entrance temperature of the circulating water, equal the best previous performance, does it establish a new record, or does it fall far short of the best?"

Getting at the Root of the Trouble

If the vacuum is notably defective under the conditions controlling it, the natural question is: "Why?" The analysis of this condition may properly proceed about as follows:

First comes the question of the quantity of circulating water. Our heat balance equation may be rearranged in this form:

$$W = \frac{S[H - (t_3 - 32)] - \left(\frac{3412}{E}\right)L}{t_2 - t_1}$$

The quantities H, t_3, and L may be measured at the time the vacuum observation is taken in addition to t_2 and t_1, the discharge and entrance temperatures of the circulating water.

In practice, however, H is not specifically measured, because even with considerably varying turbine admission pressure and superheat, its variation is practically negligible. The load L is naturally measured because every effort is needed to see that it has some standard value. The sensitiveness of turbine exhaust vacuum to load variation has been commented upon earlier in this article. Hence, the almost inevitable, although slight, departures from standard loads are noted down.

The efficiency value E may be guessed at and is known to be about 0.95. It remains practically constant and in the equation has no great importance. The quantity S, however, has very great importance. Many turbines are now provided with steam-flow or hot-well meters, from which the value of this quantity may be read directly. Where there are no such meters but where steam economy tests have at some time been made, the value of S may be estimated from the test results using the observed values of load (and of vacuum for the purpose of using the vacuum correction). Where no tests have been established the guaranteed economy may be used, supplemented by conventional rules for vacuum correction.

In one or another of these ways the quantity of condensing water in circulation may be calculated. It will be found in some cases to undergo wide and rapid fluctuations. Whether it does so or not depends, of course, upon the cleanliness or dirtiness of the condensing water supply. Important here are the nature and effectiveness of the arrangements for freeing the water from dirt and trash before it gets into the condenser, particularly the intake screens.

Amount of Circulating Water Need Not Be Calculated

Another and an abbreviated way of considering the influence of the quantity of condensing water omits the actual calculation of it and depends upon the fact that it is very nearly inversely proportional to the rise of temperature of the circulating water. The equation for W may be written:

$$W = \frac{1}{(t_2 - t_1)}\left(S[H - (t_3 - 32)] - \left(\frac{3412}{E}\right)L\right)$$

As it is necessary to bring the load L to some standard value with fairly close approximation preliminary to making the vacuum observations, it follows that the main source of variation of the turbine steam consumption S will have been eliminated. This leaves only the effects of steam pressure and superheat variation (which themselves affect H but in relatively slight degree) and the effect of vacuum variation at approximately standard load.

This last, although not negligible, has a variation range which is quite small compared with daily variation, often quite wide, of $(t_2 - t_1)$ and hence its reciprocal $\left(\frac{1}{t_2 - t_1}\right)$.

There remains, then, only the variation of the hot-well temperature t_3. This is bound to have a wide seasonal variation and a much smaller variation due to the observed vacuum and the actual load. Its total effect, however, is quite small, as may be seen from the equation, because it subtracts from H, which has a large and nearly constant numerical value.

Summing up, then, it appears that the quantity of condensing water circulating is approximately inversely proportional to the rise of temperature of the circulating water. If necessary, it may be assumed to be so and calculations may be omitted.

Looking for the Cause of Circulating Water Shortage

The next step in the process is to consider the causes which may explain inadequacy in the supply of circulating water. First and most obvious is circulating pump speed. This speed is naturally measured during or close to the time of vacuum observations and any notable departure from the speed considered normal for the season of the year would be corrected before the completion of observation.

The total hours of condenser operation since the last thorough cleaning of the tubes is next considered. There is a probability that there is some interference with heat transmission through the tubes, caused by reduction in the velocity of the water in the tubes through trash accumulation in the intake water box. There may also be a reduction of water velocity in the tubes due to obstructions in the tubes themselves.

It is a much quicker and cheaper operation to clean water boxes than to clean tubes. However, if the tubes are dirty, cleaning the water boxes will not notably restore the condenser vacuum, whereas if the tubes are cleaned the water boxes are incidentally cleaned.

The hours of condenser operation since the last tube cleaning, therefore, enter as an important factor in forming judgment, together with the seriousness of the departure of the temperature rise of the circulating water from normal.

The suddenness of departure from normal temperature rise may also hint strongly the nature of the obstruction.

Obstruction of circulation from accumulations in the tubes is apt to be a fairly gradual process, whereas the condensing water supply, if a river, may suddenly carry trash which will quickly close the entrances of tubes by accumulating upon the tube sheets. For instance, such conditions may arise when a wind storm has blown many small leaves into the river.

Cleaning the tubes of a large condenser is a slow and costly process, while cleaning the water boxes can be done very expeditiously. Hence, many cases arise where, among several condensers upon which observations have been made during the same day and which show notable falling off from proper circulating water supply, the worst of them is scheduled for tube cleaning and the remainder for mere cleaning of water boxes. This naturally has a bearing upon the vacuum which can be maintained.

Some High Spots in Mr. Smith's Article

There is no other object to be attained in vacuum maintenance than the keeping up of high turbine economy.

The turbine economy itself is determined partly by the design of turbine and condenser, and, secondarily, by the standard of maintenance.

The performance of a machine should always be judged against the best performance previously attained.

The principal guide in studying the vacuum in a power plant is the relation of turbine exhaust vacuum and entrance temperature of circulating water.

The subject, of air leakage and effectiveness of air removal ranks next in importance to adequacy of condensing water supply. Where the source of condensing water is relatively free from dirt and trash, or where modern revolving intake screens make possible the use of finer screen mesh than is possible with stationary screens, the air problem ranks first in importance.

Actual quantitative measurements of air leakage with an air bell may be rapidly made on several condensers in succession if the air bell is fixed in position and permanent piping and valve connections are provided for all condensers in the plant. As a supplement to such quantitative measurements the speeds of the air pumps are to be included as important items to be noted simultaneously with the vacuum measurements and any inadequacies of speed immediately corrected.

Of vastly more importance, however, is the question of effectiveness of air pump action within proper range. Not very much in high vacuum maintenance outranks this in importance. It is useless to have low air leakage into a condenser if the effectiveness of air-pump action is poor. With many condenser air-pumping equipments there is such ample displacement capacity that if effectiveness of the pump action is good even rather rapid air leakage into the condenser produces only trivial effect on the vacuum in the turbine exhaust.

The effectiveness of air-pump action is easily determined, and the determination should be a matter of daily routine. It is only necessary to shut off the pump from the air suction line from the condenser, and to observe the pump vacuum at normal speed, correcting the observed vacuum carefully for barometric pressure and for temperature of the mercury column used in the vacuum measurement. In other words, the absolute pressure which the pump can produce within its own cylinder or casing while working with a closed suction valve should be determined accurately. A log should be carefully kept of these absolute pressures.

There is not much in the whole field of high vacuum maintenance which is more difficult than the speedy correction of ineffectiveness of air-pump action. It cannot be done unless some man in the maintenance force has opportunities by constant practice to become quite expert at the work. He should develop this expertness under the direction of the engineer who is competent to analyze the causes of trouble. These remarks apply especially to reciprocating dry-vacuum pumps. These pumps, aside from maintenance, are very satisfactory in that they create high vacuum with very low steam consumption. On the other hand, certain forms of rotary pumps have high steam consumption and furthermore withdraw no inconsiderable quantities of steam from the condenser (particularly when the condenser air leakage is low). This steam would otherwise appear in the hot well and would thus be used for boiler feed.

The list of symptoms to be considered in connection with condensers in need of maintenance work is not exhausted without giving attention to the temperature difference between the entering steam, coming through the turbine exhaust nozzle, and the circulating discharge water. While this does not alone measure the ease or difficulty of heat transmission through the tubes it is an item of great importance in relation to this heat transmission.

The temperature of the circulating discharge water itself constitutes a variable very close in its connection with the vacuum in the turbine exhaust nozzle, to produce a high value of which is the ultimate object of all vacuum maintenance work. There is practically no air present in a turbine exhaust nozzle. Even in cases where large air leakage occurs through the cylinder casing joint or the turbine shaft glands, the air, while present, cannot be detected. It is utterly "drowned" in the enormous quantity of steam coming through the nozzle from the turbine. The presence of air cannot be determined in a condenser except in its lower regions where the largest part of what entered as steam has been condensed to water.

Therefore at the top of the condenser it may be said that the steam temperature *is* the vacuum. This is true even if careful measurements of temperature and pressure in the turbine exhaust nozzle show lack of agreement with saturated steam values listed in steam tables. The lack of agreement may be in one direction in the turbine exhaust nozzle (possibly due to to undercooling of the steam during turbine expansion), and in the other direction just a bit further down where the nozzle delivers steam to the condenser and the steam strikes the tube bank with a great blast. The latter condition may possibly be due to superheating through sudden arrest of velocity and conversion of kinetic energy. But the disagreement, whatever its cause, is not due to air.

Therefore the *temperature* of the steam is the fundamental thing and the temperature of water in close physical proximity to it (the discharge circulating water) is of great importance also. If the entrance temperature of the circulating water is high or low, if the quantity of condensing water circulating is ample or restricted, if the load departs one way or the other from the standard load aimed at during testing, if these abnormalities occur jointly or severally, the discharge temperature of the circulating water is at once affected. By reason of this and of the close link between water temperature and steam temperature due to the intense heat transmision at the condenser top, the steam temperature is affected and hence the vacuum.

The difference in temperature between steam and water, therefore, bears closest watching. It varies characteristically between winter and summer, due to varying heat absorption by the upper tube bank. This heat absorption in turn is varied by the absorption in the lower tube bank which changes greatly with entrance temperature of circulating water. It varies with varying congestion of heat absorption in the upper tube bank due to varying "drowning" effect of the lower tube bank in a cloud of air. The height of this air cloud is established jointly by the rate of air leakage and the effectiveness of air removal.

When gradual increase of the temperature difference betwen entering steam and discharge circulating water is not to be accounted for by the two categories just mentioned, the engineer prescribes the cleaning of the outside of the tubes by filling up the whole condenser steam space with a suitable chemical solution, such as sodium bisulphate. This, when allowed to stand in the condenser for several hours, has an excellently cleansing effect without being injurious.

Excessive Ash in Coal Handicaps the Power Plant

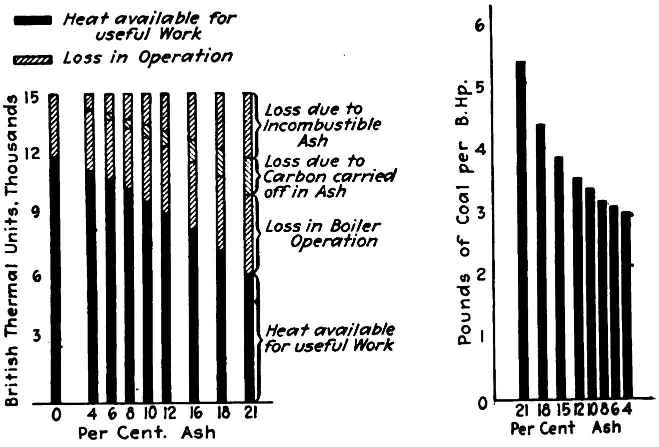
Removable Impurities Should Be Discarded at the Mines in the Interest of Freight Car and Power-Plant Equipment Conservation

A STUDY made by the J. G. White Engineering Corporation for the National Research Council sums up in an impressive fashion, substantially as follows, the losses which are incurred by the use of high-ash coal. The presence of ash reduces the heating value of the coal, increases the coal consumption, reduces boiler capacity and increases the freight-car equipment required for transportation. Each per cent of avoidable ash in the nation's coal adds 5,000,000 tons of unnecessary freight per annum.

The percentage of ash has a distinct influence on the boiler efficiency. As it increases the fireman has more difficulty completely to burn the combustible, hence whereas with a low percentage of ash and good firing we expect about 25 per cent of the weight of the ash to be unconsumed combustible, with coal containing a high-ash percentage it is rarely possible to reduce the combustible in the ash to less than 50 per cent.

One of the accompanying charts shows the effect of varying percentage of ash on coal consumption per boiler-horsepower. It will be noted that for the best coal, with 4 per cent ash, 3 lb. is required, while with 10 per cent ash, the average amount in normal times, less than 3½ lb. is required. Beyond this point the increase is very rapid until for 21 per cent ash the coal consumption amounts to 5.45 lb. per boiler-horsepower. The increase in the ash content of coal seriously reduces the capacity of steam boilers. Power plants to-day are in a serious condition because whereas the load is increasing the capacity of their boiler plants has been greatly reduced due to the poor coal obtainable. Where formerly boilers could be operated at from 200 per cent to 250 per cent of rating during peak periods it is now difficult to secure more than from 150 per cent to 160 per cent. For example, if in a given case eight boilers could do the work of a plant with coal containing 6 per cent ash, nineteen or twenty boilers are required if the coal contains more than 18 per cent ash.

This matter is very serious from the transportation standpoint as is evident from the fact that, considering the lower heating value of high-ash coal, it is possible that 40 per cent of the cars may carry worthless material. Coal containing 21 per cent ash requires 65 per cent more cars than coal containing 10 per cent ash. The trouble is not excessive until 10 per cent to 12 per cent ash has been passed. If therefore we might limit the percentage of ash to the average of 10 per cent, we should reduce our transportation equipment to a practical minimum. We should be able to operate all boilers at a reasonable efficiency and could reduce the number of boilers operated to a little more than one-half the number required with the dirty coal (that is 18 per cent ash or over).



DIAGRAMS SHOWING DELETERIOUS EFFECTS OF EXCESSIVE ASH IN COAL

Coal Storage Regulations Revised

The storage regulations prescribed by the state fuel administrators for public utilities, limiting the amounts of bituminous coal which may be stored in different sections of the country, were given on page 372 of the issue of this paper for Aug. 31. Under date of Sept. 14 the United States Fuel Administration has issued a revised list as follows:

Days of permissible storage for consumers in class 2: Maine, 120; Massachusetts, Vermont, New Hampshire, northern New York, 90; Connecticut, Rhode Island, southwestern New York, 75; southeastern New York and New Jersey, 50; Delaware, eastern Pennsylvania, Maryland, District of Columbia, Virginia, Florida, western Ohio, 40; western Pennsylvania, West Virginia, eastern Kentucky and eastern Ohio, 30; lower Michigan, 75.

Applying Engineering Principles Properly in Motor Selection

By C. W. Squier
Electrical Engineer

The Author Shows How to Compare Motors Which Appear to Have the Necessary Characteristics for the Service Designated and to Select the One Best Adapted to Meet Given Requirements

IN DISCUSSING in this series of articles the considerations which enter into the choice of railway motors I have up to this point outlined, first, how the operating requirements constituting any particular class of service are determined; second, how the various technical calculations which enter into the determination of the service and equipment are made, and third, how the numerous graphs which form the basis for deciding on the motors are constructed. By following these steps carefully we are now in a position to make an actual choice of equipment for a definite service.

How a Preliminary Selection of Motors Is Made

In making a preliminary selection of motors that appear to have the required characteristics for the service, as given in my article in the ELECTRIC RAILWAY JOURNAL of April 20, I have made use of the operating characteristic graph shown in Fig. 1. This gives the relation between the number of stops per mile and the schedule speed at which the car is operated. By comparing this graph with similar ones obtained from manufacturers of railway motors, or given in publications descriptive of their motors, I have selected three motors of different size that appear to be capable of performing the service. Characteristic curves of these motors, arranged for the size of wheels, average voltage and gear ratio that I have found necessary are presented in Figs. 4, 5 and 6.

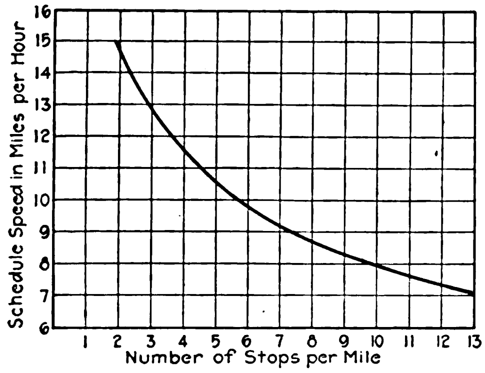


Fig. 1—Relation of Schedule Speed and Number of Stops per Mile

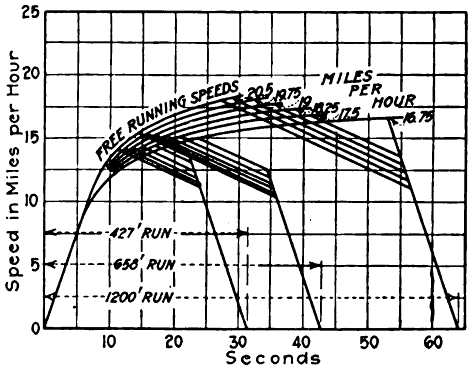


Fig. 2—Variation of Coasting Time with Free Running Speed

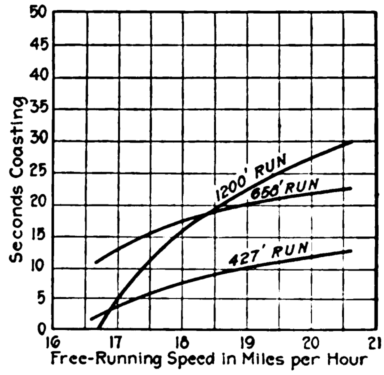


Fig. 3—Relation of Coasting Time to Free Running Speed

GRAPHS SHOWING OPERATING CHARACTERISTICS AND EFFECT OF FREE RUNNING SPEED ON COASTING TIME

Balancing Speeds of Motors Compared Must Be the Same

In laying out the speed-time graphs for comparing motors of various capacity, it is essential that the balancing speeds of the motors be the same. As the average line voltage and the diameter of the driving wheels in this case are fixed, the only thing that can be varied is the gear ratio. For the motors under consideration I have chosen a balancing speed of 19½ m.p.h. and have arranged the gear ratios of the three motors so that they will have this balanced speed.

In order to decide intelligently as to just what this balanced speed should be, I took the characteristic curves of one of these motors which would perform the service most economically and plotted a series of speed-time graphs for different gear ratios which would give free running speeds from 16.75 m.p.h. to 20.5 m.p.h. This series of graphs is shown in Fig. 2. From these it was possible to determine the number of seconds that the car could coast and still make the schedule speed for the different length runs specified. These figures of coasting in seconds plotted against the corresponding free running speed in miles per hour give the graphs of Fig. 3.

From an operating standpoint it is advisable not to reduce the amount of coasting time below ten seconds. With the short runs of 427 ft. this requires a free running speed greater than 19½ m.p.h. With 19½ m.p.h. the amounts of coasting obtained are ten and one-half, twenty and one-half and twenty-four and one-half seconds, respectively, for the different typical runs. These figures when compared with the speed at cut-off and the power input required are most satisfactory.

The three motors chosen are rated at 40 hp., 55 hp. and 67 hp., respectively, at 600 volts. They are the latest types of ventilated motor but are not arranged for tapped-field control. When we have determined which of these is best suited for the requirements we can make some further comparisons with motors of similar capacity arranged with tapped-field control, and can then decide whether the latter have advantages that will make them more desirable for use in this service.

The first analysis should be kept as simple as possible, however, and the various typical run graphs with non-field-control motors are somewhat simpler to construct than would otherwise be the case.

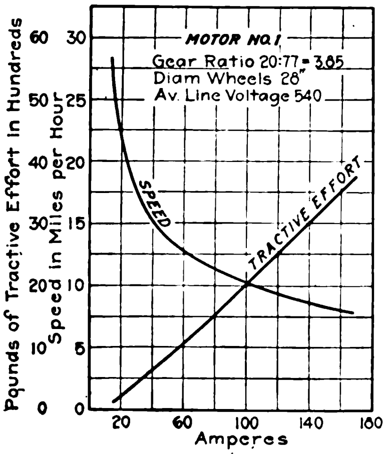


Fig. 4—Motor No. 1—40 hp. at 600 Volts

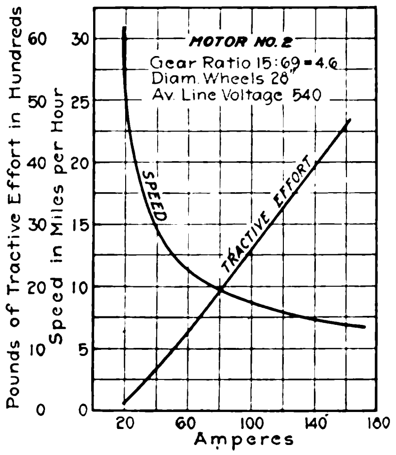


Fig. 5—Motor No. 2—55 hp. at 600 Volts

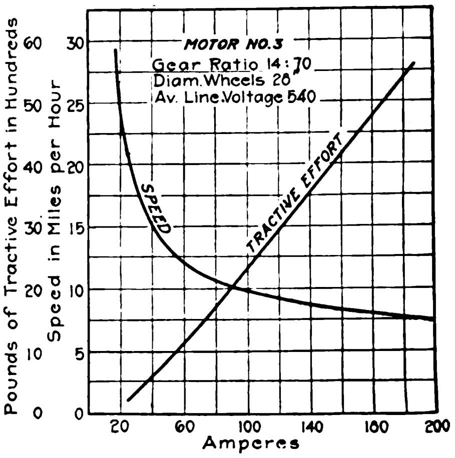


Fig. 6—Motor No. 3—60 hp. at 600 Volts

CHARACTERISTIC CURVES OF NON-FIELD-CONTROL MOTORS

The average lengths of runs for the service we are considering are 1200 ft., 658 ft. and 427 ft., respectively, for the suburban, residence and business sections as given in my April 20 article. Using the characteristic curves for the motors chosen for comparison, I have plotted graphs for speed time, heating current, power input and voltage for each of these typical runs. These are shown in Figs. 7, 8 and 9, and they were constructed by following the methods and calculations described in my previous articles. From these graphs values of heating current power input, average voltage, etc., have been calculated and are given in Table I for comparison. These determine our preliminary selection of a motor. For convenience these motors are referred to as motors Nos. 1, 2 and 3.

Let us first consider the heating currents taken in the three typical runs. A comparison of these shows that the duty on the motors is most severe for the shortest runs of 427 ft., as these runs take from 16 per cent to 26 per cent greater average heating current than the long runs of 1200 ft. It is this service through the business sections with frequent stops that determines the choice of size necessary to prevent overheating. Motor No. 1 is evidently too small for the service, as the square-root-of-the-mean-square currents are 40.1 amp., 43.9 amp. and 48.4 amp., respectively, while the continuous rating of the motor is but 38 amp. Under the average conditions of service the equipment will be required to operate in the most severe service for 37 per cent of its total mileage. The cooling effect of self-ventilation is also less in this service, and for this motor the heating current is 10 amp. more than its continuous rating. This motor, therefore, should not be considered for the service.

TABLE I—COMPARISON OF PERFORMANCE OF THREE MOTORS OF DIFFERENT SIZE, WITH NON-FIELD CONTROL

Motor No.	Horsepower Rating at 600 Volts	Continuous Rating, Amperes	Weight of Motor with Gear and Gear Case, Pounds	Length of Run, Feet	Schedule Speed, M.p.H.	Coasting Time, Seconds	Square Root of Mean Square Current, Amperes	Kilowatt-Hours		Average Volts per Motor
								For Run	Per Car-Mile	
1	40	38	1990	1200	11½	25.2	40.1	0.456	2.01	489
				658	9	20.7	43.9	0.294	2.35	436
				427	7½	11.5	48.4	0.255	3.15	410
2	55	53	2360	1200	11½	23.6	35.4	0.442	1.94	463
				658	9	18.8	37.8	0.278	2.23	448
				427	7½	10.0	41.1	0.241	2.97	427
3	67	60	2630	1200	11½	25.0	38.1	0.452	1.99	493
				658	9	19.2	41.3	0.293	2.35	453
				427	7½	11.0	44.9	0.246	3.04	424

TABLE II—COMPARISON OF PERFORMANCE OF FIELD-CONTROL MOTORS WITH NON-FIELD-CONTROL MOTOR

Motor No.	Horsepower Rating at 600 Volts	Continuous Rating, Amperes	Weight of Motor with Gear and Gear Case, Pounds	Length of Run, Feet	Schedule Speed, M.p.H.	Coasting Time, Seconds	Square Root of Mean Square Current, Amperes	Kilowatt-Hours		Average Volts per Motor
								For Run	Per Car-Mile	
2	55	53	2360	1200	11½	23.6	35.4	0.442	1.94	463
				658	9	18.8	37.8	0.278	2.23	448
				427	7½	10.0	41.1	0.241	2.97	427
4	55	54	2400	1200	11½	29.0	37.0	0.419	1.84	492
				658	9	20.5	39.1	0.265	2.12	453
				427	7½	11.2	42.2	0.238	2.94	433
5	55	48	2400	1200	11½	34.6	41.0	0.421	1.85	467
				658	9	23.1	43.3	0.278	2.23	410
				427	7½	13.0	47.0	0.241	2.97	384

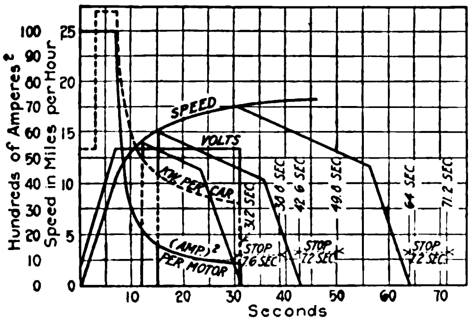


Fig. 7—Typical Runs and Most Satisfactory Operation with Car Equipped with No. 1 Motors

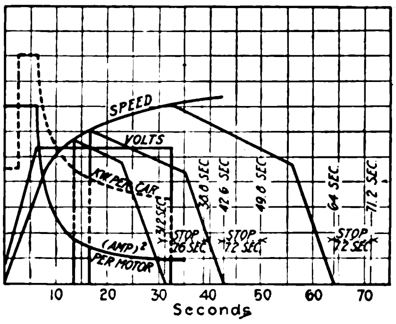


Fig. 8—Typical Runs and Most Efficient Operation with Car Equipped with No. 2 Motors

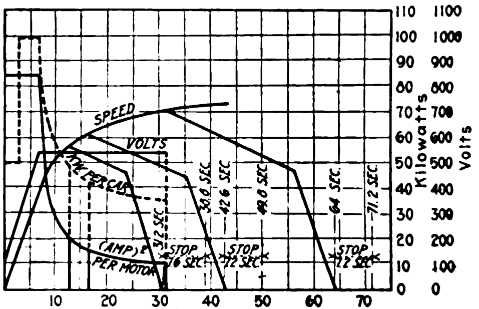


Fig. 9—Typical Runs and Most Satisfactory Operation with Car Equipped with No. 3 Motors

SPEED-TIME AND POWER-INPUT GRAPHS FOR OPERATION OVER THREE TYPICAL RUNS

Both the motors Nos. 2 and 3 will perform all classes of the service without overheating and the square-root-of-the-mean-square current for the most severe run of 427 ft. is but 77 per cent of the continuous rating of motor No. 2 and but 75 per cent of the continuous rating of motor No. 3. Our choice will then lie between these two motors.

Motors May Be Too Large for Economy as Well as Too Small for Safety

Next let us compare the power taken by these two motors. Motor No. 2 gives the most economical operation as its power consumption is from 1.943 to 2.975 kw.-hr. per car-mile, while motor No. 3 takes 1.991 to 3.041 kw.-hr. per car-mile. Motor No. 2 possesses a further advantage due to its size and weight. It weighs but 2360 lb. against 2630 lb. for motor No. 3, or a saving of 540 lb. per car. The weight of the car, which was previously assumed at 39,000 lb. was based on a motor weighing 2727 lb. Of these three motors No. 2 is the best adapted for the service required.

The results obtained in the amount of coasting for the various runs, and the close agreement of this time for the different motors while operating on the same-length run, are due to having the free running speed the same for all motors. The average voltage per motor varies from 410 to 493.

Field-Controlled Motors Most Economical for City Service

To determine the advantages that field-controlled motors might have over the motor selected, I have chosen two additional motors for consideration. Motor No. 4 is the same as No. 2 except that it is arranged for field control, and motor No. 5 is a tapped-field motor of the same size but built by a different manufacturer. The characteristic curves of these motors, arranged to meet the service conditions we are considering, are shown in Figs. 10 and 11, and speed-time, power-input, heating-current and voltage graphs using these motors are given in Figs. 12 and 13. In order to compare their performance with motor No. 2 more readily I have tabulated the results in Table II. Both motors will perform the service satisfactorily without overheating, and both show a decreased power consumption over that of motor No. 2. Motor No. 4 is the more efficient, however, and shows a decrease in power consumption over motor No. 2 of about 5 per cent.

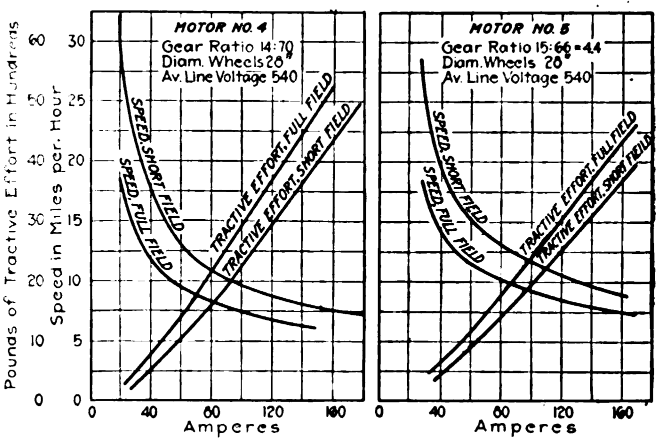


Fig. 10—Motor No. 4—55 hp. at 600 volts

Fig. 11—Motor No. 5—55 hp. at 600 volts

CHARACTERISTIC CURVES OF MOTORS ARRANGED FOR FIELD CONTROL

A comparison of the graphs shown in Figs. 8 and 12 indicates the advantages of field control for reducing the rheostatic losses during the acceleration period. The rate of acceleration is the same in both cases. With the tapped-field motor the rheostats are entirely cut out at a speed of 8.3 m.p.h., in five and one-half seconds from the starting of the car, while with the non-field-controlled motor the rheostats are not cut out till a speed of 9½ m.p.h. is reached, and they remain in circuit for six and one-fifth seconds. The current taken by the

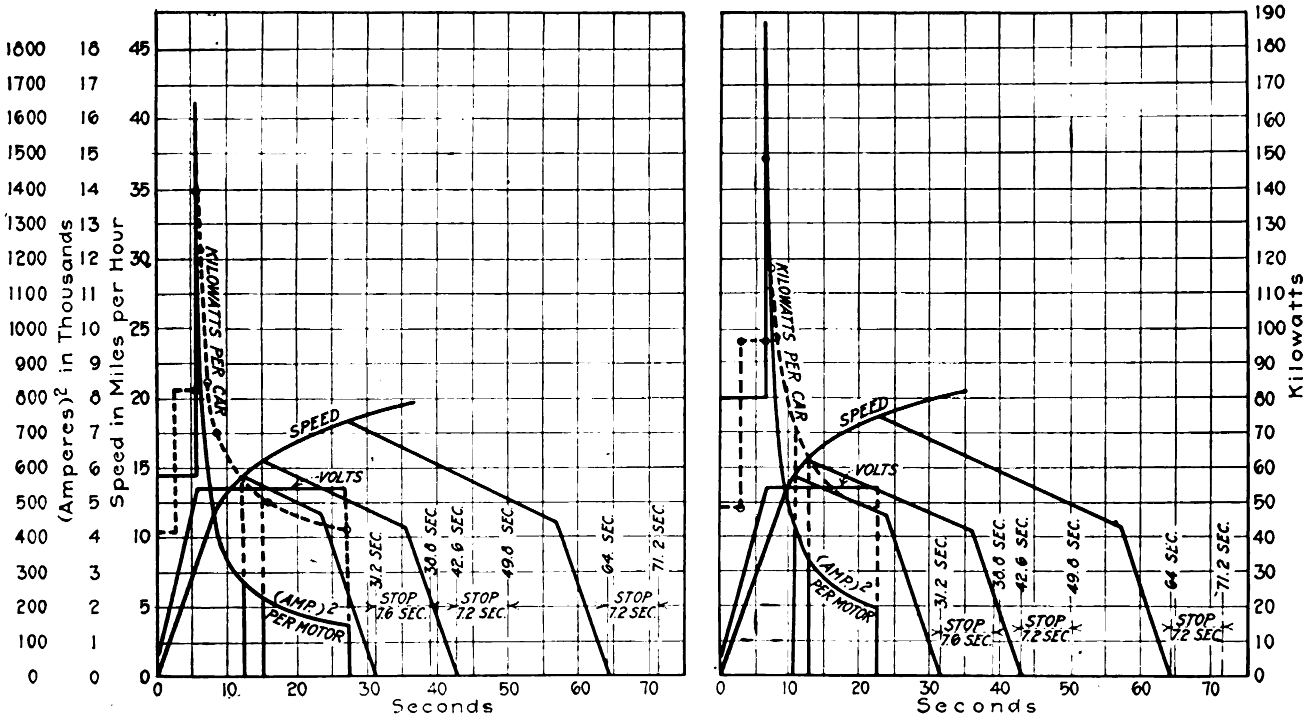


Fig. 12—Operation with Motor No. 4

Fig. 13—Operation with Motor No. 5

SPEED-TIME AND POWER-INPUT GRAPHS FOR CARS EQUIPPED WITH TAPPED-FIELD MOTORS

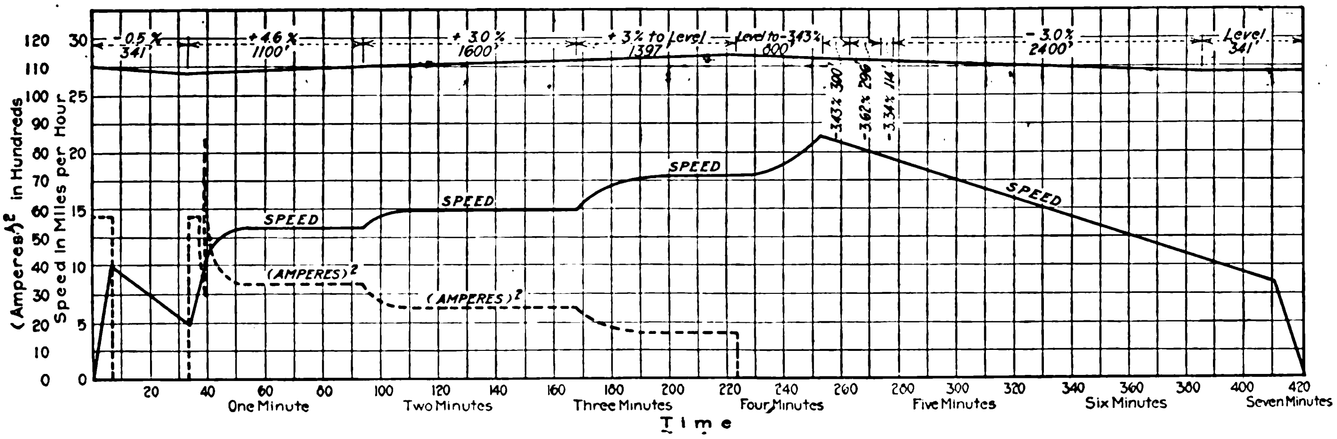


FIG. 14—SPEED-TIME AND POWER-INPUT GRAPHS FOR OPERATION OF CAR IN BRIDGE SERVICE

field-controlled motor is also less during this period, being but 76 amp. as against 84 amp. for the non-field-controlled motor. The reasons for these economies are seen by comparing the motor characteristic curves for these two motors. These show that the speed of the field-controlled motor, with tapped field is about the same as the motor without field control, while its speed with full field is about 25 per cent less. The full field is used in accelerating so the rheostatic losses will be cut out quicker and thus greatly reduced. The tapped field is used for running and so the car is able to attain the same speeds as can be attained with the non-field-control motor.

By the use of field-controlled motors a means is provided for rapid acceleration with a minimum amount of loss in the starting rheostats. The maximum current peak is higher with the tapped-field motor due to the swing that takes place when changing from full to tapped field. The first cost of tapped-field motors is also somewhat higher, but this and the preceding disadvantage are offset by its resulting advantages. Of the five motors considered for this service No. 4 with tapped-field control is the one that should be selected.

Motor Ventilation Is an Important Advance

In the first part of this article I stated that the motors selected for consideration were of the self-ventilating type. In order to determine the resulting advantages of ventilated motors I plotted several graphs for the typical runs we are considering, using non-ventilated motors, and I find that the continuous current rating with ventilation was increased from 10 amp. to 12 amp. with some motors. This permitted the use of the next smaller size of ventilated motor than would have been necessary without ventilation.

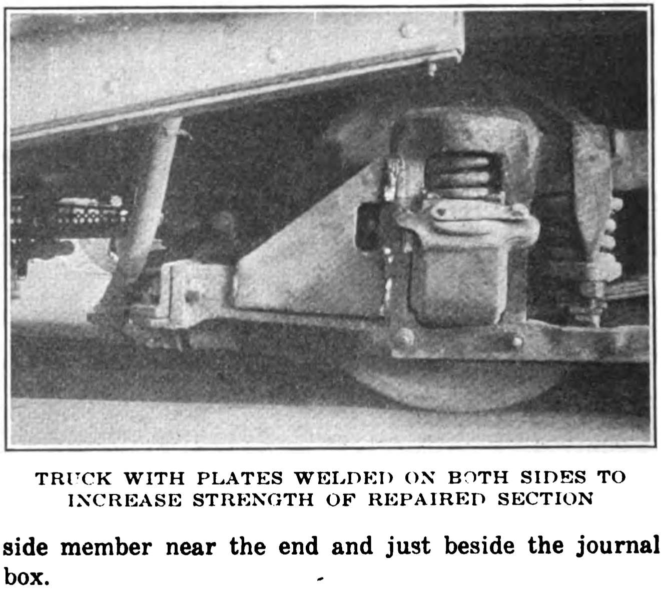
Since the amount of air circulated in a self-ventilated motor depends on the speed of the fan, it follows that in a service with low motor speeds the results obtained are not as great as in a high-speed service with few stops. The consensus of opinion of those who have had wide experience in the operation of ventilated motors seems to be that, in a combined city and suburban service such as we are considering, the modern ventilated motor has an increased rating of from 25 per cent to 35 per cent in sizes up to 55 kw. and from 35 per cent to 80 per cent in larger sizes.

As stated in my article in the April 20 issue of the ELECTRIC RAILWAY JOURNAL, in addition to the service through suburban, residence and business sections the equipments are called upon to operate across bridges with severe grades at each end.

In order to ascertain if motor No. 4, which we have chosen, will perform in this service satisfactorily I have plotted the graphs in Fig. 14 for a trip across the most severe of these bridge runs. From this it is evident that the bridge service is not a limiting condition as regards the heating of the motors, for the average heating current for this run is but 35.7 amp. The ability of the equipment to stop and start on the grades must be considered also, and in this the motors under discussion are satisfactory.

Weld Reinforcement for Truck

THE accompanying illustration shows how F. P. Maize, master mechanic Portland (Ore.) Railway, Light & Power Company uses the electric welder to make a truck stronger than it was originally. This particular type has a penchant for breaking in the lower side member near the end and just beside the journal box.



TRUCK WITH PLATES WELDED ON BOTH SIDES TO INCREASE STRENGTH OF REPAIRED SECTION

In carrying out such a repair, Mr. Maize makes the truck stronger than before by welding on a stiffening plate along the side frame and the pedestal as shown in the illustration. This plate forms a brace in the angle formed between the pedestal and the side frame.

None of these welds has disclosed any evidence of further fracture.

Railway Builds Cars for Use on Steep Grades

The Omaha & Council Bluffs Street Railway Puts in Service Forty Semi-Steel, Home-Built, 34,000-Lb. Cars—They Were Designed for Prepayment Service, Seat Forty-five Persons and Operate on a Maximum Grade of 10½ per Cent

THE Omaha & Council Bluffs Street Railway, which operates over 163 miles of track in Nebraska, chiefly in the city of Omaha and, as the name indicates, connects this city with Council Bluffs, Ia., has recently added to its stock of more than 450 cars by building forty light-weight, semi-steel cars in its shops.

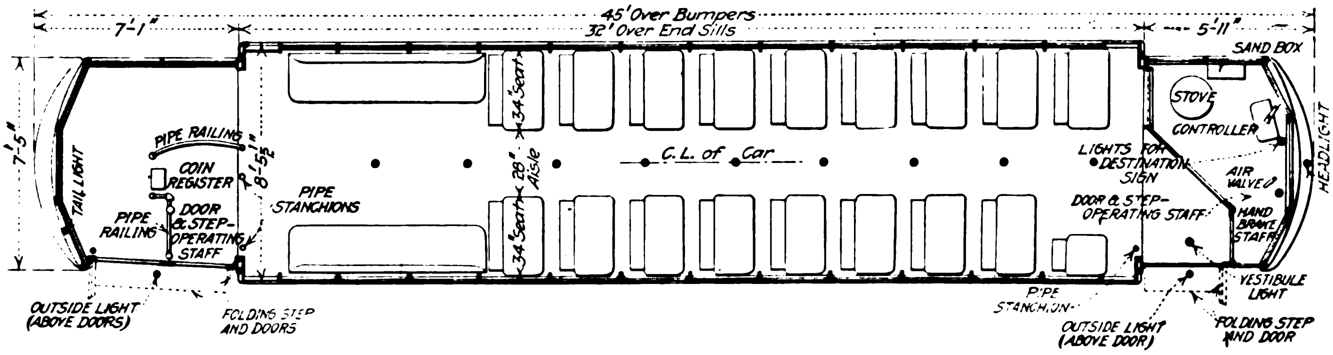
These cars, as indicated in the accompanying plan, are 45 ft. over all in length, 8 ft. 5½ in. over all in width, 11 ft. 3½ in. from top of rail to top of roof, and weigh completely equipped approximately 34,300 lb. The cars were built as light as service requirements and maximum grades of nearly 10½ per cent would permit. The design is for prepayment service, single-end operation and provides for a seating capacity of forty-five passengers.

Side Sheathing, with Stiffening, Forms Girder

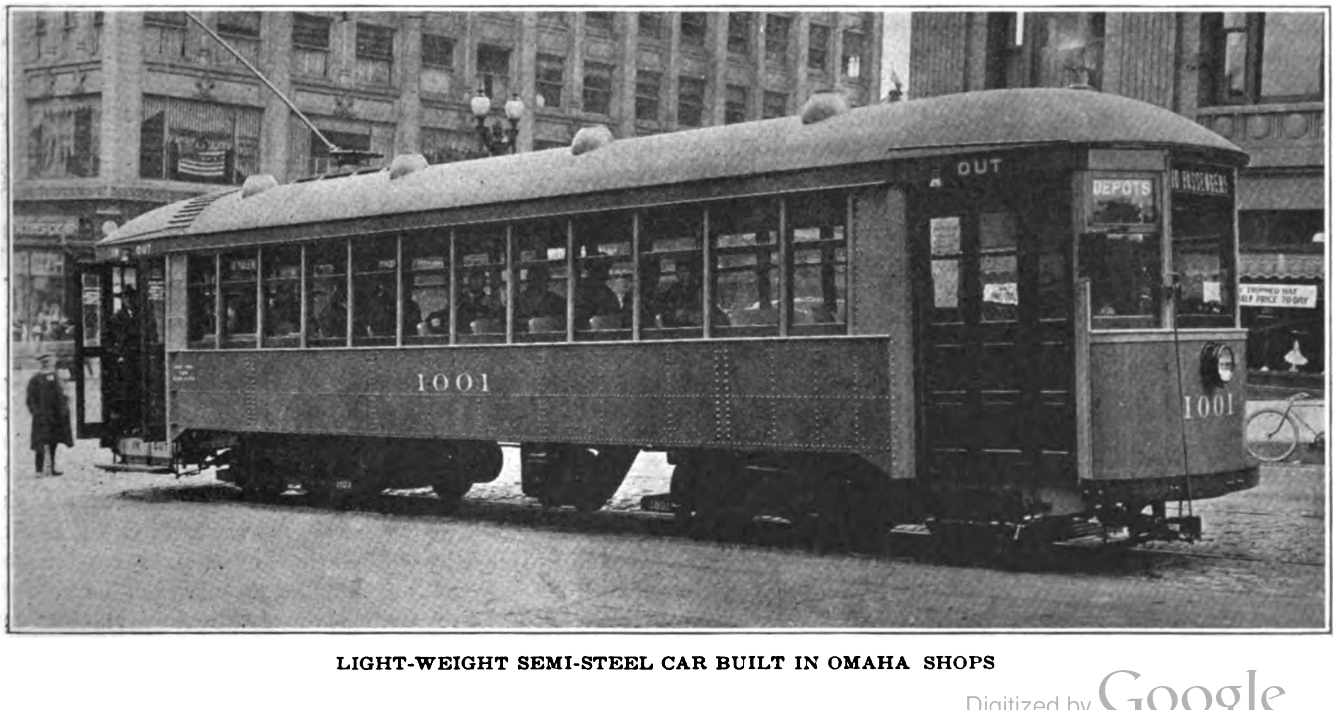
The underframe construction consists of side sills formed of steel angles, 2¼ in. x 2¼ in. x $\frac{3}{16}$ in., with 5-in., 6½-lb. channels for the cross sills and two steel angles, 2 in. x 2 in. x $\frac{3}{16}$ in., and one plate, 14 in. x ⅛ in., for the end sills.

The body corner posts are made of steel angles, 3 in. x 2 in. x ¼ in., and the intermediate posts are of wood. The carlines are of wood riveted to the tops of the side posts, and the side sheathing below the belt rail is $\frac{3}{32}$-in. structural plate, 32 in. deep, reinforced vertically by stiffener angles, 1¼ in. x 1¼ in. x ¼ in. and horizontally by stiffener angles, 1 in. x 1 in. x ⅛ in. The vestibules are sheathed with wood and the letterboards are also of wooden construction. The roof is of wood, $\frac{7}{16}$ in. thick covered with canvas. The side sill angles are connected at the ends by 6-in., 8-lb. steel channel bumpers.

Special attention is called to the rake given to the sides from the window sill to the water table. This provides an adequate overhang of the water table with maximum width of aisle space.


45' Over Bumpers
32' Over End Sills
7'-1"
5'-11"
7'-5"
8'-5½"
SAND BOX
STOVE
CONTROLLER
HEADLIGHT
TAIL LIGHT
PIPE RAILING
COIN REGISTER
PIPE RAILING
DOOR & STEP-OPERATING STAFF
PIPE STANCHIONS
34" Seat
28" Aisle
34" Seat
C. L. of Car
LIGHTS FOR DESTINATION SIGN
AIR VALVE
DOOR & STEP-OPERATING STAFF
HAND BRAKE STAFF
VESTIBULE LIGHT
OUTSIDE LIGHT (ABOVE DOORS)
FOLDING STEP AND DOORS
PIPE STANCHION
OUTSIDE LIGHT (ABOVE DOOR)
FOLDING STEP AND DOOR

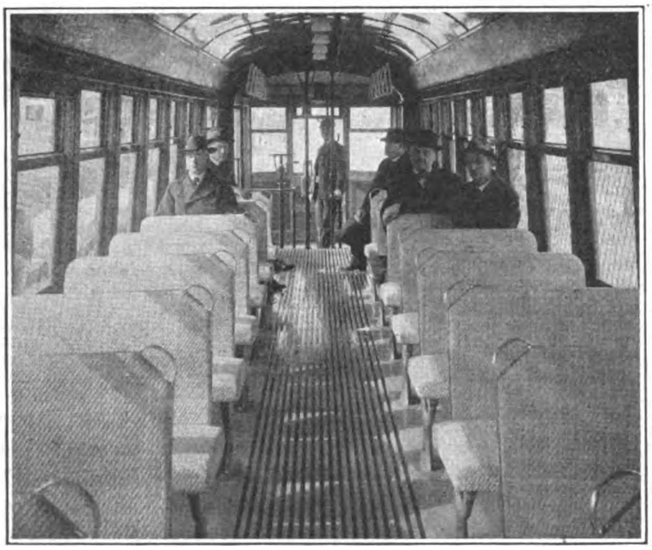
PLAN OF CAR BUILT BY OMAHA & COUNCIL BLUFFS STREET RAILWAY


OUT
DEPOTS
1001
1001

LIGHT-WEIGHT SEMI-STEEL CAR BUILT IN OMAHA SHOPS

The upper steel sashes of all side windows are stationary, while the lower sashes lift into roof pockets. Heavy wire grills are placed outside the windows and each window is provided with a Pantasote curtain. The headlining is of Agasote and the car interior is finished in cherry. The floor is of ¾-in. yellow pine with maple strips for the aisle matting.

Double out-folding entrance and exit doors and folding steps, manually operated according to the American Car Company's design, are provided at the rear, and a single folding exit door and step at the front end. There are thus door openings of 5 ft. at the rear and 2 ft. 4 in. at the front.



INTERIOR ARRANGEMENT OF OMAHA HOME-BUILT CAR

The conductor's station is on the rear platform, and fares are collected and recorded from entering passengers by means of the International fare box and register. The arrangement of the rear platform railings is shown in the drawing. The bulkhead arrangement at each end provides successive steps from top of rail to car floor of 14 in., 13 in. and 10½ in., with a 2-in. ramp from the end of the body sill to the end of the bolster. The seats are rattan, with a single pressed-steel pedestal at the aisle end of each cross-seat, the opposite end being fastened to the wall with brackets. In addition to the cross-seats there is a 7-ft. longitudinal seat on each side of the rear end, nine 34-in. transverse seats on the left side and one 17-in. transverse and eight 34-in. seats on the right side. A 28-in. aisle is provided between the transverse seats, and a 4-ft. 4-in. aisle between the rear longitudinal seats. Sanitary hand straps for standing passengers are furnished in this rear part of the car.

In the roof are eight American Car Company's ventilators, four along each side. The lighting system includes ten 36-watt lamps, arranged in series along the center line of the roof, in Electric Service Supplies Company's safety car lighting fixtures, with Gleason-Tiebout Company's "Camia" reflectors. There are two similar units on the rear platform and two on the front platform. On the same circuit are one lamp equipped with a Benjamin steel reflector, on the outside of the car above each door, two lamps in the front destination sign and one tail lamp. These lamps, with fuses on each circuit, are controlled from a cabinet in the front vestibule by means of 10-amp. snap switches. The rear side destination sign is illuminated from the interior car lighting. The signs are of the Electric Service Supply Company's hood type, the signal system is the "Faraday," with passenger's button on each side post, and the headlight is a "Golden Glow."

The front platform, excepting the exit passageway, is shut off by an Agasote bulkhead partition open at the top and bottom, with a grating in it behind the stove. A swinging door is provided for the motorman.

In the motorman's compartment are a Westinghouse K-35-G-2 controller, an Allis-Chalmers AA-7-a airbrake valve, a Dayton handbrake staff, the front door and step operating staff, a home-made sheet-iron sand box, equipped with Keystone sand trap, and a Peter Smith hot water heater.

The car bodies are mounted on Brill 76-E trucks, with 4-ft. 6-in. wheelbase and 30-in. cast-iron wheels on 4½-in. axles. There are four Westinghouse 506-C-2 motors, outside hung, geared 14 to 90, with solid gears. Other specialties of the car equipment include Tomlinson couplers, Anderson slack adjusters, H-B lifeguards and Earll trolley catchers.

Home-Made Lantern Rack and Carrier

IN THE Salem (N. H.) shops of the Massachusetts Northeastern Street Railway the home-made lantern rack shown is used. The rack is composed of three 8-in. x 1-in. discarded car running boards, with holes cut to hold the lower part of the lanterns. These are spaced just far enough apart to prevent striking in quick insertion and withdrawal. When mounted on the wall in three rows about 2 ft. apart vertically, storage space for about seven dozen lanterns is secured in a horizontal distance of about 25 ft. To facilitate carrying the lanterns out of the shop to passing cars, holders like that shown in the inset, Fig. 1, have been constructed from discarded car-sign stock. Each holder carries four lanterns and is fitted with a strap-iron handle. The lamps are seated in the holder far enough to bring their center of gravity down well below the tipping point. When the holders are not in service they are conveniently mounted on pins carried on a horizontal wooden strip fastened into the carhouse wall above the lantern storage rack.

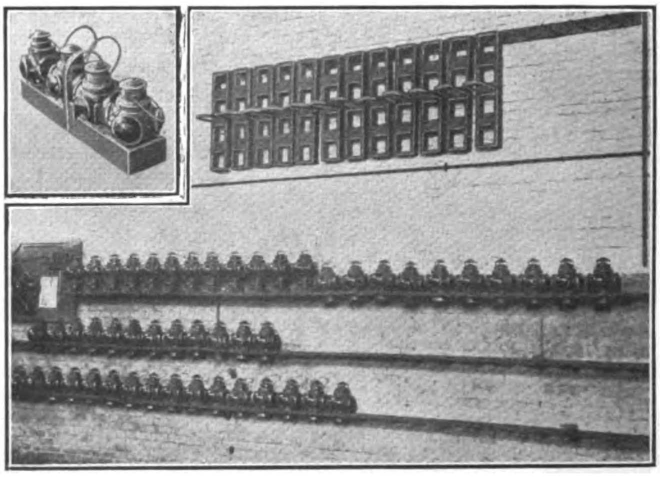


FIG. 1—CARRIER FOR FOUR LANTERNS FIG. 2—RACKS FOR LANTERNS AND CARRIERS

Depreciation and Rate Making

The Use of An Undepreciated Value With Sinking-Fund Accruals for Depreciation Is Not Only Justified by Precedent and Correct Accounting Principles but Is Desirable On the Ground of Public Policy

BY L. R. NASH
Stone & Webster, Boston, Mass.

THE paper on "Some Pitfalls in Regulating Depreciation" by John Bauer in the Aug. 24, 1918, issue of the ELECTRIC RAILWAY JOURNAL invites a few words of comment upon a much-discussed but little understood subject. Professor Bauer takes as his text a rate decision of the Colorado Public Utilities Commission, rendered in October, 1917, in which an undepreciated value is determined as a rate base in connection with a sinking fund accrued for depreciation reserves. He fears that this decision will become a bad precedent in rate valuations, and that the commission has been led into serious error and confusion in its arguments.

COLORADO DECISION NOT NOVEL

While the commission in the decision in question may not have stated its case in the clearest possible way, it has described and adopted a procedure which is by no means new in regulatory practice, so that the decision does not harbor the menace to utility patrons which is apprehended. The first leading case in which the same principles were established was decided by the Second District New York Commission in April, 1913 (Fuhrmann vs. Cataract Power & Conduit Company, 3 N. Y. (II) P. S. C. 656,714). The opinion in this case by Commissioner Stevens discusses clearly and at considerable length the advantages of an undepreciated value in connection with a sinking-fund accrual over a depreciated value with a straight-line accrual. Mr. Stevens' opinion, from which there was no dissent, agrees fully with that in the recent Colorado case, that either method, if properly and consistently applied, is perfectly fair to all parties at interest. Decisions from other commissions in more recent years have embodied the same principles, those of the California commission being most noteworthy.

OUTLINE OF COLORADO CASE

A careful reading of the Colorado decision (P. U. R. 1918 B 86) does not disclose the uncertainties and inconsistencies to which Professor Bauer refers. The utility involved was of comparatively recent origin, and it was possible to determine the original purchase price and the cost of the comparatively large subsequent additions to the physical property with an unusual degree of accuracy. Differences between the engineers of the commission and of the utility in their determinations of the rate base were confined very largely to overhead and intangible elements. Furthermore, this utility had been operating under the present public service law during the major part of its history and, if it had conformed to the accounting requirements of this law, it had annually set aside an accrual for depreciation on the sinking-fund basis embodied in its rate case. The Colorado act is one of the few that prescribe depreciation accounting procedure with such definiteness. The matter is not left to the discretion of either commission or utility. It should therefore be assumed that the commission in deciding the rate case in question simply fixed a rate base which is consistent with the utility's established accounting practice.

If this preliminary statement of the facts in this case serves to clear up some of the criticisms of the commission's procedure, there will still remain several features of Professor Bauer's discussion which need attention. They may be summarized as follows: (1) His inability to see the consistency of an undepreciated investment with a depreciated physical property; (2) The contention that an investment with a sinking-fund accrual for depreciation should sometimes be depreciated; (3) A denial of relationship between valuation and future methods of accruing for depreciation.

MISTAKES OF ECONOMISTS

It is not surprising that people unfamiliar with public utility matters should instinctively think about depreciation in connection with value, because their conception of value is ordinarily associated with sales or taxation. It is a matter of concern that there are modern students of economics who still contend that the public can only be protected from the greed of public utilities by scaling down their investment in rate cases in proportion to the theoretical physical condition of the property. The unvarying and successful practice of public service commissions for a generation, the well-known "hen" analogue, the numerous books, papers and exhaustive reports on the subject have apparently failed to convince such students that the rate base in modern regulatory practice may be quite different from the older concepts of value. It is unfortunate that "value" has been admitted to rate case nomenclature, even though it may be necessary in associated litigation.

Public utilities should be distinguished from other industries by their unlimited life. Other enterprises may serve the purpose for which they were created and liquidate. Their average life is, in fact, only a very few years. Public utilities, on the other hand, quickly become an integral part of the community life and their removal would be a calamity not to be contemplated. In the course of time they reach a stable physical condition. Daily some elements are worn out or become obsolete and are replaced; daily also new elements are added for expansion of service. A typical public utility is neither new nor old. Its efficiency does not decrease with the years but rather tends to increase with its more modern, new elements. The investor puts in his money expecting it to remain indefinitely, at any rate not to be returned on the installment plan. He trusts that the utility will protect his investment by maintaining and renewing the physical property. He assumes that such funds as are needed will be provided for that purpose but he is not concerned with the specific method by which they are accumulated as long as he is not affected.

Contrary to the popular impression, which also seems to have crept into Professor Bauer's paper, the utility is by no means synonymous with its investors. Its affairs are to a limited extent directed by certain investors, but they are also subject to the control of the community served and, in most cases, are under the supervision of a public service commission. In a sense, the utility is a trustee, furnishing to the public such service as the latter cares to pay for, and paying to the investor a return on funds placed in its hands. The income received by this trustee and its apportionment to service, taxes, replacement, returns, etc., may be very largely fixed by the commission, which thus also intervenes between investor and public.

UNDEPRECIATED RATE BASE—SINKING-FUND ACCRUAL

From the many available discussions and authorities with voluminous tables and formulae it should be perfectly clear that in the long run it makes no direct difference to either investor or patron whether the rate base is depreciated or not, provided the appropriate depreciation accrual method be correctly used. There are periodic differences which may affect the patron when depreciated value is used, and these differences tend to retard the development of the business in its early years. They would hopelessly confuse the average patron if consistently recognized in rate adjustments. In a rate case, requiring the fixing of the percentage of accumulated depreciation by a commission, the difference which would almost inevitably exist between the opinion of the commission and the accrual practice of the utility would work hardships upon either the utility or its patrons.

Irregularity in rates, uncertainties and injustice are all avoided by the undepreciated rate base and a sinking-fund accrual. Nor are there any circumstances under which the rate base can be properly depreciated when the sinking-fund accrual is used. If, as assumed in the paper, the depreciation reserve is invested in the property instead of elsewhere—and this is the usual procedure—the total investment cannot be scaled down for rate-base purposes, because the invested depreciation reserve must earn a return for its own accretion. The investor is entitled to a return on his own actual investment, but not, of course, upon the depreciation reserve investment. The patrons pay a return upon both these elements in the rate base. If the investment is scaled down, the adequacy of the depreciation reserve is impaired. Proper accounting would not permit any confusion between investors' funds and the depreciation fund, even though they should be represented in one property account.

It is not difficult to show by a simple illustration that the sum of return and depreciation annuity is the same whether a depreciated or undepreciated value is used. A property without growth ultimately reaches a theoretical condition of 50 per cent depreciation. With due allowance for salvage value and the usual consistent growth in utility property, the average actual condition should not be lower than 75 per cent. On the assumption of a useful life of twenty years and a fair return of 8 per cent, the patrons would pay in the case of depreciated value 8 per cent on 75 per cent of the investment or 6 per cent on the whole, plus 5 per cent for depreciation, or 11 per cent for both. In the case of undepreciated value they would pay 8 per cent on the full investment plus the equivalent sinking-fund accrual of about 3 per cent, or the same 11 per cent total. At certain stages in the utility's history, with other rates of return or with a different average life, the circumstances of equality would be different, but always excesses and deficiencies would in the long run offset each other. The differences would be wholly due to the irregularities arising from the use of varying depreciated values. Clearly if such values serve no useful purpose, they should be avoided.

Perhaps suspicion of the undepreciated rate base procedure lies in the possibility that greedy investors may appropriate more than their share of the return on the total investment, leaving inadequate accumulation in the reserves. Without restraint it is possible that they would go still further and pay out the entire accrual for depreciation in dividends. It is one of the functions of the public service commissions to guard aginst such diversions, through accounting instructions, reports and investigations. If such means are not effective or have not been established long enough to cause the accumulation of suitable reserves, the commissions have ample authority to compel necessary maintenance and replacements of property. It thus appears that the public is protected against excessive charges and inadequate service.

PRESENT VALUATION AND FUTURE DEPRECIATION

As to the relation between present valuation and future depreciation accruals, it is true that relationship is not necessary, but it is by no means absurd. With an undepreciated rate base one almost instinctively expects to use a sinking-fund accrual for depreciation. A straight-line accrual would involve the unusual practice of crediting income with the return on invested reserves. With a depreciated rate base one similarly expects to accrue for depreciation on the straight-line basis. The substitution of a sinking-fund accrual, while possible, would involve a change in depreciation accounting methods and the determination of a new rate of accrual which would provide for remaining value in remaining life expectancy.

In spite of the above statements, the possibility is here pointed out of conducting a rate case without necessary reference to actual past or future depreciation accounting methods, other than to establish their adequacy. If the actual, undepreciated, total investment is taken as the rate base and a fair return allowed thereon plus a sinking-fund accrual for depreciation, substantial justice will be done to all parties at interest. If in the past the utility in question has paid continuously a fair return on the full investment and accumulated a full straight-line depreciation reserve, a rate decision on the proposed basis might properly reduce the future accruals, even to the point that the future sinking-fund accruals would be only the amounts necessary to provide for remaining value in remaining life expectancy. On the other hand, for equal accuracy the opposite procedure should be followed in the case of deficiencies in past accruals. No useful purpose would be accomplished by changing the rate base instead of the depreciation accrual.

Briefly, the accurate application of this method in a rate case requires the determination of revenue sufficient to provide for operating expenses, taxes, a fair return upon the full, actual investment, and a depreciation accrual on the sinking-fund basis to accumulate in the years of remaining life of the various property elements that part of their cost not already accumulated. To these factors should be added if necessary a return upon past deficiencies in fair return or an amoritzation thereof. A utility subject to rate regulation on this basis might still follow the less complex straight-line method of accrual in its actual accounting, the result being that there would be deficiencies in return in the early years and excesses in later years with respect to specific property elements. When the property as a whole had reached maturity, with elements of widely varying ages and length of useful life, the combined differences would not be appreciable.

DEPRECIATION SHOULD BE PROVIDED FOR

It is the regular duty of the public service commissions to see that suitable provision is made for depreciation. Under their supervision, accruals may be decreased or increased from time to time as actual useful life is found to be greater or less than previously estimated. As long as obsolescence and inadequacy play their present important part in the usefulness of utility elements, great refinement in estimating accruals or present condition is futile. If the latter can be entirely avoided, the problem of rate adjustments is materially simplified. In view of this simplification and the equal fairness of rate regulation based upon undepreciated rather than depreciated values, it hardly seems necessary to find fault with the utilities for favoring the more straightforward and understandable method. Undoubtedly one motive in the choice is a desire to relieve the apprehension aroused among investors by the strange doctrines which have been propounded in this particular field since the advent of regulation.

To a surprising degree, academic discussion fails to recognize that most public utilities are constantly growing and needing new capital. The strict regulation and frequent criticism of utility activities, the "fair return *and no more*" (writer's italics) sentiment, reiterated in the paper under discussion, all make it difficult for utilities to compete successfully in the money market for new funds and to hold what they already have. The resulting increased cost of money means a higher ultimate cost of the service rendered. An adherence to established and tried business principles instead of experimentation with unseasoned theories would do much to restore confidence in public utilities as a safe investment, to improve the service rendered and to reduce its cost.

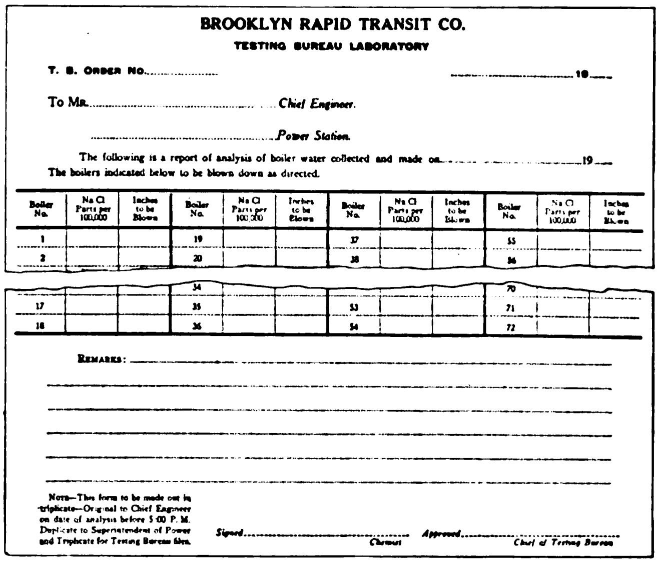
LETTERS TO THE EDITORS

Testing and Treating Power-Plant Feed Water

BROOKLYN RAPID TRANSIT COMPANY
BROOKLYN, N. Y., Sept. 8, 1918.

To the Editors:

One of the readers of the ELECTRIC RAILWAY JOURNAL has written me asking to be referred to a text-book that will explain the methods of testing boiler feed water for salinity, hardness, alkalinity, etc. He also inquires as to the manner of taking samples of boiler water and schedule of testing. These questions were raised by reading my article on "Testing and Treating Power-Plant Feed Water" in the ELECTRIC RAILWAY JOURNAL of April 20. As there may be other readers of the paper who are interested in these points I am sending you the substance of my reply to his inquiry for such use as you may care to make of it.



BROOKLYN RAPID TRANSIT CO.
TESTING BUREAU LABORATORY

T. B. ORDER NO.................... ....19....

To MR.. Chief Engineer.

....Power Station.

The following is a report of analysis of boiler water collected and made on..............................19....
The boilers indicated below to be blown down as directed.

Boiler No.	Na Cl Parts per 100,000	Inches to be Blown	Boiler No.	Na Cl Parts per 100,000	Inches to be Blown	Boiler No.	Na Cl Parts per 100,000	Inches to be Blown	Boiler No.	Na Cl Parts per 100,000	Inches to be Blown
1			19			37			55		
2			20			38			56		
			34						70		
17			35			53			71		
18			36			54			72		

REMARKS: ....

NOTE—This form to be made out in triplicate—Original to Chief Engineer on date of analysis before 5:00 P. M. Duplicate to Superintendent of Power and Triplicate for Testing Bureau files.

Signed.............................. Chemist
Approved.............................. Chief of Testing Bureau

FORM USED FOR ASSEMBLING FEED WATER TEST DATA

The book "Examination of Water" by William P. Mason contains valuable information on pages 18, 19 and 20, concerning the test relationships which distinguish between bi-carbonate, normal carbonates and hydrates in water. There is also much of value in the book "Test Methods for Steam Power Plants" by Edward H. Tenney. The chapter on water for boiler feed purposes contains, on pages 79 and 80, a discussion of the determination of chlorine. There are available, as a matter of fact, many references covering the matter.

Boilers of the multiple-drum type sometimes show large differences in the concentration of water in the several drums. When water for sampling purposes is taken from the mud drums of such boilers, excellent average concentration values are obtained. Average values, however, are not of first importance. When differences of concentration occur in the several drums of a multiple-drum boiler it is of urgent importance to determine by testing the maximum concentration value, since it is the maximum value which is most in need of control.

One way of taking water from a boiler drum is by means of a tee on the water column blow-down line, but this is not the best practice. When such a line is "blown" a considerable amount of steam comes down from the steam space in the water column, and this steam condenses in the line and makes the water show salinity which is too low. It is much better to have steam-drum sampling lines entirely submerged.

Another matter which must be kept in mind is that when water is sampled from a line part of it flashes into steam on account of the high temperature of the water. If this is allowed to occur to any appreciable extent it makes the salinity too high. The proper way is to blow the line and then shut off the valve and allow it to remain shut for a sufficient time to cool the water in the line by radiation. Then if the valve is merely "cracked" open, a sample of water may be obtained which will show the true salinity of the drum water.

Boilers fired with underfeed stokers are apt to need more frequent sampling than where the average steaming rate is not high, and samples taken once a day may not be too frequent. It all depends, of course, upon the quality of the feed water. If make-up water is of indifferent quality, or if surface condensers are used and trouble is experienced with leakage of salt water into the hot-wells, frequent testing of the boiler water is desirable. The accompanying printed form shows a scheme for listing salinity values of boiler water with accompanying recommendations as to the numbers of inches of water, measured on the gage glass, which should be blown off. The recommendations for blowing are so proportioned as to reduce the salinity of the boiler water to some suitable standard value. Where the salinity is found greatly to exceed the chosen standard it is necessary to blow in installments. The effect of salt introduced when the water level is pumped up after each installment of the total blow should be taken into consideration, at any rate it should be considered if the salinity of the feed water is other than quite low.

H. LE H. SMITH,
Chief of Testing Bureau.

How to Base Fares According to Distance

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
EAST PITTSBURGH, PA., Sept. 9, 1918.

To the Editors:

To provide a basis for charges on the zone system, why not have either:

(a) Each car equipped with a mileage register which would show the total distance traveled for each trip; or

(b) Each car equipped with a large clock indicating the time traveled; the clock to be adjusted so that it operates only when the car is in motion?

The conductor could then issue a ticket to each passenger when he enters the car, punched to indicate either the place or the time of boarding. The fare would then be collected when the passenger left the car and would be based upon the distance traveled as shown by the punching on the ticket. For example, suppose the fare for a 10-mile run, which has a running schedule of 100 minutes is 10 cents or 1 cent per mile. If the passenger boarded the car at any point between the first mile and the second mile and left the car at a point between the sixth and seventh mile, or got on at any point within the first ten minutes after the car left the terminal and left the car at any point between the sixty and seventy-minute time sector, his fare in either case would be 6 cents. By such a plan, there would be a charge proportioned to the distance traveled and the cost of operation. In addition to the foregoing, a "readiness to serve" or minimum fare charge should be made for any distance traveled under 2 miles. This minimum charge might be as low as 2 cents.

It is believed that such a scheme would not be difficult to inaugurate, the public being already educated to the charge-per-mile basis, and, further, it should not be difficult to form public opinion in favor of a plan that can be shown will give fair treatment of all.

A. H. MASTERS,
Assistant to Sales Manager

AMERICAN ASSOCIATION NEWS

Three War Board Bulletins This Week

UNDER date of Sept. 16, the American Electric Railway Association War Board has issued bulletins Nos. 30 to 32.

The first relates to the operation of the draft and contains the text of a letter, dated Sept. 9, from Provost Marshal General Crowder to employers generally. Included are statements from the War Industries Board and the United States Railroad Administration bearing upon the situation.

Bulletin No. 31 is a reprint of the foreword to Circular No. 20, Preference List No. 2, War Industries Board, making clear the basis for the determination of priorities. Electric railways and related manufacturers are listed by the Board in Class II.

The third bulletin calls attention to the restrictions upon non-war construction, as covered in Circular No. 20, issued by the priorities division of the War Industries Board. Chairman McCarter points out that the priorities division construes this bulletin to apply to all extensions, improvements, repairs, etc., of electric railways.

National Electrical Safety Code Now Under Revision

THE present edition of the National Electrical Safety Code designated as Circular No. 54 of the Bureau of Standards has been exhausted, and before reprinting the text of the rules will be revised. This revision is now under way and the Bureau of Standards is anxious to secure from all interested parties comments and suggestions for changes in, or for additions to, the present rules which will reduce accident hazards. These changes or additions must be reasonable and practicable, and they should be supported by citation of specific instances or other evidence when possible. They should be addressed to the Bureau of Standards, Washington, D. C.

A list of proposed changes to Part 3 of the Safety Code has already been prepared and copies have been sent to the committees of technical and utility associations, state commissions and others who have been cooperating with the bureau in the formulation and revision of the rules. Similar lists of proposals for the other parts of the code are now being prepared.

I. C. C. Lays Down Valuation Principles

Decision on Texas Midland Upholds Single Sum Value—Original Cost Will Be Reported as Fully as Possible

IN ITS recent report on the valuation of the Texas Midland Railroad the Interstate Commerce Commission—five years after the passage of the federal valuation act—has taken the important step of passing upon a number of moot points. The Texas Midland case is the first one in regard to which the commission has rendered a report even approaching a final determination of value, and with respect to fundamentals it is therefore a test proceeding.

A perusal of the entire report will be advisable for those interested in utility valuation work. The details are too voluminous to be reproduced here, but an indication of the scope of the decision can be given through a mention of some of the findings. These are as follows:

Single Sum

The valuation amendment authorizes the commission to find a single sum as the value of the common carrier property for purposes under the act to regulate commerce; and the commission will ultimately make such finding as to the property of each carrier, supplementing tentative valuations already made in which a single sum is not stated by such findings.

Original Cost

Original cost to date, which generally cannot be ascertained from accounting records alone, will be reported as fully as possible from the best available evidence in each particular case. When the original cost of portions of the common-carrier property, but not of the whole, can be stated, the ascertained facts will be reported; when the cost of no portion of the property can be identified, the carrier's investment account will be shown. Estimates will be resorted to, within comparatively narrow limits, as to minor portions of the property, the cost of which can not be ascertained from records.

In requiring a report as to the original cost to date of "each piece of property" owned or used by a carrier, the act can not be narrowly construed. A reasonable construction requires that original cost should be reported in all reasonable detail, and the words refer to various sections of the railroad, rather than the individual ties, rails and similar elements.

Cost of Reproduction

Cost of reproduction new of the common-carrier property is ascertained upon the assumed basis of the non-existence of the railroad while all other conditions in the same territory were taken as existent on valuation date. The most practicable and economical construction program is employed, and to an inventory of items making up the physical property are applied cost prices fairly representative of conditions on valuation date, with the addition of the estimated cost of placing the items in position as of valuation date, and certain overhead charges.

In ascertaining the cost of reproduction new the commission is not to ignore expenses which would be incurred by reason of the fact that the physical plant, other than land, would have to be built, and is not limited merely to the reporting of an inventory value.

No allowance is made in the estimate of cost of reproduction new for contingencies as such, but the quantities and prices employed reflect various construction contingencies and fairly represent the amount of money necessary to reproduce the identical property.

The percentage plan of stating engineering in the cost of reproduction new is adopted. In stating the cost of reproduction new by the percentage method engineering should be computed on the amount of the investment in the road accounts, exclusive of engineering and land.

The percentage method of estimating general expenditures, other than interest during construction, is adopted in determining the cost of reproduction new, and the percentage adopted in the present case is applied to the road accounts, exclusive of land.

In estimating cost of reproduction new, the property to be reproduced is taken as the existing property as it was when put into its present service; and if secondhand materials were used, the cost of reproduction new is estimated for the same kind of materials in the same condition as when installed.

Interest During Construction

In estimating interest during construction, for the purpose of stating the cost of reproduction new, it has been assumed that the credit available is good and uniformly the same and that money is obtainable at the same rate of interest and supplies can be purchased at equally advantageous prices; 6 per cent per annum is assumed as the interest rate and is taken as covering the cost of obtaining money.

The period used in determining interest during construction in estimating the cost of reproduction new is taken at one-half of the estimated construction period required for reproduction, plus three months, as to road and general expenditures; and at three months for equipment.

Working Capital and Land

Materials and supplies and cash on hand are not included in the estimate of cost of reproduction new; but the amounts on hand, as shown by the carrier's inventory and its general balance sheet, are stated in the tentative and final valuation.

The present value of the lands owned or used for common-carrier purposes is stated by ascertaining the number of acres and multiplying this acreage by a market value determined from the present fair average market value of similar adjacent and adjoining lands, due allowance being made for any special value which may attach by reason of the peculiar adaptability of the land to railroad use.

Nothing additional is added for the expense of acquisition, for severance damages, for engineering, and for interest during construction. The reproduction cost of carrier lands, and the present cost of condemnation and damages, or of purchase, of a carrier's lands, are not estimated.

Depreciation and Appreciation

In estimating the cost of reproduction less depreciation, depreciation has been treated as covering the lessening in the number of units of capacity for service as compared with those existing in the same elements when installed; and upon ascertaining what part of the remaining capacity for service remains, the depreciation which has already accrued is subtracted from the cost of reproduction new and the remainder is given as the cost of reproduction less depreciation. Due consideration is given to existing salvage or scrap value. Depreciation is not taken merely as the equivalent of deferred maintenance or loss of service efficiency.

While the valuation act evidently intends to require a statement of all the cost values and other circumstances which might bear upon the value of the property, at least for rate-making purposes, and appreciation is a fact which may affect the final value of the property, the record in the present case does not warrant any definite finding as to either the cost or the value of such appreciation as has resulted from maintenance, operation and the effects of time upon the roadbed.

Other Elements of Value

The finding in the tentative valuation that "no other values or elements of value were found to exist" is approved upon the record in the present case, in the light of the fact that in the cost of reproduction new and the cost of reproduction less depreciation figures requisite consideration was given to the fact that the property constitutes a railroad and is doing business, and is not merely an aggregate of materials.

W. L. Davis, auditor Lehigh Valley Transit Company, has issued to conductors and agents on this property a calculating table in handy pocket form for use in making computations with the new 6-cent fare unit.

Brooklyn Unionists Fight Discharge

Former Employees of B. R. T. Elevated Subsidiary, Discharged for Serious Violations of Rules, Allege Discrimination—Drag War Labor Board Into the Case, Despite Absence of Controversy with Remaining Men

A CHARGE that labor agitators are trying to make use of the War Labor Board to create industrial discord in Brooklyn was made on Sept. 19 by President T. S. Williams at a hearing before this board. The case concerned allegations of discrimination made by a few former employees of the New York Consolidated Railroad, which operates the elevated lines of the Brooklyn Rapid Transit System. President Williams averred that certain men had been discharged for infractions of rules and not for union membership, but that no controversy exists between the elevated company and its employees and that the board is not justified in proceeding with the case.

To the company's proposal that the question of reinstatement of the men be left to the employees' association of the company or to a board of arbitration chosen from employees, Messrs. William H. Taft and Frank P. Walsh, joint chairmen of the board, ruled that a charge of discrimination had been made and that the board could not hand over to any other body its duty of rendering a fair decision. The evidence presented, it was said, would show whether or not the charge was justified.

MAYOR HYLAN INTERVENES

The Department of Labor several weeks ago called upon the War Labor Board to investigate the claim that the Brooklyn company was interfering with the right of its motormen to join the Brotherhood of Locomotive Engineers. Under the principles of the board, workers are protected in their right to join unions and to bargain collectively through chosen representatives with their employers, and employers are forbidden to molest workers in the exercise of the right. To determine whether this principle had been violated, the case was referred to a section of the board consisting of the joint chairmen.

Hearings were held during the last of August before examiners of the board, and a report was made to the chairmen. Subsequently, however, Mayor Hylan of New York City wrote to the board to the effect that there was "immediate danger of a strike because of the discriminatory methods used against the men who are exercising their inalienable right to organize." The board, therefore, reopened the case for another hearing on Sept. 19.

POSITION OF COMPANY

In reply to the allegation that additional discharges for union membership had been made since the hearings before the examiners closed, President Williams outlined his company's position as follows:

The proclamation of the President creating the National War Labor Board defined its "powers, functions and duties" as covering "controversies arising between employers and workers in fields of production necessary for the effective conduct of the war."

No controversy existed in this case between employers and workers at the time the War Labor Board instituted an inquiry, and no such controversy now exists. There would have been no interruption of service had the War Labor Board not intervened, and there is no indication of such interruption now as justifies the Mayor in calling upon the War Labor Board to re-open this case.

The only threat of a strike came from men outside our employees and representatives of a labor organization that had for years been unsuccessfully trying to represent our men in their relations to the company. This outside talk of a strike was pure bluff, founded upon the expectations that it would bring to the assistance of a losing cause the influence of the national government. All but four out of the 450 employees affected have signed a statement that—"There is no controversy between our employer and ourselves upon the questions of wages, working conditions, hours of labor, discrimination, intimidation or otherwise."

NOT IN INTEREST OF INDUSTRIAL PEACE

The situation presented therefore is that the functions of the National War Labor Board have been appealed to—without the knowledge of the National War Labor Board, I presume—not, as defined by President Wilson, to settle a labor controversy but to incite one; not in the interest of industrial peace but in the interest of industrial discord.

Such an injection of discord where harmony now prevails would seem to be incredible. It is difficult enough for electric railways in times like these to discharge properly their duties to the public without exposing the public and the war activities of the government to the added injuries which would follow a serious interruption of transportation service.

The principles to be observed by the National War Board, as defined at its creation, specifically stated:

"In establishments where union and non-union men and women now work together, and the employer meets only with employees or representatives engaged in said establishments, the continuance of such condition shall not be deemed a grievance."

NO STRIKE IN NINETEEN YEARS

That is our situation. For about a score of years our employees have had an association of their own, designed originally for purposes of insurance against death and illness and for social welfare. About two years ago the functions of this association, in order to procure greater co-operation between employer and employees, were extended by the selection of departmental trustees for the adjustment of working conditions.

Owing to the sympathetic and co-operative relations between company and employees, there has been no labor strike upon our system for nineteen years, our system standing alone among New York transportation companies in this record. Among our elevated and subway employees there has never been a strike since these railroads became a part of our system.

The particular matter which the board has been called upon to consider is not one involving wages or hours of labor, but whether certain employees who have been dismissed from the service of the New York Consolidated Railroad shall be reinstated, and whether motormen of that company shall be given the right to join and take an active part in the organization of the Brotherhood of Locomotive Engineers "without fear of intimidation or dismissal from the service," as well as the right to bargain collectively.

GOOD REASONS FOR DISCHARGES

The evidence taken by the examiners of the board indicate that no men have been discharged except for good and sufficient reasons. As to the question of "intimidation," there is just as much proof or more of intimidation of our employees by these outside labor organizers as there is of intimidation by the company against its employees.

The company does not, however, look with favor on any attempt to substitute for the existing association representing all of its employees an organization controlled essentially by men who are not in its employ. It does not hesitate to inform its employees of this conviction, or to persuade them that their interests do not lie in that direction.

Such an organization, dominated by outside influences and prejudices, too often establishes a barrier between employer and employee. It makes for discord instead of harmony. It destroys co-operation and sympathetic relation. It brings outside troubles into local affairs. It substitutes the judgment of uninformed and often selfish outsiders for the judgment of experienced and well-informed insiders.

WOULD CALL IN TRUSTEES

The first purpose of the War Labor Board was that the employers and employees of private industries should not attempt to take advantage of the existing abnormal conditions to change the standards which they were unable to change under normal conditions. Our employees have not attempted to take advantage of any such abnormal conditions to change existing standards, but outside agents, who vainly for two years have attempted to change the principles upon which our industrial relationship was founded, are now attempting again with the hope of support from the War Labor Board to inject discord into a peaceful situation.

In behalf of this industrial relationship, in behalf of the principles which underlie it, in behalf of a continuance of peace, in behalf of the people whom we serve, and in behalf even of the government itself, whose war operations will be seriously embarrassed by any labor disturbance, we ask you to think twice before you will lend your influence and support to those who would disturb and destroy the principles and results which long years of co-operation have established. We ask you to announce, and to announce promptly, that there is no situation presented here which calls for the exercise of your powers of recommendation.

If in your judgment the evidence taken by the examiners indicates the possibility of any injustice done to employees who have been discharged, we suggest that the facts in each case be presented to the departmental trustees, whom the employees have themselves selected to represent them, and we pledge ourselves to observe the recommendations of such trustees as to the reinstatement of these recently discharged employees.

The remainder of the hearing was devoted mostly to testimony of former employees and company officials. The motormen asserted that they had been discharged on account of excessive demerits which had rapidly accumulated after they joined the union. Company representatives, however, showed that the men had received demerits before and that the immediate cause of discharge was serious infractions of the rules, such as running at excessive speed around elevated curves. It was averred that the union members had in no way been subjected to discrimination. The complete records of all men called up for demerits and warning or discharge in the last three months were promised to the board. The hearing was then adjourned, and a decision was promised at the earliest possible date.

GENERAL NEW YORK HEARING ASKED FOR

In connection with the opening of the Brooklyn hearing, James H. Vahey, counsel Amalgamated Association of Street and Electric Railway Employees of America, asked that the War Labor Board hear alleged complaints on the part of employees of the New York Railways and the Third Avenue Railway. Mr. Taft remarked that the board had received a request for Charles B. Hubbell, chairman Public Service Commission for the First District of New York, to assist the commission in handling the New York transportation situation. He added, however, that the board would have to consider the question of jurisdiction, and definite complaints must be filed so that the issues might be clear.

Four Tramway Topics Absorbing to Britishers

Tramways & Light Railways Association Holds Conference on Labor, Industrial Councils, Fuel and Higher Fares

THE annual meeting of the Tramways & Light Railways Association of Great Britain, which was held in London in July, took the form of a conference. Informal discussion on topics of pressing importance to the industry were the features. It appears that the problems agitating the tramway managers of the British Isles are substantially the same as those in the foreground in this country, although the details differ materially.

In the matter of national awards of tramwaymen's wages it appeared from the discussion that the tramways had been embarrassed by their lack of right to organize so as to deal as a unit with the National Transport Workers' Federation. It became necessary to appoint a representative committee to present the tramways' side of the controversy to the National Committee on Production. The result was first an award of an all-round war bonus of 20 shillings per week. Later, after the men had presented claims for an increase of 12½ per cent in the basic rate, the bonus was raised to 25s. In this same connection the discussion indicated that progress is being made with plans for national councils of labor and the industries, including the corporate and municipal tramways, for the purpose of reaching agreement on fundamental economic relations.

The speakers at the meeting expressed concern over the coal restriction order of the government sent out by the tramways committee of the Board of Trade reducing the coal allowance of tramways in southern England by 15 per cent. From the technical standpoint interest centered in the possibility of supplementing the coal supply with coke or coke breeze. It was pointed out that a 15-per cent reduction in fuel means more than this reduction in service on account of the necessary standby losses in the power plant.

The discussion on increased fares is now of little interest because it was preliminary to the House of Commons bill abstracted in the issue of this paper for Sept. 7, page 418. It seems that the members hoped for a better allowance for the owners of the tramway properties than was actually allowed in the bill, although the bill itself was the outcome of the work of this association and the Municipal Tramways Association. Five per cent on stock was an allowance favored, but the bill provided maximum dividends not to exceed three-fourths of the pre-war rates.

During the past year more than 7,000,000 copies of the weekly bulletins have been printed and distributed by the National Safety Council, 750 original bulletins having been prepared. Forty-seven local councils are now actively pushing safety work. Eight "Safe Practices" pamphlets have been printed and distributed, three others are in press and twelve more are in preparation. The national headquarters staff at Chicago now comprises thirty-one persons. In the words of W. H. Cameron, general manager of the Council, "Safety work in the United States has arrived."

New Form of Thermostatic Heat Regulator for Cars

THE accompanying halftone shows a new form of thermostat made by the Railway Utility Company, Chicago, Ill. The makers guarantee a regulation of temperature within 1 deg. by its use as compared with 4-deg. range which was secured with the type previously made by the company.

It consists, as shown, of a mercury bulb and tube securely but flexibly mounted so that the action will be free from the effects of vibration. Extra protection is afforded the bulb itself through the guard which incloses it. The thermostat is mounted in an airtight case, the cover of which (not shown) engages with the ridge projecting from the back casting. The cover is held in place by two screws passing through the holes shown in the back.

As will be evident from this description the mounting has been so designed as to render the thermostat as nearly "foolproof" and "tamperproof" as possible.

Making Temperature Trip the Circuit Breaker

THE fact that most electrical apparatus can withstand momentary overloads without danger has gradually led operators to push up the current values at which electromagnetic protective devices will operate, or to dispense with them entirely, rather than undergo the inconvenience of having them disconnect the machinery on momentary peaks.

A method of visual protection on the basis of temperature has been in use for some time. Exploring coils are built into the apparatus and used to indicate the temperature of hot spots by electrical means.

The Westinghouse Electric & Manufacturing Company has now brought out the type CT relay, which automatically trips the circuit breaker when the temperature reaches the danger point under excessive current. This device may be used to protect any alternating-current apparatus from excessive heating if the apparatus is so arranged that exploring coils can be installed.

The type CT temperature relay operates on the Wheatstone bridge principle. Two arms of the bridge are copper exploring coils arranged to be placed in the oil or embedded in the windings of the apparatus to be protected, the other two arms are unchanging resistance mounted in the relay. The current for the bridge is supplied by the current transformer connected in the circuit of the apparatus to be protected. The relay has two windings which co-operate to produce torque in a manner similar to the current and voltage coils of a wattmeter. The main winding is a coil operated directly by the current transformer. The auxiliary coils are connected to the Wheatstone bridge arms similarly to a galvanometer connection, and thus receive current the magnitude and direction of which depends upon the resistance of the search coils. Above a certain temperature the torque of the relay is in the contact direction and below it, in the opposite direction. To close the contact, two predetermined conditions must co-exist: excess current and excess temperature.

Keeping an Accurate Record of Energy Consumption at San Diego

ONE of the greatest sources of energy waste on many electric railways is failure to meter or otherwise keep account of the energy used by different departments as in carhouse lighting, shop tool work, track welding, etc. This charge cannot be brought against the San Diego Electric Railway, which has realized for years past that lack of accounting means indifference and carelessness. This company does not allow the feeling to exist that the power station is the "easy mark" of the system. The care given by the company to what has now become more important than ever is indicated by the following sample monthly report prepared by Homer MacNutt, superintendent of motive power:

WHERE AND HOW POWER WAS USED

			Kilowatt-hours
37	E	San Diego Electric Railway Machine shop, Sixteenth and L Streets	2,430
37	E	Pit wheel grinder, M Street carhouse	1,240
38		Shifting cars between M Street carhouse and machine shop	120
39		Shifting cars between Adams Avenue carhouse and machine shop	526
39		Shifting cars for pit wheel grinder	30
71	D	Shifting cars, track to track at M Street and Adams Avenue houses	434
71	B	M Street carhouse, outside lights	180
71	B	Adams Avenue carhouse, outside lights	180
23	E	Automatic sectionalizing switches	2,265
67	H	Electric track switches	155
72		Signal lights, First and Spruce, Fifth and K Stretes, Fifth and University Avenue	110
78	D	Lights at ends of lines:	
		Fortieth and M Streets	100
		S. D. & S. E. Railway Bridge, Thirty-third and M Streets	60
		Exposition terminal loop	60
		Mission Cliff Gardens, toilet and waiting room	120
		Kensington Park, Adams Avenue line	60
		Fort Stockton Drive and Trias Street	60
		Old Town line at Ramona's Home	60
		Park Boulevard and Adams Avenue	60
		Ferry wharf, San Diego side	9
		Ferry wharf, Coronado side	0
81	A	Mission Cliff Gardens, Pavilion house	0
		S. D. & Coronado Ferry Company, S. D. side, lights and heater in building	72
		S. D. & Coronado Ferry Company, oil pump at Coronado	16
		S. D. & Coronado Ferry Company, machine shop at Coronado wharf	0
		Hotel del Coronado, sewer pump	233
		Christ Episcopal Church, Coronado	10
		S. D. & South Eastern Railway shops	3,530
		California China Products Company, National City	0
		Construction cars (in a separate report)	
		Bonding cars (in a separate report)	
78	A	Wrecker car No. 12 charged at 3 kw.-hr. per mile when in use	0
78	A	Tent City sewer pump, holes 2 and 3	347
		Thirtieth and Woolman	60
		Roseville	60
		Ocean Beach	60
		Lights in machine shop	60
		Armature oven	357
		Total	13,244

"Economy" watt-hour meters have recently been installed to check the energy consumption.

The American Institute of Electrical Engineers has published an article by Frank T. Baum, consulting engineer, San Francisco, Cal., on a simple method for determining the economic proportion which should exist between hydroelectric and steam power in a plant utilizing both. Mr. Baum gives in non-mathematical form the principle underlying his plan and illustrates its application by means of curves and numerical calculations. The article appears in the September issue of the A. I. E. E. Proceedings.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE • PERSONAL MENTION • CONSTRUCTION NEWS

Philadelphia in Review

Conditions Are Such That Company Can Continue for Present Without Fare Increase

T. E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, has written to the Public Service Commission, setting forth in detail the amazing growth in stability and prosperity of the company under the Stotesbury management and giving the assurance that the timely assistance of the government, in supplying funds for needed equipment, and the abnormal increase in earnings are serving to meet the immediate wants of the company.

Future Uncertain

The communication, however, gives what amounts to a notice that while the improved financial condition of the company will not necessitate an increased fare before Jan. 1, 1919, some form of relief will have to be applied whether the pending operating lease with the city shall be approved or rejected by the commission. For under the lease an increase is automatically assured when the need shall arise; without it, the company announces that it will be prepared to submit a program for some sort of a zone system, by which long-distance riders will have to pay more than the "base fare of 5 cents."

In his letter Mr. Mittten said:

"The company's position has been greatly improved, although its every step in the later years of this management has been made difficult by the uncertainty of the city's plans and the consequent impossibility of establishing a definite program for the future. Under such a handicap this management has increased its facilities so that it carried, in greater comfort than heretofore, 741,140,856 passengers during the year ended June 30, 1918, at an average fare of 3.96 cents per passenger, as against a total of 432,884,253 passengers during the year ended June 30, 1910, at an average fare of 4.15 cents per passenger."

Reserve Funds to Be Used

Under the Stotesbury management, the net increase in the capital obligations of the company has been $12,854,792 and fixed charges increased about 13 per cent, yet the proportion of gross earnings required to pay fixed charges, which was 46 per cent in 1910, was only 32 per cent for the latest fiscal year. Earnings provided $4,103,639 of the cost of new cars.

The renewal reserve, which at the outset of the Stotesbury management "consisted of securities having an estimated value of $1,200,000," and has since received 15 per cent of gross earnings to insure upkeep of the property "now contains a balance of $2,625,000, of which $1,434,391 is in cash." Mr. Mitten then adds, "We shall dip very deep into this reserve during the next few months, while putting our cars and tracks into condition, but it must be understood that we have accumulated this money for just such an emergency."

During the eight-year period ended June 30 last the aggregate gross revenue of the company and its disposition is given as follows:

Interest and rentals..........	$74,895,127
Wages to employees..........	69,502,064
Materials and expenses of operation, maintenance and renewals, claim reserve, etc...	29,588,437
Taxes, including payments to city, State and federal governments	15,272,389
Undistributed surplus	4,884,078
New cars from earnings, renewal account	4,103,639
Philadelphia Rapid Transit, dividends	2,847,933
Gross earnings, distributed as shown	$201,093,667

Seattle Plans Municipal Railway Work

Plans for the development and extension of the Seattle Municipal Railway have been furthered by the passage by the City Council of a resolution introduced by Councilman Oliver T. Erickson, chairman of the city utilities committee, directing the judiciary committee to apply to the capital issues committee for approval of a bond issue of $150,000 "for the extension of the municipal railway on East Marginal Way from West Spokane Street to the south city limits." The resolution also provides for securing approval of $300,000 of utility bonds to buy equipment and build terminals for the road, as well as $500,000 of the $3,700,000 utility bonds authorized by the Council for improvements of the city water system.

Councilman Erickson also recently secured passage of a series of ordinances providing for the equipment for the new elevated railway line. One ordinance provides for the purchase of six single-truck and twenty-five double-truck cars for $217,000; another provides for securing this money from the general fund until a bond issue can be provided. A third resolution provides for the appropriation of $500 to pay the expenses of Superintendent of Utilities Thomas F. Murphine on a trip to St. Paul to inspect cars offered the city by the United Railway & Logging Company.

Middlesex Strike Settled

Chairman of Massachusetts Committee on Public Safety Acts as Mediator

The strike of the employees of the Middlesex & Boston Street Railway, operating through about twenty cities and towns in the suburban district west of Boston, was settled on Sept. 10 by Henry B. Endicott, executive manager of the Massachusetts Committee on Public Safety, after an extended conference with representatives of both sides.

Decision Effective Until July, 1919

The "blue-uniform men," to whom the company was willing to grant an increase in minimum wage from 30 to 35 cents an hour and increase the maximum from 40 to 42, receive substantially these advances at the hands of Mr. Endicott. The executive board of the union had agreed to give the offer of the company a trial until Nov. 1, provided the company would agree that after that date either party might refer the case to the War Labor Board, to which the company demurred. It was understood that the decision of Mr. Endicott is to hold until July 1, 1919, at least.

The miscellaneous employees, carhouse men, linemen, trackmen and others, who received from 28 to 42 cents an hour, wanted a minimum of 42 cents, whereas the company was willing to give them 2 cents more an hour than they were getting.

The strike was declared on Aug. 30. It occurred in direct violation of the employees' agreement with the company to arbitrate wage and other disputes by the usual joint selective method, the men insisting that the controversy in this case be settled by the War Labor Board. The company announced its willingness to have this board adjudicate the issues provided questions of working conditions were also included, but the employees were unwilling to submit any matter other than wages to the federal authorities.

Service Restored With Loyal Employees

The company operated such cars as possible during the strike by utilizing the services of loyal employees, but only a small percentage of the usual car-mileage was run. Plants in the district working on war orders resorted to automobile and motor-truck transportation, supplemented by steam railroad service, to meet the situation created by the strike.

Seattle Sale Plans

Negotiations Apparently Proceeding Satisfactorily for Disposal of Railway to City for About $15,000,000

The offer of the city of Seattle, Wash., to purchase the railway lines and system of the Puget Sound Traction, Light & Power Company for the sum of $15,000,000 was reported in Seattle this week as having been accepted by the Stone & Webster interests in Boston, but at the office of Stone & Webster in Boston it was officially stated on Sept. 18 that no basis for sale had yet been reached.

200 MILES OF RAILWAY INCLUDED

The property under negotiation embraces more than 200 miles of railway, with overhead trolley system, 500 cars, some of them practically new; eight carhouses and a large assortment of general railway equipment.

Any transfer would not involve the power and lighting systems of the company, which would continue business in light and power as well as operate the Everett and Tacoma interurbans, which trackage agreements into the city will be worked out by city and traction officials.

If the deal is arranged the city officials also plan to lease or purchase the city lines of the Seattle & Rainier Valley Railway, giving the city of Seattle complete control, through ownership, of its entire transportation system. Representatives of the Seattle & Rainier line have assured the Council they will accept any reasonable proposition.

An inventory and appraisement of the property to be taken over will be commenced at once by the city.

Official authority for the city to take over the lines will be provided in an ordinance authorizing an extension and improvement of the present municipal railway system. Payment is to be made in twenty-year utility bonds, bearing interest at 5 per cent. The bonds are to be paid out of the earnings of the railway. There will not be a lien on any other city property. It is the purpose of the city officials to try the operation of the lines on a 5-cent fare, and if that is not sufficient, raise the fare to an amount that will bring in the required revenue.

UNIFICATION WILL SAVE $1,000,000

Traction officials assure the city that unification of the railway systems of the city will save at least $1,000,000 yearly in expense. The elevated line which the city is building through the industrial district is expected to further reduce the operating expenses. Another means of increasing the income that it is expected will be put into effect is the elimination of jitneys from sections of the city where railway cars can handle the traffic. Jitney competition is said to have been one of the principal causes of reduction in the company's income.

It is expected that the acceptance of the city's offer will greatly clarify the local situation with regard to employees of the company, who have been negotiating for increase in pay. Under a tentative agreement, it is understood that the new arrangement means that effective on Aug. 1 the company was to pay its men on the basis of 50, 55 and 60 cents an hour, and that this scale will be continued by the city after transfer of its lines. Failure of the negotiations for the sale of the lines will mean that the wage question will be submitted to the War Labor Board for adjustment, with possibility of greatly impairing the railway service by reason of the men seeking more remunerative employment elsewhere.

A contract with Stone & Webster, who control both the local railway and the power company, is proposed to be entered into by the city for sufficient power to operate the railway until the city's Skagit River power plant is finished. This station will probably not be ready for three years. The city will pay for the power at the rate of 1 cent a kilowatt, the price at which the city electrical department sells current to the municipal line.

VALUATION BASED ON COMMISSION FIGURES

The price of $15,000,000 for the railway named in the negotiations is based on the State Public Service Commission's valuation of the property and estimate of the City Public Utilities Department, which recently completed an investigation of the properties.

Thomas F. Murphine, Superintendent of Public Utilities, expressed the belief that few, if any, additional new places in his department would be required to handle the affairs of the railway. The City Utilities Department now has a railway operating organization which Mr. Murphine believes could be expanded to meet the new demands. Most of the present 1800 operating officials and employees of the traction company would probably be retained, if they desire to stay with the city.

The purchase of the railway by the city would conclude a long struggle between city and the company over matters of service and franchise obligations. A tremendous amount of litigation has resulted, in most of which the city has been victorious. Some weeks ago, negotiations were undertaken with a view of finding some means whereby better service could be furnished the shipyard workers. The company insisted upon securing an increase in fares. This move was resisted by the city. A counter-offer of the city to lease the railway lines was rejected. A. M. Taylor, in charge of the housing and transportation division of the United States Shipping Board, who has been in Seattle for several weeks, has assisted toward the settlement of the transportation problems now proposed. In discussing the possible acceptance of the offer. A. W. Leonard, president of the company, said:

"We realize that the city, with its legislative power, has many advantages over a private company in the operation of a railway. Seattle would acquire a splendid piece of property, and with the breadth of view shown by the Mayor and the City Council, we feel sure the city would succeed in developing a fine operating system."

Attacks on Chicago Bills

Attempts to block a vote on the new traction ordinance in Chicago were made during the week ended Sept. 14 when two suits were filed seeking to enjoin printing of the question on ballots for the Nov. 5 election. Arguments on both petitions were made in the Circuit Court on Sept. 17. Both petitions assail the right of the City Council to order the traction ordinance to be submitted to the voters. Both also charge the ordinance is illegal because it contains legislation which the Aldermen are powerless to adopt.

Louisville Wage Negotiations Ended

In the matter of the wage dispute between the union of railway employees and the Louisville (Ky.) Railway negotiations have practically ended and as the matter now stands it will be taken before the War Labor Board for adjustment. The company concluded a letter to the union in part as follows:

"We decline to grant you the wages you demand. It is impossible to do so. We decline to enter into any agreement to submit the matter of wages to the War Labor Board. If and when you shall demand of the War Labor Board to take up the question of differences between you and this company, and we are informed of that fact by the War Labor Board, and are invited to join you in submitting to the War Labor Board the matters in controversy, we will then make a reply to the War Labor Board, but in any event, we shall insist that if there is to be an appeal to the War Labor Board, all questions are to be considered as open between us and that we are not to be bound to enter into any contract with you except such as may be required to be entered into by the War Labor Board."

Independent of any arbitration as to permanent increase in wages, the railway made the following announcement to its employees:

"Negotiations between the employees and the company were broken off yesterday afternoon. In considering the matter the company has concluded that it is just as a war-time measure to advance the wages of conductors and motormen 7 cents an hour and other employees paid by the hour in the same proportion based on their wages July 1, 1918. This advance is to take effect Sept. 1, 1918."

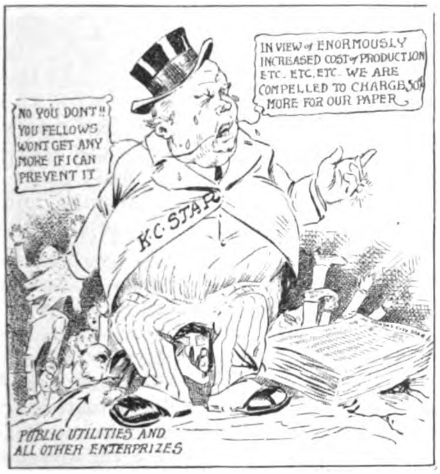
Turning the Tables

Kansas City Smiling at the "Star," Which Knocked Fare Increase but Increased Its Own Price

The Kansas City public has got a good deal of amusement—and satisfaction—out of the efforts of the Kansas City (Mo.) Railways to tell its side of the story of increased fares, in answer to the Kansas City *Star's* criticisms of the railway and others concerned in bringing about such increase.

COMPANY'S PAPER STATES FACTS

Every week the railway has presented the subject of higher fares in its bulletin circulated on the cars, making response, with facts, to the attacks of the newspaper. As different cities went to higher fares, and as evidence accumulated of the necessity for public service corporations and public service departments of municipalities, charging more for the service, the bulletin marshaled an increasing array of testimony for the advance in Kansas City.


IN VIEW of ENORMOUSLY INCREASED COST of PRODUCTION ETC. ETC. ETC. WE ARE COMPELLED TO CHARGE 50% MORE FOR OUR PAPER
NO YOU DONT!! YOU FELLOWS WONT GET ANY MORE IF I CAN PREVENT IT
K.C. STAR
PUBLIC UTILITIES AND ALL OTHER ENTERPRIZES

THE STAR AS OTHERS SEE IT
(*From The Railwayan*)

The climax of the company's display of evidence backing up a fare increase came in September. The *Star* announced on Sept. 1 that its price of 10 cents a week for morning, evening and Sunday papers by carrier would be advanced to 15 cents, and that its street sale price would be raised from 1 cent to 2 cents. The announcement mentioned the advances in the cost of production, and referred to correspondence with the War Industries Board, which board had called the attention of the *Star* to complaints from competitors of the low price of the paper.

From the point of view of the railway, the situation was particularly opportune, because of a phrase the *Star* had used editorially:

"WHO'S NEXT?"

"Street railway, electric light company, gas company—who's next?"

It was apparent that the *Star* itself was the next agency furnishing a public service (of a sort) to advance its price.

The railway displayed on the front of its cars for a week the following placard:

"Owing to War Conditions the *Star* Reluctantly Increases Its Price and Still Knocks the 6-Cent Fare."

The paper answered this placard, with an editorial saying that it "is not knocking 6-cent fare if 6-cent fare is just." The railway company thereupon changed its placards, which then read: "Even the *Star* is for the 6-cent fare now."

Other placards called attention to *The Railwayan*, the weekly bulletin that would be on the cars on Sept. 9, in which the whole matter would be discussed. This bulletin contained direct and forceful statements—the first edition of 30,000 was exhausted by noon, and a second edition of 20,000 was exhausted on Tuesday.

Cleveland Terminal Hearing

A public hearing was held on Sept. 11, on the plan to erect a union passenger station on the Public Square at Cleveland, Ohio. Attorney J. L. Cannon, representing the Cleveland Union Terminals Company, indicated that full information was wanted before any important steps were taken. Objection was made to the removal of the proposed depot from the group plan or mall, of which the new courthouse and city hall form a part. The change proposed would necessitate an important revision of the plans. Instead of a handsome structure, a freight yard would face the buildings which have already been erected.

Mr. Cannon said the sponsors of the plan want to get an expression of public opinion. If a union depot on the Public Square is not wanted, it will be an easy matter for the voters so to decide. He could not say whether all the railroads would agree to use a station in that location, but if they did not, there would be no depot. This probably means the interurban electric railways as well, for these roads are to be provided for in the terminal plans.

As soon as the plans of the new company were announced, several members of Council thought it would be a good plan to insist upon the electrification of all steam roads entering the city. Mr. Cannon informed them that such a requirement would kill the project at once. The plan of the projectors is to provide for terminal facilities as soon as possible and then erect as much of the depot building as the government will approve. They do not believe that the entire plan can be carried out until conditions change, because government approval of any plans so extensive as those under consideration could not be secured.

In connection with his visit to Cleveland for the inspection of railroads and their facilities, W. G. McAdoo, director general of railroads, inquired into the project for building a new union station on the Public Square.

Conductresses for Detroit

Detroit United Railway Short More Than 300 Men, Will Put Women On the Cars

The Detroit (Mich.) United Railway announced on Sept. 12 that it had found it necessary to employ women as conductors and that it would begin to receive applications for these positions on Sept. 13. The women will be assigned to the Woodward Avenue line first and gradually other lines will get their share of them. It is likely that between 200 and 300 will be employed.

The women will be paid the same scale of wages as the men, as follows: first three months, 43 cents an hour; next nine months, 46 cents an hour; after one year, 48 cents an hour. The company has set no age limits, merely prescribing that applicants must be of good health; have good hearing and eyesight, and must be of good moral character. For the present they may wear such clothes as they choose, but a cap, bearing a number, will be furnished by the company. Later the women will wear uniform coats.

The company is inviting wives and daughters of former employees now in military service to apply for the positions. Such applicants will be given the preference.

For several weeks past the company has been short from 300 to 350 men. In an announcement the company said:

"We are firm in the belief that these women conductors — patriotically offering their services to replace men who are now on the battlefields of France or who will soon be—will receive the hearty co-operation of the general public and will speedily prove their worth."

Successful women applicants will receive three or four days' preliminary training before they are put on cars.

Ohio Interurbans to Aid

Samuel Lake, connected with the Federal Railroad Department, has been in Ohio for several days, inspecting interurban railways with a view to making recommendations for an increase in their carrying facilities wherever necessary in order to furnish the desired aid to steam roads. He and J. B. Dugan, representing the Ohio Public Utilities Commission, spent several days in and around Toledo and also visited other points in Northwestern Ohio.

Toledo, being an important interurban center, may be selected as the location for a large freight station. If it is found necessary to have such a building, one may be leased or built. The Toledo Terminal Railroad already has a building which would serve well for this purpose, should the location be suitable. To just what extent the interurban railways will be able to furnish aid will depend upon the increase in equipment that can be secured, after the present facilities have been developed up to the limit.

News Notes

Wage Increase in Dallas.—Effective from Sept. 1 the Dallas (Tex.) Railways granted a war bonus of 4 cents an hour to its conductors and motormen. The bonus will remain in effect during the war. This is the second increase this year.

Offices in New Location.—The offices of the Columbus Railway, Power & Light Company, Columbus, Ohio, so long located at 14 North High Street, have been moved to 104 North Third Street, where more space and better facilities have been secured.

Priority for Subway Construction.—The Public Service Commission for the First District of New York has secured from the War Industries Board at Washington priority certificates sufficient to insure the completion of essential parts of the dual subway system.

Trenton Company Removes Office.—The general office of the Trenton & Mercer County Traction Corporation have been removed from the American Mechanic Building, Trenton, N. J., to the Broad Street Bank Building, where the entire seventh floor is occupied.

Free Rides to Soldiers and Sailors.—William L. Smith, general manager of the Dayton (Ohio) Street Railway, has announced that hereafter soldiers and sailors may ride free on the line. The company is having 1,000,000 transfers printed containing Liberty Loan advertisements.

Mr. Witt on Municipal Ownership.—Peter Witt on Aug. 26 addressed the Public Ownership League at Trenton, N. J., in which he advocated the public ownership of electric railways and other utilities. Director of Public Safety George B. LaBarre, Trenton, N. J., spoke along similar lines.

Montgomery Strike Settled.—An agreement has been entered into between the Montgomery Light & Traction Company, Montgomery, Ala., and its trainmen under which the strike in that city has been settled. The company has conceded the right of the men to organize. Service has again returned to normal..

Offers Inducements for Patriotic Saving.—The Toledo Railways & Light Company, Toledo, Ohio, has offered the married employee who shows the largest savings for the year invested in thrift stamps a present of a $100 Liberty Bond. The unmarried man who makes a similar showing will receive a $50 bond.

Increase in Wages in Fort Worth.—The Northern Texas Traction Company, Fort Worth, Tex., increased the pay of its employees effective on Sept. 1, 5½ cents an hour. Under the new schedule, beginners will receive 38 cents an hour. Since the United States entered the war, the aggregate increases in wages amount to 60 per cent of the former wage and the increases since the beginning of the war in Europe amount to 75 per cent.

Interurban Increases Wages.—Commencing on Sept. 12 and thereafter for the duration of the war or until further notice, the wages of motormen and conductors of the Washington-Virginia Railway, Washington, D. C., will be as follows: First three months, 43 cents an hour; next nine months, 46 cents; thereafter, 48 cents. Extra men will receive one-half pay from time of reporting for work until excused for the day or assigned to a run.

Women for Johnstown.—Unable to secure sufficient men to operate its cars, the Johnstown (Pa.) Traction Company is planning to employ women as conductors. E. M. du Pont, general manager, says that although the trainmen have been granted a wage increase of 12 cents an hour, the company has not been able to get motormen and conductors. The new wage of 45 cents an hour increases the company's payrolls about $7,000 a month.

Texas Electric Increases Wages.—The Texas Electric Company, which operates the interurban lines from Dallas to Denison and Sherman, from Dallas to Waco and from Dallas to Corsicana, and the local lines in Sherman, Denison, Waxahachie, Corsicana and Waco, announced an advance in pay of motormen and conductors effective from Sept. 1. The raise amounts to 4 cents an hour. It is granted as a war bonus because of the increased cost of living.

Kansas City Labor Agreement Renewed.—The Kansas City (Mo.) Railways has renewed its agreement with its trainmen and other employees, all features being covered except that of wages. The agreement as signed expressly provides that the wage question shall wait the action of the War Labor Board, which will take up the Kansas City Railways' problem during September. The agreement is practically the same as that made a year ago, except for a few changes in language.

Gasoline Replaces Steam.—The Railroad Commission of California has authorized the Los Angeles & San Diego Beach Railway, San Diego, Cal., to cease operating its steam trains between San Diego and La Jolla, and to make three round trips a day by gasoline motorcars. The commission found that the increased costs of operation, and the increasing use of privately owned automobiles and the competition furnished by a stage line now operating between these points, did not justify the continuation of the steam line.

Cleveland Subway Report in Six Months.—It is believed that Barclay Parsons & Klapp, New York, engineers, in about six months will be able to complete a survey of the city of Cleveland for the purpose of constructing a subway or rapid transit system. A study of the growth in population will come first, after which the occupational location of the people will be considered. After this a study of the building activities for several years back will be made and this will be followed by an investigation of the traffic situation with special reference to relief from congestion.

English Tramways Will Need Rebuilding.—Quoting a Boston business man who has just returned from a stay of several months in England and France the Boston *News Bureau* says: "Business in the tight little isle is humming as never before. An indication of the expansion already accomplished is afforded in the figures of steel capacity, which has increased from 4,000,000 tons annually before the war to 12,000,000 tons now. A large steel manufacturer expressed the opinion that the steel business of the country will be tremendous for years after the war. For four years there has been nothing but the most necessary repair work. The railways and tramways will have to be practically rebuilt."

Wages and Fares Coupled.—It is the purpose of the Virginia Railway & Power Company, Richmond, Va., to make applications promptly to the municipal governments in Richmond, Petersburg, Norfolk and Portsmouth for a 6-cent fare. As soon as this relief is assured and additional revenue provided, the company will advance the scale of wages of its motormen and conductors throughout the system to a minimum of 41 cents an hour and a maximum of 45 cents an hour and other employees in proportion, which increases will remain in force so long as the additional revenue provided by the increased fare is effective. The matter of a straight 5-cent fare for the company in Richmond has been before the Council there for some time.

Labor Differences Adjusted.—The differences between the motormen and conductors in the employ of the Atlantic City & Shore Railroad, Atlantic City, N. J., and the officers of the company, have been settled by the granting of an increase of 5 cents an hour to the platform men, and the recognition of the union by Receiver Clarence L. Cole. The increase became effective on Sept. 1. The crews running between Atlantic City and Longport and the Inlet will now receive 36, 38 and 40 cents an hour, and the men on the Ocean City division, 38, 40 and 45 cents an hour. Overtime will be paid for at the rate of time and a half. The pay is for a day of ten hours, which must be completed within twelve hours. There will also be a revision of swing runs.

Financial and Corporate

Great Expectations

Utah Company Shows How Commission Erred on Increased Fares—Lose 464,161 Riders in Month

That estimates of results expected with increased fares, particularly in small or medium-sized cities, frequently do not even approximate the results actually obtained is strikingly illustrated in the case of the Utah Light & Traction Company, Salt Lake City. In *Kar-Fax* for Sept. 14, published by the company, appears the following comment:

SOME OF THE ESTIMATES

"Last fall, and again this summer, the Public Utilities Commission took measures to save the Utah Light & Traction Company from bankruptcy by authorizing a raise in rates. By its first action the commission estimated that the company's revenue would be increased about $10,000 a month, and by the second—the adoption of the 6-cent fare and the 5-cent commutation ticket—the commission estimated a further increase of $11,000 a month, making a total of $21,000.

"But, like the divisional chief, they didn't figure on the pile of sand. They based their calculations on what they had good reason to believe was a solid "take-off" for the company's running jump to safety, or in other words the volume of business of the company during 1917. But, as a matter of fact—almost overnight, so to speak—it has proved a pile of sand.

"Instead of increasing, as might have been expected, or at least remaining stationary, the passenger traffic is decreasing to an alarming extent. We have already given the figures showing this for the period of April through July. Figures for August prove that the loss in patronage is getting even greater.

SOME OF THE RESULTS

"The total decrease for last month, as compared with August, 1917, was 464,161 passengers. This is a greater loss by 131,670 over that of July, the decrease during that month, as compared with July, 1917, being 332,491 passengers.

"The result is that, in spite of the advance in fares granted on two occasions by the Public Utilities Commission, the Utah Light & Traction Company is worse off than it was a year ago. Instead of an added revenue of $21,000 for the month of August, 1918, as compared with the same month in 1917, it has suffered an actual loss of $4,055.

"It is true that this loss tapered off somewhat the latter part of the month, and the showing may be better for September. But the prospect is anything but cheerful. Even though the 6-cent fare comes up to the most sanguine expectations of the commission in point of ratio to the 5-cent commutation rate, it is difficult to see how, with men—street car passengers—continually being called in the draft, and with no adequate compensation in traffic, the Utah Light & Traction Company can maintain its present service on its present revenue."

Abandonment Threatened

The city of St. Thomas, Ont., has entered an action in court to recover $8,000 from the London & Lake Erie Railway & Transportation Company, claiming that amount as rental for the use of streets and of the tracks of the municipal railway. The company responds with claims for work done and materials provided, which the defendants assert will nearly offset the bill. The London & Lake Erie company has repeatedly indicated its intention to abandon operation and scrap the road which runs between London and Port Stanley. An official of the railway was quoted by a Toronto newspaper recently as saying that it is only a matter of a few days until this course will be taken. The railway has lost money since the city of London electrified its paralleling steam road. St. Thomas took its bill to court only after the company had failed to send a representative to discuss the situation with the City Council.

Commonwealth Splits Even

Rise in Expenses Balances Revenue Gains—Interurban Passenger Earnings Increase 22 Per Cent

The gross earnings of the Commonwealth Power, Railway & Light Company, Grand Rapids, Mich., for the twelve months ended Dec. 31, 1917, amounted to $3,041,130, a substantial decrease from the figure of $3,458,729 in 1916. Deductions for expenses and interest increased from $806,980 to $891,505, so that the net income available for dividends, replacements and depreciation dropped from $2,651,742 in 1916 to $2,149,624 in 1917. Preferred stock dividends of $1,077,010 were paid in the last year, comparing with $1,019,170 in 1916, and the balances in the two years were $1,072,614 and $1,632,572.

The combined results of operations for all the subsidiaries in the last two calendar years are shown in Table I. The cost of labor increased $571,313 or 24 per cent, the cost of coal and oil $1,610,050 or 84 per cent, and taxes $304,955 or 33 per cent. The receipts and expenses both increased about $2,700,000, but owing to the rise in fixed charges the net income available for dividends, replacements and depreciation showed a falling off of $502,117 or 18.9 per cent.

TABLE I—COMPARATIVE INCOME STATEMENT FOR SUBSIDIARIES OF COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY IN CALENDAR YEARS 1916 AND 1917

	1917	1916	Increase	Per Cent Increase
Gross receipts	$19,723,736	$16,962,606	$2,761,129	16.28
Operating expenses	11,078,632	8,374,620	2,704,011	32.29
Gross income	$8,645,104	$8,587,986	$57,118	0.67
Fixed charges, including taxes and dividends on outstanding preferred stocks of subsidiary companies	6,495,479	5,936,244	559,235	9.42
Net income, available for dividends, replacements and depreciation	$2,149,625	$2,651,742	*$502,117	*18.94
Dividends on preferred stock	1,077,010	1,019,170	57,840	5.68
Balance	$1,072,615	$1,632,572	*$559,957	*34.30

*Decrease.

The proportionate shares of the various classes of subsidiaries in making up the gross receipts are shown in Table II. While the city lines showed a slight decrease, the interurban passenger receipts increased 22.32 per cent. The city traffic in revenue passengers fell off 635,859 or 6.87 per cent, but the interurban traffic gained 1,798,157 or 17.37 per cent. Part of the interurban increase was due to the extension of lines to the cantonments at Rockford, Ill., and Battle Creek, Mich.

TABLE II—DIVISION OF GROSS RECEIPTS FOR SUBSIDIARIES OF COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY IN 1916 AND 1917

Gross receipts	1917	Per Cent of Total	1916	Per Cent of Total	Increase	Per Cent Increase
Gas	$2,504,996	12.70	$2,125,925	12.53	$379,070	17.83
Gas residuals and miscellaneous	1,186,568	6.02	739,856	4.36	446,711	60.38
Electric†	7,594,242	38.50	6,297,088	37.12	1,297,153	20.60
Heating and water	535,928	2.72	465,168	2.74	70,760	15.21
Railway:						
City	4,243,042	21.51	4,275,014	25.20	*31,972	*0.75
Interurban	2,838,033	14.39	2,329,099	13.68	517,934	22.32
Freight and miscellaneous	820,924	4.16	739,452	4.37	81,471	11.02
Total	$19,723,736	100.00	$16,962,606	100.00	$2,761,129	16.28

†Electric sales to subsidiary railways are eliminated.
*Decrease.

Parent Company Responsible to Public

Court Holds Receivers Should Pay Fixed Charges of Underlying Company Only from Surplus Funds

The receivers for the Pittsburgh Railways have been authorized by Judge Charles P. Orr in the United States District Court to pay $247,075 fixed charges due its chief underlying company, the Consolidated Traction Company, for August, and $31,465 for similar charges for the month of September. No mention is made, however, of $216,582 in fixed charges due in August to other underlying companies.

CITY AND ONE RECEIVER PROTEST

The payments had been protested by the City of Pittsburgh, near-by boroughs and one of the three receivers for the company. They maintained that the money should be expended for needed improvements.

The matter of the payment of the fixed charges came before the court in the form of a petition for advice on what to do regarding payment. In a supplemental petition Receiver Fagan protested against the payment. This brought forth a petition from the Consolidated Traction Company, backed up by the majority receivers, that the fixed charges due the company be ordered paid. The court upheld the right of the Consolidated Traction to intervene because of its claim to ownership of a considerable part of the property embraced in the Pittsburgh Railways system. The court said in part:

"The legal position of the Consolidated Traction Company is that the receivers of the Pittsburgh Railways cannot retain the property of the Consolidated Traction Company in their possession and also keep the income derived by the receivers from the operation of such property. The discussion of this legal position at any length is unnecessary.

"Before receivers are required to elect whether or not they will affirm a lease entered into by an insolvent corporation prior to their appointment, they are entitled to a reasonable time to determine whether the assumption of the obligations of the lease would be beneficial to the trust. What is a reasonable time within which receivers may declare such election varies in almost every case. The present case is one necessarily involving great perplexities.

SOME UNDERLYING COMPANIES DESERVING

"These underlying companies want some share of these returns as compensation for the use of their properties. Some produce a substantial net income while some do not. At the present time all properties comprising this system operated by the Pittsburgh Railways are being valued. Until such valuations are obtained, it will be difficult even to take the first step toward a solution of any of the perplexing problems which confront the parties interested. There should be no election therefore by the receivers to affirm or disaffirm any of the contracts entered into by the Pittsburgh Railways with subsidiary corporations until after the valuations of the various properties comprising the system have been completed. Therefore, the Consolidated Traction Company is not entitled at present to the return of its properties.

"Nor is the petitioner entitled, as a matter of right, to the alternative of the prayer. In other words, it is not entitled to have payment of the sums named in the lease because its property is retained by the receivers. If it be entitled to any moneys at all, because of its interest, it will be entitled to them solely because the receivers have more money in their hands than they will be able to spend within a reasonable time, in placing the various properties under their control in condition properly to perform the duties owing to the public. At the time of the hearing the court expressed the view that the interests of the public were paramount to all others.

DUTIES TO PUBLIC PARAMOUNT

"The principle is well recognized that before moneys shall be applicable to the payment of interest to bondholders or dividends to stockholders, the duties toward the public should be performed. Therefore, in the present case it is the duty of the receivers to discharge the obligations of the Pittsburgh Railways to the public before discharging the obligations to investors.

"The receivers have in their hands now more money than they can spend at the present time or in the near future, and the moneys in their hands are increasing greatly. To withhold all of said moneys from those who own the properties would be to penalize them for something for which perhaps they are not responsible. If enough and more, that is to say sufficient funds, are retained in the hands of the receivers to meet the expenditures which they can within the near future incur in the performance of their duties as herein outlined, the surplus tributed from time to time in the distributed from time to time in the idscharge of obligations to investors.

"The order for the payment of this money is not to be deemed an order for a continuance of similar payments to the same company as they may mature hereafter. There may be other underlying obligations that may require similar treatment. Such payments as may be made will be made by order of this court and should be separately charged against the particular properties to which they may be applicable, so that upon any reorganization the respective charges and the respective values may have consideration. Let an order be drawn in conformity with this opinion."

Approving immediate compliance with joint demands for better service made by officers of the army and navy and the Public Service Commission, Judge Orr in United States District Court in handing down an order on Sept. 16 on another phase of Pittsburgh Railway receivership, directed the receivers to pay $38,760, mostly for car trust securities, but to defer $72,495 for charges on other underlying bonds.

Loans to Municipal Lines

Under an agreement which was reached recently between A. M. Taylor, director of housing and transportation of the United States Shipping Board, and Mayor Ole Hanson, Seattle, Wash., arrangements were made whereby the city may borrow the sum of $392,000 for municipal railway improvements, of which sum only $330,750 will have to be repaid by the city. Payments are to be made in five annual installments, beginning one year after the close of the war, and bearing interest at the rate of 5 per cent.

The agreement provides tentatively that the city extend its elevated line, now in course of construction, from Spokane Street and Whatcom Avenue west to First Avenue, at an estimated cost of $50,000.

The Fleet Corporation will loan the city $217,000 for the purchase of thirty-one cars, title of the cars to remain with the Shipping Board until the loan is repaid, with 5 per cent interest.

A double-track railway is to be furnished the plant of the Seattle North Pacific Shipbuilding Company. If possible, the city will electrify the Northern Pacific siding and connect it with the Lake Burien line. This improvement will cost $75,000. The Fleet Corporation will advance the money. The city will repay 75 per cent of this amount, and the Shipbuilding Company will repay the city 40 per cent.

The city of Tacoma will obtain a loan from the Emergency Fleet Corporation of $237,000 to double track the tideflats railway and purchase ten additional cars.

Gasless Sunday Helps

The passenger earnings for the Philadelphia (Pa.) Rapid Transit System for Sept. 1 amounted to $75,960 as against an average of $68,845 for the Sundays during the month of August. This increase of $7,115 represents approximately 175,000 additional passengers, which increased riding was due to two factors—first, the discontinuance of automobile operation, and, second, the most favorable weather conditions. Willow Grove Park also reflected the increase. The total receipts from the amusements and concessions there amounted to $20,000, an increase of approximately 15 per cent in the patronage of the park. The automobiles checked at the park decreased to less than fifty from about 800 for a normal Sunday.

Financial News Notes

Road Being Scrapped.—The Adirondack Lakes Traction Company's road at Gloversville, N. Y., set to be sold under auction last June, has been abandoned and is now in the process of being scrapped. The Adirondack Lakes Traction Company, a 5-mile road, was the successor to the Mountain Lake Railroad. Reference to the affairs of the company was made in the ELECTRIC RAILWAY JOURNAL for May 11, page 930.

Would Purchase Columbus Property.—Councilman Fred Zimpfer on Sept. 10 introduced a resolution in Council at Columbus, Ohio, which provides that a request be made to the Capital Issues Committee at Washington to allow the city to issue bonds for the purchase of the railway property of the Columbus Railway, Power & Light Company. This request is to be made on the ground that the company has failed to furnish the public with proper service and that the public interests have suffered as a result.

St. Louis Valuation Planned.—J. L. Harrop, chief engineer of the Public Service Commission of Missouri, has announced that the work of valuing the property of the United Railways, St. Louis, Mo., will be begun by the commission as soon as the valuation of the property of the St. Joseph Railway, Light, Heat & Power Company has been completed. The valuation of the St. Louis property was ordered when the matter of increased fares for the United Railways was before the commission recently.

Offers to Sell to City.—The street railway committee of the Commercial Club of Fort Collins, Col., held a meeting on Sept. 6 at which plans were discussed for the taking over of the property of the Denver & Interurban Railroad in Fort Collins consisting of 7.5 miles of line, or so much as it is desired to purchase, the company having made the city a definite offer. It is understood that the railway has made a definite proposition to sell the local system for $75,000, or any part of the line at the invoiced value.

Income Bond Interest Passed.—Announcement has been made that no interest will be paid on the adjustment mortgage income 5 per cent bonds of the Third Avenue Railway, New York, N. Y., for the six months ended June 13, 1918. The interest is due and payable on Oct. 1, next. Interest was paid regularly from January, 1913, to April 1, 1917. For the six months of 1917 only 1¼ per cent was paid. The interest for the last six months of 1917 was passed. Interest on these bonds is cumulative. There is now due on this issue 6¼ per cent.

Pittsburgh Announces Interest Payments.—J. I. Foster, treasurer for the receivers of the Pittsburgh (Pa.) Railways, announces that coupons due on July 1 and on Aug. 1, from the first mortgage bonds of a number of Pittsburgh Railways subsidiaries will be paid. These include the Bloomfield Street Railway, Washington Electric Street Railway, Duquesne Street Traction Company, Central Traction Company, Pittsburgh-Canonsburg-Washington Railway and Pitcairn-Wilmerding Street Railway. Permission has been granted the Pittsburgh Railways to spend about $375,000 on pressing repairs.

Renewal of Notes Denied.—The California Railroad Commission has denied the application of the Los Angeles & San Diego Beach Railway, Los Angeles, Cal., to issue notes in renewal of outstanding notes, and to issue and pledge bonds to secure the payment of the notes. The company has $83,261 of notes outstanding. The payment of $49,393 of these notes is secured by $68,500 of the company's first mortgage 5½ per cent bonds. The company wanted to secure the payment of all the notes which it desired to issue for the purpose of renewing notes outstanding by first mortgage bonds in the ratio of $100 of bonds to $70 of notes.

Receiver for Bowling Green Company.—At Bowling Green, Ky., Judge J. McKenzie Moss has appointed Master Commissioner W. R. Speck as receiver for the Southern Traction Company. The receiver has put one car in operation and hopes within the next few days to have the entire system in operation. The company discontinued service because officials said operation was being carried on at a loss. The City Attorney filed suit for a receiver. Upon the promise of the company to put the cars in operation at once the case was held in abeyance awaiting the fulfillment of the promise. The cars were not put in operation in the time specified and the receiver was appointed.

Bids Rejected.—The property of the Richmond & Chesapeake Bay Railway was offered for sale recently at public auction at the Richmond terminal of the line. L. W. McVeigh, auctioneer of the property, announced that the highest bid would be subject to final ratification by the trustees of the road. The last bidder was B. Colitz, of the Central Iron & Metal Company, Chicago, Ill., at $90,000. The trustees have refused the offer. The auctioneer advised all prospective bidders that the trustees earnestly desired that the purchaser might be some one who purposed operating the road, and insisted that the bidders announce whether their purpose in offering to buy accorded with that object. All the bidders stated that the road was to be used as junk. The company ceased operating in 1917.

Successor Company Organized.—The articles of incorporation of the Petaluma & Santa Rosa Railway, Petaluma, Cal., formed to take over the Santa Rosa & Petaluma Railroad, in the plan to refinance the line, have been filed with the county clerk as required by law. The capital stock of the new corporation is placed at $1,250,000. The incorporators and first board of directors are: Rudolph Spreckels, L. B. Mackey, San Francisco; F. A. Brush, Santa Rosa; George P. McNear, Petaluma; Thomas Maclay, Petaluma; Allen I. Kittle, Ross; E. C. Merritt, Santa Rosa. The purposes of the corporation cover the operation of the lines and rolling stock of the former concern; the establishment of a ferry service to Petaluma, a distance by water of 39 miles; the construction of a new line from Sebastopol to Santa Rosa, and a branch from Liberty Station to Two Rock. The plan for the reorganization was reviewed in the ELECTRIC RAILWAY JOURNAL for Aug. 31, page 387.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILROAD, SANFORD, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, ‡'18	$20,097	$13,550	$6,547	$470	$6,077
1m., July, ‡'17	23,326	13,048	10,278	431	9,847

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$230,752	*$147,895	$82,857	$39,425	$43,432
1m., June, '17	164,448	*109,392	55,056	37,568	17,488
12m., June, '18	2,385,304	*1,555,941	829,413	464,291	365,122
12m., June, '17	1,959,871	*1,286,176	673,695	442,230	231,465

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$94,087	*$67,727	$26,360	$19,703	$6,657
1m., July, '17	99,449	*62,693	36,756	15,570	21,186
12m., July, '18	880,545	*741,748	138,797	206,367	†67,570
12m., July, '17	861,823	*637,770	224,053	185,042	39,011

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$248,491	*$160,935	$87,556	$40,372	$47,184
1m., July, '17	197,671	*131,481	66,190	41,343	24,847
12m., July, '18	2,617,697	*1,675,458	942,239	488,583	453,656
12m., July, '17	2,430,215	*1,535,677	894,538	496,071	398,467

PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., June, '18	$939,382	*$566,622	$372,760	$265,736	$107,024
1m., June, '17	755,872	*454,318	301,554	191,438	110,116
12m., June, '18	10,513,263	*6,548,665	3,964,598	2,502,460	1,462,140
12m., June, '17	8,812,115	*5,336,144	3,475,971	2,255,365	1,220,606

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$816,958	$559,976	$256,982	$164,988	$91,994
1m., July, '17	858,177	567,607	290,570	150,671	139,899
7m., July, '18	5,664,531	4,075,467	1,589,064	1,103,068	485,996
7m., July, '17	6,034,121	3,975,678	2,058,443	1,026,682	1,031,716

* Includes taxes. † Deficit. ‡ Includes non-operating income.

Traffic and Transportation

Rebate Slips in Missouri

Both St. Louis and Kansas City Companies Plan This Action Following Court Decision

Starting at 6 a. m. on Sept. 12 the United Railways, St. Louis, Mo., began to give a negotiable receipt for 1 cent to each passenger who pays 6 cents for a ride. This arrangement will continue in effect until the decision of the Supreme Court of Missouri, which will pass upon the validity of the action of the State Public Service Commission in granting the company an increased fare. The company is required to deposit with the Mercantile Trust Company 1 cent for each 6-cent fare received. Passengers must ask the conductor for the receipt. Advertisements published by the company state that the receipt "will be issued on request." In the event the final ruling of the Supreme Court is unfavorable to the railway, those who hold receipts will be paid back the extra cent. It is probable that the case will be heard by the Supreme Court en banc as early as Oct. 21 and not later than Oct. 28.

The order of Circuit Judge Slate in the fare case would have restored 5-cent fares, but Chief Justice Bond of the State Supreme Court on Sept. 7 authorized the companies to continue charging 6 cents until the Supreme Court passes on the case.

The Kansas City Railways, having given a supersedeas bond in the Supreme Court in the matter of higher fare litigation, is planning to give receipts to passengers for the extra cent they pay. The decision of Judge Slate of the Cole County District Court, on Aug. 31, vitiating the increased fare orders of the Public Service Commission, stimulated many passengers in Kansas City to withhold the extra cent from conductors. Newspaper stories of passengers who upon being refused such receipts refused to pay the penny also assisted the tendency. The admission of a bond by the Supreme Court pending final decision by it on the jurisdiction of the State Commission, restored to the public their normal view of the 6-cent fare.

Skip Stops in Los Angeles

The Los Angeles (Cal.) Railway put the skip stop in operation on West Pico Street line on Aug. 7. Up to the third day of operation not a complaint had been registered. On the other hand two persons called in regarding to the location of stops previous to the installation of the new method of operation. In each case their suggestions were deemed of sufficient merit to warrant shifting of the stop, as the suggestions which were made were not controlled by personal or selfish reasons. The company took considerable pains to advertise this method of operation thoroughly. A pamphlet was addressed to the employees of the company. Another was distributed to the patrons on the W. Pico Street line. In addition *A-Z-U-R-I-D-E*, the company's fortnightly publication, was distributed through the city to the extent of 75,000 extra copies. Advertisements were also placed in the papers. The company has placed new stop signs throughout the entire line whether or not in the skip-stop section. The skip stop was only used west of Figueroa Street, which is practically half of the line. As this system is introduced on the lines the company will put new stop signs everywhere. No stops are made except at a sign. Over that portion of the lines where skip stops are not supposed to be in operation the company does skip some stops, as the company is cutting out stops at unimportant streets.

Jitney Regulation Sustained

Jitneys in Texas have lost again in the courts in their fight for existence. Judge George Calhoun of the Fifty-third District Court at Austin, in dissolving the temporary injunction granted several weeks ago restraining the city of Dallas from enforcing the city ordinance enacted on Aug. 2 with the avowed purpose of putting the jitneys in Dallas out of business, recognized the right of cities in Texas to exercise their police powers to regulate traffic of this kind, even to the extent of stopping such traffic altogether.

The decision of Judge Calhoun was made after an exhaustive hearing on the merits of the case, in the course of which the jitney drivers offered evidence of their right to operate unhampered on the streets of a city as public carriers, and the city offered evidence showing the detrimental effect of the jitneys on the morals of a community, how they congested traffic on the downtown streets, how they were not amenable to regulation and other undesirable features of their operation.

Immediately after the temporary injunction was dissolved, Mayor J. E. Lawther of Dallas, who was in Austin at the time, notified Chief of Police Ryan by telephone and instructions were issued to the police officers to arrest all jitney drivers found operating in violation of the ordinance of Aug. 2. This ordinance prohibits the operation of jitneys in the downtown or business district of Dallas.

This decision is regarded as of special importance at this time as it upholds jitney ordinances in nearly all the cities of the State.

Increase Sought in Capital

Both Washington Railways Find Cost and Wage Burdens More Than Present Fares Will Stand

The Washington Railway & Electric Company, Washington, D. C., has petitioned the Public Utilities Commission of the District of Columbia to substitute for the sale of six tickets for 25 cents, as at present, a uniform cash fare of 5 cents per passenger per trip with transfer privileges to connecting lines as provided in the present tariffs. Among other things the company cites increasing costs of material and recent advances in wages as factors contributing to the conditions that make the appeal necessary.

SPEEDY ACTION URGED

The petition was dated Sept. 14. It was signed by William F. Ham, president. In his conclusion Mr. Ham urges that the increase now requested be granted as speedily as possible, together with such other relief, if any, as the commission may deem proper.

On Sept. 18 it became known that the Capital Traction Company informally had notified the Public Utilities Commission that it would seek a higher rate of fare in order to meet the increase of more than $400,000 annually in its payroll, involved in the new pay scale announced last week and other increased costs of operation imposed by war. Formal application, it is expected, will be filed on Sept. 23. Just what form the fare request of this company will take has not yet been made known.

The commission met on Sept. 18, but it did not set a date for the hearing on the petition of the Washington Railway & Electric Company. In view of the appeal of the Capital Traction Company for relief, it is expected that the cases will be heard at the same time, perhaps in a joint proceeding.

LABOR BOARD URGES ACTION

A feature of the case of the Washington Railway & Electric Company is the decided attitude taken by the War Labor Board with respect to the company's appeal. In recommending to the Public Utilities Commission that financial relief be granted to the company, the board has reiterated statements made by it in the Cleveland, Schenectady and other wage cases passed upon by it previously, declaring that alleged "overcapitalization, corrupt methods and exhorbitant dividends in the past are not relevant to the question of policy in the present exigency" and that "in justice the public should pay an adequate war compensation for a service which can not be rendered except for war prices."

In the ELECTRIC RAILWAY JOURNAL for Aug. 17, page 312, it was stated that the Washington Railway & Electric Company would seek an increase. It was not known at that time, however, just what form the application would take.

Indianapolis Fare Hearings Reviewed

Hearings Have Been Going On Since Aug. 19, but Final Arguments Are Expected This Month

The hearing of the petition of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., for increased rates of fare, which began before the Public Service Commission of Indiana on Aug. 19, has proceeded practically continuously since that date.

CITY ATTORNEY DELAYS CASE

A great deal of delay has been occasioned by the action of the City Attorney of Indianapolis in his cross-examination of the witnesses of the company, who have testified as to the value of the inventory of the street railway property, mention of which was made in the ELECTRIC RAILWAY JOURNAL for Aug. 24. The attitude of the City Attorney has been to attempt to discredit the financing of the original properties of the Indianapolis Street Railway and the Citizens Street Railway, which were taken over by lease by the Indianapolis Traction & Terminal Company. The company's valuation of the physical property was given as $24,018,040, and with intangible values added the total was $28,634,210; the total issued securities of the Indianapolis Traction & Terminal Company and underlying leased property amounts to $25,000,000.

H. O. Garman, engineer for the commission, was called on to verify some of the figures used in the company's inventory of the property. He placed a valuation of approximately $15,000,000 on the company's physical property, including the structural overhead, and including the terminal station and property used in connection with the interurban lines entering the city. He stated, however, that possibly a careful valuation of the property might add 20 per cent to his figures or a total of $18,000,000. Mr. Garman based his figures on the "barebones" valuation of $78,700 a mile for the Indianapolis property, and stated that he had taken the valuation per mile in various cities and made certain deductions, giving the comparative "barebones" figures as his estimate for the following cities: Detroit, $48,860; Kansas City, $90,639; Milwaukee, $94,000; Cincinnati, $88,500; St. Louis, $65,700.

Mr. Garman stated that in this estimate he had stripped the valuation of all the questionable percentages, like amounts allowed for engineering costs, superintendence, interest and taxes during construction, small omissions, fire and liability insurance, contingencies, franchise and like valuations.

Robert I. Todd, president of the company, was on the stand for several days verifying figures which had been introduced by other officials.

CITY THINKS RENTALS TOO HIGH

The city contended that the rental paid to the stockholders of the Indianapolis Traction & Terminal Company of a 6 per cent dividend, amounting to $300,000 per annum, should be reduced before any increase in fare was considered, if the company was found to be in need of securing additional revenues. It was also contended that the interurban companies should be charged a higher rate per passenger for the use of the tracks and interurban terminal of the city company, to provide additional revenue.

On Sept. 3, after much argument as to the details of valuation on the part of the city, Chairman Lewis of the commission took a decided stand in the case, and stated that at this time it was of little concern what the inventory shows, but it was of very great importance to see that the income of the property was not less than its expenses, so that the company could continue to operate without injury to the services, or danger of insolvency. He said that this was no time for receivership. There are about 1400 public utilities in the State under stress. The commission did not propose to see them wrecked. He was frank to say that the company would be saved from insolvency if any danger of that was shown.

CITY REPRESENTATION ON BOARD

On Sept. 5 Commissioner Edwards, who has charge of the case, made a suggestion that public representation be allowed on the board of directors of the company to create confidence in the company on the part of the public, and asked if the company would consider his proposal, that one director should be appointed by the Governor of the State, one by the Mayor of Indianapolis, and one by the Indianapolis Chamber of Commerce and the Board of Trade in conjunction with the other civic organizations of Indianapolis. The company took the matter under consideration and on Sept. 9, unreservedly accepted the proposal of the commission, stating its earnest desire to give the best service possible, and to coöperate in every way for the interest of the public.

An adjournment of the hearing was taken until Sept. 20, when the arguments of the company and the city will be presented, probably closing the hearing.

An Interurban on the Stage

The Arkansas Valley Interurban Railway Company, which operates between the cities of Hutchins, Wichita and Newton, Kan., has completed a motion picture panorama of its entire line. This is to be used principally at the "Wheat Show," an annual event held in Wichita, and scheduled this year for Sept. 30 to Oct. 12. The picture consists of three reels and covers the entire line showing many interesting scenes and the several thriving and prosperous little cities through which the road operates.

The successful filming of the picture, accomplished by M. B. Faidley, well known in Eastern cities and famous for having picturized the Santa Fé Trail, was made under the direction of Fred C. Mayer, traffic manager, of the Arkansas Valley Interurban Railway. Considerable interest has been manifested in the effort to incorporate this line in motion pictures, and a number of Kansas motion picture theaters have already reserved dates for the showing of the film.

This novel scheme of advertising the facilities of a transportation line is being watched with interest by other electric lines, no doubt with a view of some such similar action on their part should the plan fulfill the expectations of its sponsors.

Renews Its Fare Plea

George A. Stanley, president of the New York & North Shore Traction Company, Roslyn, N. Y., has declared that operations will cease one minute after midnight on Sept. 30 unless the city of New York grants the company financial relief or positively signifies intention to do so at an early date. Some time ago the company asked for a 7-cent fare. Mayor Hylan and the other members of the transit committee of the Board of Estimate held a public meeting in Flushing, but no action has been taken by the committee. This matter was referred to previously in the ELECTRIC RAILWAY JOURNAL for July 6, page 34.

Six Cents for Houston

The City Council of Houston, Tex., on Sept. 9 adopted a resolution granting the Houston Electric Company a 6-cent fare, an increase of 1 cent. Half fares will be 3 cents, instead of 2½ cents. The new rate becomes effective on Sept. 30 and will remain in operation until the end of the year if there are no further proceedings. At that time the city may order the present rate of 5 cents restored, or it may decide that the company is entitled to a still further increase and declare in favor of a 7-cent rate, which the company has asked for.

All capital expenditures must first be approved by the City Council. Furthermore, the city may demand a detailed statement of the valuation of the property of the Houston Electric Company, which must be furnished either before or after Jan. 1, 1919, the cost to be paid by the company. Until such valuation is made, no dividend is to be declared without giving the city ten days' notice. No dividend can exceed 7 per cent of the present valuation of the property.

The city will have a representative on the board of directors of the company, who will be entitled to inspect the company's books. The railway company is to furnish monthly financial statements of its operations regularly to the city.

Relief for Los Angeles

Case of Pacific Electric Railway, Pending Since May, Decided by Fare Advance in Suburbs

An increase in passenger rates was granted the Pacific Electric Railway, Los Angeles, Cal., by the State Railroad Commission in a decision made on Sept. 4. The opinion was written by Commissioner Harvey D. Loveland.

The application of the company has been pending since May 28. The increased rates authorized are expected to produce less than 20 per cent increase in the gross revenues of the company, which operates approximately 600 miles of trackage in southern California with its center in Los Angeles. The increase, however, will still leave a gap of approximately $1,000,000 between the amount of revenue produced and the amount necessary for the expenses estimated during the year ending May 31, 1919.

5½ MILE CENTRAL ZONE

The new rate is based upon a central zone in Los Angeles extending 5½ miles, radius from the Pacific Electric and Hill Street stations. In this zone the rate of fare is 5 cents. All mileage rates are computed from the edge of this zone to the point of destination on mileage basis plus the 5 cent rate. The mileage rate fixed by the commission for one-way fares is 3 cents a mile with half fare for children over five and under twelve years of age; round-trip fares to be at the rate of 2½ cents a mile, with half fares as before stated. Commutation tickets are ordered to be ten-ride individual at 2 cents a mile; thirty-ride family, at 1½ cents a mile; and a forty-six-ride individual school, and a sixty-ride individual at 1 cent a mile up to 10 miles; at 9 mills a mile from 10 to 15 miles, 8 mills a mile from 15 to 20 miles and 7½ mills a mile over 20 miles.

The commission also grants an increase in what is known as the beach zone rates. The beach zone rates are treated largely as excursion and are increased from 35 to 40 cents one-way, and from 50 to 60 cents round-trip. No discrimination has been made in reference to reduced rates to industrial or other zones.

Local fares inside the city of Los Angeles are not to be increased, and the zone computation is only to be used for interurban rides.

The rates authorized may be established at any time within twenty days.

SEVEN-CENT PLEA REJECTED

In dismissing the request of the company that it be permitted to charge zone fares up to 7 cents in the city of Los Angeles, the commission holds that while the government is computing war taxes and all other affairs upon the 1 cent basis, it is not difficult to continue to do so in all other affairs. Hence, the desire of the company to compute its rates wherever the amount exceeded 2½ cents on a basis of 5 cents, and where less than 2½ cents on a basis of nothing, has been denied and the rates will be computed on the 1 cent basis. Where fares come out on an even half cent or over, they are to be rounded up to an even cent, but where below, the fractions are to be discarded.

Meeting the request of City Attorney Stephens at Los Angeles that the rates be based upon the valuation of the property, the opinion states that this valuation is in the process of making by engineers of the commission and the railroad, and is practically 75 per cent finished. It is pointed out that the revenue allowed the company is equal to only 6 per cent upon less than $32,000,000, while the undisputed value of the property devoted to public service is a value in excess of $50,000,000. The commission urges that the work on the valuation be carried on to completion for use in further rate considerations.

The decision of the commission was prompted by the financial conditions of the company, the necessity of continuing its service for a large population —the largest population that has been affected by single rate decision in the history of the Railroad Commission—the increased cost of materials due to war conditions, the reduction of traffic due to the growth of automobile transportation and the direct appeal of the federal administration to state commissions to maintain during the war crisis the financial stability of public utilities.

NEW RATE IN EFFECT SEPT. 15

O. A. Smith, general passenger agent for the Pacific Electric Railway, announced on Sept. 5 that the new rate schedule recommended by the State Railroad Commission would go into effect about Sept. 15. Interurban fares will be figured on the basis of 3 cents a mile one-way or 2½ cents per mile for round-trips.

The mileage schedule will not apply between Los Angeles and the beaches, from Santa Monica on the north to Seal Beach on the south, but this fare will be increased from 35 cents one-way and 50 cents round-trip to 40 cents one-way and 60 cents round-trip, respectively.

In constructing one-way, round-trip, ten and thirty-ride commutation fares from Los Angeles, a blanket fare of 5 cents will be applied for the first 5½ miles and mileage rates beyond. Fares will end in denominations of 1 cent instead of 0 or 5, as formerly. The distance from Los Angeles to Covina is 21.78 miles; deducting 5½ miles leaves 16.28 miles at 3 cents per mile, which amounts to 49 cents, and, adding 5 cents for Los Angeles city fare, makes the total one-way fare 54 cents from Los Angeles to Covina.

The sixty-ride commutation fare between Los Angeles and Long Beach or between Los Angeles and San Pedro, which is used to a considerable extent by employees of the shipbuilding plants, will be $9.20. This is figured at rate of 7½ mills per mile on the distance between Los Angeles and Long Beach, 20.45 miles.

Brief mention of the handing down of the decision was made in the ELECTRIC RAILWAY JOURNAL for Sept. 14, page 479.

Transportation News Notes

Six Cents in Racine.—A 6-cent fare for adults and a 3-cent fare for children was granted the Milwaukee Heat, Light & Traction Company, operating in Racine, Wis., by the State Railroad Commission on Sept. 10.

Kankakee Council Willing.—The Council of Kankakee, Ill., has passed an ordinance authorizing the Kankakee Electric Railway to charge a 6-cent fare, provided the change is approved by the Illinois Public Utilities Commission.

Fare Increase in Pascagoula.—The Pascagoula Street Railway & Power Company, Pascagoula, Miss., has raised the rate to Moss Point 6 cents, making the price of the trip from Pascagoula to Moss Point 21 cents instead of the former sum of 15 cents.

Shop Early Plea in New Jersey.—The Public Service Railway, Newark, N. J., has posted the following placards in the cars on the various divisions: "War workers are increasing, thus making it more urgent that women shop early in the day."

Rockford Wants Six Cents.—The Rockford (Ill.) City Traction Company has filed with the Public Utilities Commission of Illinois a request for a rehearing in the matter of 6-cent fares for Rockford. The commission recently fixed fares in the city of Rockford at 5 cents.

Uniform Findings.—The finding of the Utilities Commission of Kansas in the fare and freight rate matter of the Joplin & Pittsburg Railway, Pittsburg, Kan., was the same as that for the Kansas City, Kaw Valley & Western Railway, Bonner Springs, Kan., referred to previously in the ELECTRIC RAILWAY JOURNAL.

Increase for Evansville Railways.—The Interstate Commerce Commission recently authorized the Evansville (Ind.) Railways, operating the interurban line from Henderson, Ky., and Evansville, Ind., to increase its fares between those two points and intermediate stations, not to exceed 10 per cent.

Chattanooga Hearing Held.—The City Commission of Chattanooga, Tenn., held a hearing on Aug. 20 on the application of the Chattanooga Railway & Light Company, Chattanooga, Tenn., for a 6-cent fare. Both the opposition and those in favor of the change were heard. The matter is still open.

Increase Refused in Binghamton.—The petition of the Binghamton, (N. Y.) Railway for an increase in fares, failed to pass the Common Council on Sept. 9, although the report of the committee in charge of an investigation asked for its acceptance. Twelve Aldermen were present and when a vote was taken ten negatives and two affirmatives were recorded.

Parcel Dispatch Advertised.—The Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., is advertising the service which its North Shore parcel dispatch is prepared to give. Patrons are assured of merchandise being delivered within twenty-four hours and frequently in less time if purchases are made early in the day and promptly delivered to the station.

Winnipeg Will Ask More.—With 60 per cent increase in salaries being demanded by the employees, the Winnipeg (Man.) Electric Railway informed the City Council on Sept. 10 that it is preparing to ask for the right to increase fares. The company's maximum demand will be 7 cents, with unlimited transfers as now, or 6 cents for tickets and 1 cent for transfers, it is understood.

Columbus, Ind., Wants Fare Increase.—The Central Indiana Lighting Company, which operates the railway in Columbus, Ind., has filed a petition with the Public Service Commission of Indiana asking for authority to increase fares from 5 cents to 7 cents. The company announces that in the event of the rejection of the petition by the commission it will take steps to dismantle the lines and discontinue all service.

Accountant Begins Fare Study.—J. R. Lamb, Cincinnati, Ohio, an expert accountant, who has been engaged by the Louisville Board of Trade to examine the books of the Louisville (Ky.) Railway, with a view to determining whether the latter has a valid reason to ask the city administration for permission to raise fares from 5 cents to 6 cents, or even more, has begun his work. A comparative statement of the cost of operation in 1914 is being prepared for him by the company.

Federal Investigator in Cleveland.—C. S. Lake, inspector for the traffic department of the Federal Railroad Administration, was in Cleveland, Ohio, on Sept. 11, looking into the facilities of interurban railways for carrying freight in less than carload lots. His report will determine the action of the government in the proposal to loan the interurban railways funds for the purchase of freight equipment. E. F. Schneider, general manager of the Cleveland, Columbus & Southwestern Railway, said that freight trains will be operated in the night largely, if Mr. Lake's report is favorable to hauling freight.

Grand Rapids Wants Seven Cents.—Following up its request of June 3, when it asked the City Commission for a 6-cent fare, the Grand Rapids (Mich.) Railway, through Benjamin S. Hanchett, president, has sent in a new request to the commission, this time for a 7-cent fare. Mr. Hanchett informed the commission that the data it asked concerning the financial history of the company had been compiled and would be presented by him to the commission for a hearing whenever the commission desired.

New Keyport Tariff Suspended.—The Board of Public Utility Commissioners of New Jersey, on Sept. 12 ordered the suspension of the proposed increases in the existing fares of the Jersey Central Traction Company, Keyport, N. J., until Dec. 10 next unless the board prior to that date shall determine that the increases are just and reasonable and shall approve them. A hearing on the matter will be held at the State House, Trenton, on Nov. 12. The company filed with the board a schedule of passenger fares to take effect on Sept. 22.

Commission Approves Turnstiles.—The attitude of the Public Service Commission of the First District of New York on the subject of turnstiles has been somewhat misunderstood. Last spring the subject came up in connection with an application of the New York Municipal Railway Corporation (Brooklyn Rapid Transit System) to use turnstiles in some of its stations. The commission's decision in that case was against their use in stations with very heavy traffic. Since then, however, passimeters of the automatic type have been permitted in several of the most busy stations of the New York Municipal Railway.

Jersey Fare Argument Before Court Oct. 5.—After an agreement between George L. Record and Frank Bergen, representing the New Jersey League of Municipalities and the Public Service Railway, Newark, N. J., respectively, it was decided on Sept. 12 to argue the application of the municipalities for a writ of review in the 1-cent transfer case before Justice Swayze in Jersey City on Oct. 5. Justice Swayze has indicated that the writ will be allowed, but he wants to hear argument on the question of whether or not the Public Service Railway is to be allowed to collect the 1-cent for transfers pending the litigation.

Bridge Fare Increase Allowed.—Permission to increase fares over the Eads Bridge from 10 to 11 cents was granted to the East St. Louis (Ill.) Railway on Sept. 5 by the Interstate Commerce Commission. Several weeks ago the East St. Louis & Suburban System, of which the railway line over the bridge is a part, was authorized to raise its fares to 6 cents. This authority came from the Public Utilities Commission, of Illinois, which had no jurisdiction over cars running between Illinois and Missouri over Eads Bridge. The action by the Interstate Commerce Commission extends the 6-cent authority so that this amount may be collected in addition to the regular 5-cent bridge fare.

Omaha Wants Seven Cents.—At a hearing before the State Railway Commission on Sept. 9 on the application of the Omaha & Council Bluffs Street Railway, Omaha, Neb., for leave to collect a fare of 6 cents in lieu of the present fare of 5 cents, John L. Webster, general counsel for the company, filed an amended application asking for permission to charge a fare of 7 cents. The additional 1 cent increase was asked for on account of alleged change in conditions since the filing of the original application, including a further increase in the cost of supplies and material and an increase in wages which the company is paying, the wage increase being paid in accordance with an order of the War Labor Board.

Auto Stages Increasing in California.—Interurban buses are increasing in numbers and popularity about as rapidly as the jitney bus on the city streets is disappearing. There are now more than 2000 interurban buses operating in California. They probably handle about 20,000 passengers daily. These buses are owned by about 750 companies now licensed to operate in the State. In the first six months of 1918 it is estimated that 2,000,000 passengers were carried on interurban buses south of the Tehachapi Pass, and in the northern part of the State it is estimated that an equal number has been handled. Several successful motor freight lines are operating despite the fact that it has not been believed that this business would be found profitable.

Increase in Salamanca.—The Western New York & Pennsylvania Traction Company, Salamanca, N. Y., has been granted permission by the Public Service Commission of the Second District to increase its fares in Salamanca, Bradford and Olean from 5 cents to 7 cents. In granting permission for the change in the company's franchise, the municipal authorities of Salamanca have attached certain restrictions, one of which is that the additional 2 cents cannot be collected from passengers longer than three years after the date of the ordinance, but may be continued one year after the close of the war. The company may also charge a fare of 3½ cents a mile on its interurban lines between these points and Little Valley, Bolivar, Portville and Limestone.

Lincoln Fare Decision Appealed.—The Lincoln (Neb.) Traction Company has filed notice of appeal from the order of the State Railway Commission which allows the company to increase its fares in Lincoln to 5 cents within the city zone and 6 cents outside that zone. The company asks for a transcript of the evidence taken at the hearing and that it be filed in the Supreme Court as provided by law in appeal cases. No other reason is given in the notice of appeal except that the company is dissatisfied. The order of the commission carried with it several conditions, one of which commands the company not to pay dividends on its common stock; that it proceed to recover $198,228 paid out since 1912 to the holders of this stock and that it take steps to cancel the $1,652,000 of common stock. The fare case was before the commission in applications Nos. 3066, 3298 and 3461.

Eight Cents in Scranton and Wilkes-Barre.—Agreement to permit 8-cent fare to be collected on cars in the Wyoming Valley was reached at the session of the Public Service Commission of Wilkes-Barre, Pa., on Sept. 13. Chairman W. D. B. Ainey of the commission ordered the Wilkes-Barre Railway and the Scranton Railway to offer patrons a refund slip that will remain in effect until a final decision, and made it clear that patrons must not be embarrassed nor compelled to ask for the slips. W. E. Boileau, general manager of the Scranton Railway, wanted to know if it would be all right to give three 1-cent slips instead of a one 3-cent rebate ticket when the 8-cent rate becomes effective. He was told by Mr. Ainey that one slip is to be given with each fare. If old rebate tickets are used there must be some mark indicating that it was issued after the fare was raised from 6 cents to 8 cents.

One-Third Its Employees Gone.—Theodore P. Shonts, president of the Interborough Rapid Transit Company, has replied to the Public Service Commission for the First District of New York with respect to its order requiring the company to operate ten-car express trains on a two-minute headway and six-car local trains on a three-minute headway in both morning and evening rush hours on the east side and west side subways. He says that the service is not what the company had hoped it would be when the new subways were put in operation, but that the conditions which prevent the company from giving greatly improved service are beyond its control. The company has plenty of cars and plenty of power, but it lacks men. During the year out of a total of employees numbering about 14,000 the company has lost about 2000 men to the army and navy. In addition about 3000 experienced men have gone into war industries, munition plants, etc. Five hundred women are being employed in the subways and every effort is being made to obtain additional employees. Wages have been raised. Mr. Shonts asks the forebearance of the people during the difficult war times. *The Subway Sun* for Sept. 16, posted in the cars of the company, was given over to presenting these facts to passengers.

Personal Mention

W. F. Ham, President

Former Vice-President and Director of Washington Railway & Electric Company Heads Company

William F. Ham, who has been acting as president of the Washington Railway & Electric Company, Washington, D. C., since the resignation of Clarence P. King, in March, 1918, was elected president of the company on Sept. 12.

Mr. Ham has had more than twenty-five years of electric railway experience, and during this time he has established a high reputation as an administrator and operator. He has also taken a very active part in association work, especially with the Accountants' Association. He was one of the prime movers in the organization of this association and was vice-president in 1899-1900 and president in 1900-1901. His most important service to the association, however, probably has been as a member of its important committee on the standard classification of accounts, on which he has continuously served from the time of the organization of the committee at the first meeting of the association until the present time and as chairman of the committee from 1905 to 1911. It was in recognition of the value of his work on this and other committees of the Accountants' Association that the organization took the unusual action some six years ago of presenting Mr. Ham with a silver salad bowl.

Harris & Ewing Photo

W. F. HAM

Mr. Ham's corporation career has been one of continuous promotion. His first connection with electric railway work was from 1892 to 1895 in the New York office of the Lorain Steel Company. In this way he became associated with Tom L. Johnson and Albert N. Johnson and in 1895 he accepted the office of secretary of the Nassau Electric Railroad, Brooklyn, N. Y., one of the Johnson properties. He continued in this position until the Nassau Electric Railroad was acquired by the Brooklyn Rapid Transit Company early in 1899. He was than appointed auditor of the Brooklyn Rapid Transit Company and served until December, 1899, when he accepted the position of comptroller of the Washington Railway & Electric Company. The following year he was also elected treasurer of the company. In December, 1911, after eleven years' work with the Washington property, he was elected first vice-president and a director of the company to succeed George H. Harries, who became connected with H. M. Byllesby & Company, public utility operators, Chicago.

Since he has been in Washington Mr. Ham has confined his business activities strictly to the Washington Railway & Electric Company, except for being a director of the Federal National Bank. During his connection with the company the gross earnings have increased from $2,000,000 a year to more than $6,500,000 a year.

Mr. Taylor on Tour

Director of Transportation on Inspection Trip to Pacific Coast—Appointments Announced

A Merritt Taylor, director of passenger transportation and housing for the United States Shipping Board, Emergency Fleet Corporation, has left Philadelphia for the Pacific Coast on an official tour of investigation. He will inspect all transportation lines that touch the shipyards and will decide many important problems of line extension and housing. Mr. Taylor's tour will occupy about three weeks and will thoroughly cover the Pacific Coast yards south from Seattle.

Mr. Taylor has announced the appointment of Garrett T. Seely, former assistant director of transportation, as assisant director of passenger transportation and housing.

J. Willison Smith, former assistant director of housing, has been appointed assistant director of passenger transportation and housing also.

The change in the official designation of Mr. Taylor's two assistants was made to give authority to Messrs. Seely and Smith to direct the affairs of the passenger transportation and housing division during the absence of Mr. Taylor.

As noted elsewhere in this issue, Mr. Taylor is reported from Seattle to have assisted toward the proposed settlement of the transportation problem there which provides for the city taking over the local railway lines.

William B. McKinley, president of the Illinois Traction Company, Peoria, Ill., and a member of Congress from the nineteenth Illinois district, expects to visit the western battlefront this fall, as a member of a party of Congressmen.

J. F. Canfield has been appointed auditor of the Ottumwa Railway & Light Company, Ottumwa, Iowa, to succeed Crad Brazel, who is now auditor of the construction department of the Northern States Power Company, Minneapolis, Minn.

J. J. Chisholm, superintendent of the Market Street power house of the New Orleans Railway & Light Company, New Orleans, La., has severed his connection with the company and accepted a position with the Woodward Iron Company, Woodward, Ala.

Elmer G. Fay has been appointed assistant treasurer of the Trinidad Electric, Transmission, Railway & Gas Company, Trinidad, Col., to succeed Hubert J. Wightman, resigned, who has gone into business for himself in Trinidad as a public accountant.

H. W. Smith has been appointed claim agent of the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, South Bend & Northern Indiana Railway, and the Southern Michigan Railway, South Bend, Ind., to succeed E. R. Dow.

J. C. MacPherson, superintendent of the electrical lines of the Southern Pacific Company's transbay system, with headquarters at Oakland, Cal., who has held that position since the installation of the system several years ago, has resigned. Mr. MacPherson has received a commission as captain in the Engineers' Corps, U. S. A., and expects to leave for France immediately.

George M. Mattis has been elected vice-president of the Chicago, Ottawa & Peoria Railway, with headquarters at Champaign, Ill. Mr. Mattis has also been elected treasurer of the company to succeed Edward Woodman. The company is included in the Illinois Traction System. Mr. Woodman continues as a director of the Illinois Traction Company and as vice-president and director of the Western Railways.

Joseph H. Towle, after seven years service, has resigned as master mechanic for the American Railway Company's Dayton and Springfield (Ohio) properties, to join the Railway Improvement Company as assistant electrical engineer as of Oct. 1. Mr. Towle's father is George C. Towle, general manager Peoples Railway, Dayton and the Springfield Railway. His headquarters will be at the New York office.

Edward J. Cooney, executive assistant of the Rhode Island Company, Providence, R. I., in charge of publicity and editor of that company's weekly publication, *The Trollier*, has resigned from the company. Mr. Cooney has had many years' experience in editorial, general publicity and advertising work. Before becoming connected with the Rhode Island Company he was assistant sales manager of the Screw Machine Products Company.

Charles A. Smyth, who for a number of years has been general manager of the Arkansas Valley Interurban Railway, Wichita, Kan., has just returned from France where he has been in the service of the American Red Cross Society, and will again assume active management of the railway. Mr. Smyth spent about seven months in Europe and his description of the conditions "over there" are reassuring, instructive and immensely entertaining.

T. H. Williams, who succeeded J. C. MacPherson as superintendent of electrical lines of the Southern Pacific covering Oakland, Alameda and Berkeley, has been promoted to the position of assistant general manager of the Southern Pacific lines south of Ashland, Ore. The announcement was recently made by W. R. Scott, federal manager of the Southern Pacific-Western Pacific lines. T. F. Rowlands, who has been superintendent of the Western division of the Southern Pacific electric lines at Oakland pier, has had his jurisdiction extended to cover the district which has been under Mr. Williams' supervision.

Hubert J. Wightman, who for more than five years has been assistant treasurer of the Trinidad Electric, Transmission, Railway & Gas Company, Trinidad, Col., has resigned his position, and in the near future will establish himself in Trinidad as a public accountant. After serving as a bookkeeper and clerk for several years, he became associated with Niles & Niles as an accountant, and served with them for more than a decade, severing connection with them after having had charge of their Boston office for more than a year. He resigned from their employ to become connected with the company in Colorado.

R. D. Long, for the last twelve years connected with the electrical engineering department of the Winnipeg (Man.) Electric Railway, has resigned from that position. For the first six years of this time Mr. Long was assistant chief engineer and for the last six years he has been chief electrical engineer. As such he has had full charge of all installations and operations of the company's electrical system, including the hydrogenerating plant and high-tension transmission systems and receiving and distributing stations at Winnipeg, as well as the underground and overhead low-tension distribution for electric light, power and railway service.

James Theron Rood has been appointed professor of railway electrical engineering at the University of Illinois. Professor Rood takes charge of the department formerly administered by Prof. A. M. Buck, now with John A. Beeler. Professor Rood was graduated from the Worcester Polytechnic Institute in 1898 with the degree of bachelor of science and received the degree of doctor of philosophy from Clark University in 1906. He was instructor in physics and mathematics at Ursinus College from 1906 to 1907, instructor in physics and electrical engineering at the University of Alabama from 1907 to 1909, and since 1909 has been professor of electrical engineering at Lafayette College.

Obituary

Douglas Robinson, capitalist and real estate dealer, died on Sept. 12 from heart disease at Amsterdam, N. Y. He was in his sixty-fourth year. Mr. Robinson was widely known in New York State, and for a number of years was one of the leading figures in New York City realty transactions. He was co-receiver with Adrian H. Joline of the Metropolitan Street Railway, New York, N. Y., the predecessor of the New York Railways.

Willard Harding Burroughs. secretary and treasurer of the Memphis (Tenn.) Street Railway, is dead. He succumbed to acute uremic poisoning after only a few hours' illness. Mr. Burroughs was born forty-five years ago in Shelby County, Missouri. He was educated to become a lawyer, and in 1895 was licensed to practice law in Missouri. In 1903 he entered the accounting department of the United Railways, St. Louis. In March, 1905, he went to Memphis as secretary and treasurer of the Memphis Street Railway. Mr. Burroughs is survived by his widow and one daughter.

William Kent, eminent consulting mechanical engineer of New York City, died at his summer home at Gananoque, Ont., on Sept. 18, at the age of sixty-eight years. Dr. Kent was possibly most widely known through his "Mechanical Engineer's Pocket Book," written in 1895 and now in its ninth edition. He was for five years dean of the L. C. Smith College of Applied Science of Syracuse University, and for four years editor of *Industrial Engineering*. Before going to Syracuse he was associated editorially first with the *American Manufacturing and Iron World*, later for a considerable period with *Engineering News*. He was a prolific writer, lecturer and inventor, and maintained throughout his life an active interest in the national societies related to his engineering and educational work. An extended article by him, comparing the designs of the three principal electric railway power stations which had recently been erected in New York appeared in the issue of this paper for Oct. 5, 1901. Dr. Kent was admired and respected for his courageous advocacy of the principles he believed to be right, and he accomplished much in the three fields of engineering, education, and technical literature.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Recent Priority Regulations

War Industries Board Acts on Brass Conservation—Classification of Important Industries Under Sept. 9 Order

Following a conference of the brass manufacturers with B. M. Baruch, chairman of the War Industries Board, and other members and officials of the board, and representatives of the Navy and the Emergency Fleet Corporation, and a later conference of the board with the war service committee of the surface-type condenser industry, it was decided in order to conserve brass to regulate distribution of those condensers which are essential to ships.

There are about forty-five manufacturers affected by the decision of the War Industries Board. They are being notified to take no further orders and enter into no new contracts for sale or to sell or deliver to any purchaser, government or civilian, except on a permit issued by the War Industries Board. To get such a permit the proposed purchaser must show his need to the satisfaction of the board.

The manufacturers will be permitted to fill, where possible, existing orders with non-ferrous condenser tubes on contracts for shipment prior to Jan. 1, 1919. On contracts after Jan. 1, 1919, the manufacturers are urged to put steel tubes on condensers for land uses and are directed to send immediately estimates for steel required.

The Navy and the Emergency Fleet Corporation are exempt from these orders and regulations of the War Industries Board as to condensers for ship usage, but not as to condensers for land stations.

Some months ago the government took over control of and distribution of the turbine-engine industry because of the shortage in the supply and their essential need in the Navy and Emergency Fleet war program. The non-ferrous condenser is an essential integral part of the turbine, and shortage in its production caused the Navy and Emergency Fleet Corporation officials to appeal for government regulation of production and distribution.

CLASSIFICATION OF RAILWAY INDUSTRIES

An abstract of the priority order classifying all industries into four groups, issued Sept. 9, was published on page 471 of this paper for last week. For the convenience of readers the actual classification of some of the principal electric railway manufacturing industries is reprinted here. (The term principally as used in the following means 75 per cent or more):

Brass and copper—Plants engaged in rolling and drawing copper, brass and other copper alloys in the form of sheets, rods, wire and tubes—2.

Cranes—Plants engaged principally in manufacturing locomotive or traveling cranes—2.

Electrical Equipment—Plants engaged principally in manufacturing same—3.

Public Utilities—Street railways, electric lighting and power companies, gas plants not otherwise classified, telephone and telegraph companies, water supply companies, and like general utiltities, also plants engaged principally in manufacturing equipment for railways or other public utilities—2.

Steel Rail Mills—Rolling rails fifty or more pounds per yard—2.

Stoker Manufacturers Organize

A national organization known as the Stoker Manufacturers Association has been voluntarily formed by automatic mechanical stoker manufacturers primarily to so improve the engineering and business sides of the stoker industry as to render it more efficient and better equipped to utilize coal more economically and to serve better the government during the war. The movement is in no sense a business combination.

Under war conditions capacity and economy are the big factors in stoker operation. Improvements are to be expected as a result of technical discussion and interchange of ideas at annual conventions to be held by the association. The organization will also insist upon uniformity of guarantees which will relate only to the stoker and not as hitherto include the performance of the boiler and draft-producing apparatus. The War Industries Board was quick to accept the offer of assistance made by the association, asking only that each manufacturer make an individual monthly private report of conditions of the trade direct to the government in order that each might secure proper priorities to facilitate deliveries to essential industries.

The executive committee of the association includes: President, P. A. Poppenhusen, Green Engineering Company, Chicago; vice-president, S. L. Nicholson, Westinghouse Electric & Manufacturing Company, East Pittsburgh; secretary-treasurer, F. H. Daniels, Sanford Riley Stoker Company, Ltd., Worcester; W. F. Sauter, American Engineering Company, Philadelphia; W. H. Rea, Detroit Stoker Company, Detroit.

Coal Production Situation

Labor Day Causes Loss In Output, Although Compared With Last Year the Results Are Very Favorable

Production of bituminous coal during the week of Sept. 7 while limited by the loss of time on Labor Day exceeded production during the week of July 6 when production was also limited by a holiday by 1,000,000 net tons, according to the weekly report of the Geological Survey. The output during the current week (including lignite and coal made into coke), is estimated at 11,249,000 net tons, a decrease compared with the week preceding of 1,455,00 net tons or 11.5 per cent, and an increase over the corresponding week of last year by 1,257,000 net tons or 11.2 per cent. The average production per working day during the week of September 7 (five and ½ days), is estimated at 2,110,000 net tons as against 2,117,000 net tons during the week of August 31 and as against 1,874,000 net tons during the same week of 1917. The loss of time during the current week places production for the coal year to date approximately 17,000,000 tons behind the summer requirements outlined by the U. S. Fuel Administration and makes necessary an average daily production during the balance of the coal year of 2,041,000 net tons to make up this deficit. This, it will be noted, is 3.2 per cent in excess of the average daily production for the coal year to date.

Production of anthracite during the week ended Sept. 7 is estimated at 1,617,597 net tons, 28 per cent less than the production during the week preceding, due mainly to loss of time on Labor Day, and 3 per cent less than the corresponding week of last year. The daily average during the week of Sept. 7 is estimated at 323,516 net tons as against 338,111 net tons during the coal year to date and as against 330,081 net tons, the daily average during the corresponding period of 1917. The total production for the coal year to date is estimated at 45,645,597 net tons, an increase over the same period of last year of 2.4 per cent.

The Roller-Smith Company, 233 Broadway, New York, N. Y., has appointed W. G. Merowit as its Buffalo agent, with offices at 716 Ellicott Square. Mr. Merowit will handle the Roller-Smith Company's lines of instruments, meters and circuit breakers in the western part of the State of New York.

Little Demand for Pole Erection Tools

Ash to Manufacture Handles Is Now More Difficult to Obtain Than Steel

To determine the market condition of pole erection equipment in so far as demand is concerned is simply to answer the question, "How much new construction work is there going on?" This equipment is seldom purchased except for new construction, and when the construction is completed the equipment is adequate for several years for maintenance purposes. The present financial status of public utilities in general, plus the urgent requests of the government, prohibit any new construction that is not absolutely essential to industry and public welfare.

This answer to the foregoing question bears out the report of manufacturers that there is little demand for such articles as pikes, cant hooks, shovels, spoons, picks, digging bars and "jimmies." Because of the small demand and poor prospects for any immediate need very little stock is being carried. A small quantity of shovels and spoons is kept on hand, but few of the other tools. Although steel is a scarce commodity, it is reported that for the manufacture of pole erection equipment wood for handles is obtainable in still smaller quantities. Steel can be manufactured, but wood has to be grown. A few years ago certain manufacturers of these tools specified and would accept only second-growth ash with straight grain. Later they were requested to and did accept other than second growth, and still later ash with the grain at a slight angle to the axis of the handle had to be accepted. This was followed by the use of maple as well as ash, and at the present time little but maple can be obtained.

All tools are up in price, and those used in the erection of poles are no exception, as they have come in for an advance of from 50 to 75 per cent. Only last week prices advanced 10 to 15 per cent on this line. Delivery of orders in any considerable quantity may be somewhat delayed.

No curtailment of types has as yet been reported. In other construction and digging lines, however, there has been a marked reduction in the number of types produced.

Commission Rules Against Commercial Bribery

The Federal Trade Commission has ordered a chemical company in Chicago to discontinue the practice admitted to have been employed by some of its salesmen of giving gratuities such as liquor, cigars, meals, entertainment, souvenirs, etc., to employees of its customers and prospective customers with a view to influencing the purchase of supplies. The company, which manufactures industrial chemicals, admitted further to have spent money for the entertainment of its customers. The company accepted the issuance of the commission's order without presenting testimony in support of the practice.

Revised Wiring Device Schedule

Reduction of 68 Per Cent in Types Recommended by Manufacturers' Committee

Manufacturers of wiring devices, acting through the wiring device committee of the general war service committee of the Electrical Manufacturing Industry, have prepared a revised schedule of essential devices to be retained in their listings. Each manufacturer has been asked to check carefully his line of devices as cataloged and report to the chairman his elimination. The extent of the elimination is shown in the following:

	Number Devices Now Listed	Number Retained	Per Cent. Reduction
Sockets and Receptacles..	100	20	80
Cut-outs and fuses........	500	125	75
Miscellaneous	25	20	20
	625	165	68

The War Industries Board will not permit development for commercial purposes during the period of the war, and especially no manufacturer will be permitted to duplicate the essential devices of some other manufacturer as scheduled herein, provided he is not now making them.

Similar work having as its motive the elimination of many types in accordance with the wishes of the War Industries Board is under way in about twenty-five group committees of the electrical industry.

NEW YORK METAL MARKET PRICES

	Sept. 11	Sept. 18
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	29.25
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.75	9.85
Tin, Chinese*, cents per lb	.....	.....
Aluminum, 98 to 99 per cent., cents per lb	†33.10	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Sept. 11	Sept. 18
Heavy copper, cents per lb	23.50 to 24.50	23.50 to 24.50
Light copper, cents per lb	21.00 to 21.50	21.00 to 21.50
Red brass, cents per lb	23.00 to 24.00	23.00 to 24.00
Yellow brass, cents per lb	16.00 to 16.50	15.50 to 16.00
Lead, heavy, cents per lb	7.50 to 7.75	7.50 to 7.75
Zinc, cents per lb	7.50 to 7.75	7.50 to 7.75
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton.	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton.	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	Sept. 11	Sept. 18
Rubber-covered wire base, New York, cents per lb	30 to 37	30 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40 to 36.75	32.40 to 36.75
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4¼	4¼
Rails, girder (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	16 to 40	16 to 25
Waste cotton (100 lb. bale), cents per lb	12 to 13	11 to 16
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.90	$1.90
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.92	$1.92
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	66½	66½

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Recent Incorporations

Petaluma & Santa Rosa Railway, Petaluma, Cal.—Articles of incorporation have been filed with the County Clerk by the Petaluma & Santa Rosa Railway, which has been formed to take over the Santa Rosa & Petaluma Railroad in the plan to refinance the line. The company purposes to operate the present lines and rolling stock of that company, to establish a ferry service to Petaluma, a distance by water of 39 miles, and to construct a new line from Sebastopol to Santa Rosa and a branch line from Liberty Station to Two Rock. Capital stock, $1,250,000. Incorporators and first board of directors: Rudolph Spreckels and L. B. Mackey, San Francisco; George P. McNear and Thomas Maclay, Petaluma; F. A. Brush and E. C. Merritt, Santa Rosa, and Allen I. Kittle, Ross.

Franchises

Alameda, Cal.—The San Francisco-Oakland Terminal Railways has asked the Railroad Commission of California for authority to build a double-track street railroad across the tracks of the Southern Pacific Company just east of Webster Street and north of the Alameda Marsh Line, Alameda, Alameda County. This crossing is in connection with the San Francisco-Oakland Terminal Railways' line under construction from Webster Street across the Alameda Marsh to the Liberty Shipbuilding Yards now being built by the United States Shipping Board Emergency Fleet Corporation.

Gloucester, N. J.—The Public Service Railway has received a fifty-year franchise from the City Council of Gloucester for the construction of an extension from Broadway to Warren Street. The new line will run to the new shipyard village at Yorkship and the work will be begun soon.

Portland, Ore.—The Kenton Traction Company has received a franchise from the City Council to operate its cars over the Derby Street approach to the Interstate Bridge.

Track and Roadway

Muscle Shoals Traction Company, Florence, Ala.—The Muscle Shoals Traction Company has received a guarantee of the total amount of subscriptions required from Limestone County, together with a guarantee of the right-of-way, which will be donated for the company's main line extending from Huntsville to Florence. The Florence Chamber of Commerce has guaranteed right-of-way in Lauderdale County and terminal facilities in Florence. The survey has been completed from Huntsville to a point 7 miles from Florence. Thurston Allen, Florence, secretary. [Aug. 3, '18].

Washington-Virginia Railway, Washington, D. C.—It is reported that an extension is being built by the Washington-Virginia Railway to Camp A. A. Humphrey and will probably be ready for operation about Oct. 15.

McComb & Magnolia Railway & Light Company, McComb, Miss.—A report from the McComb & Magnolia Railway & Light Company, which is building a line to connect McComb, Magnolia and Summit, states that the construction of its line has been suspended for the period of the war. Guy M. Walker, New York, N. Y., president. [June 1, '18.]

Public Service Corporation, Newark, N. J.—Up to the present time the Public Service Corporation has received a total appropriation of $2,317,105 from the Government for extensions in the Public Service Railway Company system and electric transmission lines, as follows: new traction lines to Newark Bay, with eighteen additional cars, $821,739; extensions to traction lines at Camden and Gloucester City, including thirty-three cars, electrical extensions, etc., $1,240,780; electric construction and development work for the New York Shipbuilding Corporation at the recently established Yorkship Village, Gloucester City, $215,000, and new electric feeders and other work at Kearny—near Newark, $39,586.

Items under "Recent Incorporations," "Franchises," "Track and Roadway" and "Power Houses, Shops and Buildings" are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

Tidewater Power Company, Wilmington, N. C.—Plans are being made by the Tidewater Power Company to double-track its line to the shipyards, the Government to loan $400,000 for this and other work.

Steubenville, East Liverpool & Beaver Valley Traction Company, East Liverpool, Ohio.—Plans are being considered for the construction of a new bridge over Little Yellow Creek, at a point a few feet up the creek from the present structure. The bridge will be 41 ft. wide, 36 ft. to be used by the traction company and vehicle traffic and 5 ft. to be railed off as a sidewalk.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—The city of Seattle, according to Mayor Hanson and Superintendent of Public Utilities Murphine, will seek a definite agreement with the Puget Sound Traction, Light & Power Company for the use of the new Fifteenth Avenue bridge into Ballard, before the company will be permitted to operate its cars over the structure. The question has become a live issue since the recent demand from the War Department for the immediate removal of the old bridge across the Salmon Bay Waterway at Fourteenth Avenue, Northwest, now used by the company. The Fourteenth Avenue bridge was built by the company on a permit from the War Department with the understanding that it should be removed when it became an obstruction, or when a permanent high bridge was built. The latter condition was realized when the city built the Fifteenth Avenue bridge. Unless the traction company comes to an agreement with the city, the removal of the old bridge will shut the company out of the thickly-populated Ballard district, except by a longer route over the Fremont bridge. The municipal cars now serve the Ballard district over the Fifteenth Avenue bridge, and according to Superintendent of Public Utilities Murphine could handle all the Ballard traffic.

Power Houses, Shops and Buildings

East St. Louis & Suburban Railway, East St. Louis, Ill.—A portion of the building containing the transformers at the Winstamely station of the East St. Louis & Suburban Railway Company was recently damaged by fire, caused by the explosion of an oil switch. Damage to the building is estimated at about $2,500, and the loss of the transformers is estimated at $20,000. New equipment will be purchased at once.

Boston & Worcester Street Railway, Boston, Mass.—The new general freight offices and freight depot of the Boston & Worcester Street Railway on Shrewsbury Street, Worcester, which have been under construction for the past few months, are now completed and the offices of the company have been moved to the new quarters.

Toledo Railways & Light Company, Toledo, Ohio.—A 12,500-kw. turbine at the Water Street plant of the Toledo Railways & Light Company was recently damaged by a short circuit. The loss is estimated at about $10,000.

Pennsylvania Railroad, Philadelphia, Pa.—Preparations are being made by the Pennsylvania Railroad for the construction of new shops, including engine house, machine-shop, car shop, etc., at Marietta.

Charleston Consolidated Railway & Lighting Company, Charleston, S. C.—About $750,000 will be expended by the Charleston Consolidated Railway & Lighting Company for additional construction and machinery for its Charlotte Street electric plant to provide ample power and lighting for Government plants and private factories manufacturing war products. Of this amount $350,000 will be financed by the War Industries Board. The new machinery to be installed will include a 5,000-kw. turbo-generator, three 500-hp. boilers, condenser, switchboard, condenser intake, coal and ash handling equipment, etc. Specifications for the new construction include a brick chimney 250 ft. high by 12 ft. diameter at the top, and a 7,900-ft. transmission system Contracts have been awarded for the machinery.

Columbia Gas & Electric Company, Huntington, W. Va.—The Government has awarded a contract to the Columbia Gas & Electric Company for furnishing electric energy to the new Federal nitrate plant to be located at Broadwell, near Cincinnati, Ohio. The contract provides for an increase in capacity of the company's electric plant including a new 30,000-kw. turbo-generator, condensers, boilers and auxiliary equipment. It is understood that the Government has advanced the company $2,000,000 for the work.

Rolling Stock

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., is expecting delivery of a number of new passenger cars early in November.

Munical Bridge Commission, St. Louis, Mo., has purchased two one-man cars for use on the Free Bridge. Delivery is expected early in November.

Columbus Railway, Power & Light Company, Columbus, Ohio, has received nine new cars which will be put into service soon. They are combination summer and winter cars.

City of Tacoma, Wash., has arranged through the Director of Transportation and Housing of the United States Shipping Board for a loan of $237,000 to double-track the Tide Flats line and purchase ten additional cars.

City of Seattle, Wash., has arranged through A. Merritt Taylor, Director of Transportation and Housing of the United States Shipping Board, to borrow $392,000 for municipal railway improvements, among which will be included thirty-one cars. The title to the cars is to remain with the shipping board until the loan is repaid.

Auburn & Syracuse Electric Railway, Auburn, N. Y., is reported to have purchased a 350-ton electric locomotive, Westinghouse type, the first of its kind to be used by the company, to provide for increased service from the works of the Semet-Solvay Company, Split Rock plant, near Solvay. The locomotive will be used on the freight line of the company extending to Marcellus.

New Advertising Literature

Bonham Traffic Recorder Company, Hamilton, Ohio: Eight-page folder descriptive of the Bonham fare recorder.

Economy Electric Devices Company, Chicago, Ill.: Card entitled "Skip Stops Save Coal—Economy Meters Show the Saving."

Universal Safety Tread Company, Boston, Mass.—Circular on "Ladder Tread," designed primarily for ships, but suitable for electric cars, stations, etc.

Trade Notes

A. F. Nelson, Harrisburg, Pa., has purchased the rapid ready change carrier business from the estate of Charles F. Etter.

Boston (Mass.) Elevated Railway has closed a contract with the Bernitz Method Company, Boston, Mass., for the use of this company's method of furnace wall protection in connection with all of its underfeed stoker installations.

Economy Electric Devices Company, Chicago, Ill., announces that an order has been received from the Capital Traction Company, Washington, D. C., for ten Economy electric railway meters suitable for the measurement of energy consumption on the cars of the Capitol City. The company has also recently sold the Chicago & West Towns Railway Economy railway meters for use in power-saving work on all of the cars of this property, which serves a dense suburban territory west of Chicago.

Bolden Manufacturing Company, Chicago, Ill., in order to overcome delays of l.c.l. freight deliveries from Chicago to Eastern customers and to meet the government's restrictions on l. c. l. shipments, has opened a warehouse and distributing station at Metuchen, N. J. This warehouse is in charge of S. C. Schenck, Eastern manager of the company, and a small emergency stock of all insulations and sizes of magnet wire will be carried for immediate or urgent shipment. Shipments from this stock will be billed f.o.b. Metuchen at an advance of ¾ cents a pound over the Chicago price. It is also the intention of the company, so far as possible, to pack shipments from Chicago for Eastern customers in its cars from Chicago to Metuchen, to be reshipped from there. The freight will be prepaid through to destination and an additional charge made on the invoice equivalent to the l.c.l. rate from Chicago to destination. However, if shipments are desired direct from Chicago, they will be made on request. All orders to the company from Eastern customers for magnet wire should be mailed to the Belden Manufacturing Company, Metuchen, N. J.

"War Service and Economy" Issue

Electric Railway Journal

Published by the McGraw-Hill Company, Inc.
Consolidation of Street Railway Journal and Electric Railway Review

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Using Disabled Men In the Railway Industry

CAN the railway industry use the services of physically impaired men with profit to both employer and employee? The question is one whose importance grows as the casualty lists mount up and the home man-power wanes. Elsewhere in this issue is published a brief survey of what is being done to reclaim and re-educate the human wrecks left on the back trail of war and industry, and of what they are able to accomplish after the reclamation process has been completed. That some interest in the matter is being taken by men in the electric railway industry is evidenced by the development of the pedal-controlled car of the Third Avenue Railway, New York City, described in the Electric Railway Journal for May 18, 1918, page 977, and by expressions of interest from men prominent in the industry.

Disability may preclude a man from being a "jack of all trades," but along certain lines the incapacitated man may be altogether as capable as an able-bodied man. Again, thanks to the skill of the artificial limb makers and the re-educational teachers, a missing member may not prove an insurmountable obstacle to the performance of duties which in the ordinary man require the use of the full complement of limbs. In any event, it seems to be better for everybody concerned that the cripple receive an opportunity to do a man's work with other men for a man's pay than receive a surplus of pity and charity.

Because of the limited range of activities of the disabled man his job should be one which gives steady employment. The stability of the electric railway industry in this respect makes it peculiarly attractive. For certain classes of disability there are opportunities open for platform men, particularly where modern types of cars are in service. In the shop it appears that there are a number of places where properly trained men could be used to advantage. The opportunities in the way department are more limited, but doubtless some exist. Certainly, railway men who have suffered some handicap in the war but are otherwise able should with some training be able to fit into some part of a railway organization. The government is providing in a splendid manner the means for rehabilitating the men who have become incapacitated in the national service. Information as to the exact nature of the different kinds of employment, as to what cripples now in service are able to do, and as to the disqualifying disablements for the various lines of work is of great value and every assistance should be given in its collection.

* * *

Our "War Service and Economy" Issue

TWO ways stand out prominently by which electric railway companies in this country can help the government in these days of national stress. One is by giving the best possible service which they can to the transportation of troops and war supplies as well as of workers in the munition and shipbuilding plants and all others engaged in essential industries. This might be called the direct way and applies to the transportation of both passengers and freight. The other way of assisting the nation is indirect but for that reason none the less important. It consists in giving the necessary service mentioned with the least possible draft upon the military resources of this country, particularly in fuel and man power. It is these two purposes to which this number is devoted, namely "War Service and Economy."

It has not seemed wise for the American Electric Railway Association to hold the usual four-day convention this year. The responsible executive officers of electric railway properties could not be spared for a long enough time from their properties, and the period of the Fourth Liberty Loan drive was set to include the dates originally selected for the convention. But the fact that the convention plan has been abandoned need not and should not prevent electric railway companies from operating their properties in such a way as best to promote our military success abroad. Many electric railway men are actively fighting the Hun, and it is the duty as well as the pleasure of those who remain in this country to co-operate to the best of their ability in the common cause.

Let every company strive toward war service and economy to the end that the enemy the more quickly may confess defeat.

Electric Railways Are Bound to Live

OF ALL the valuable things accomplished by the modern one-man car, there is one that must mean much more to us all than any saving of the moment in wages, power or other items. That supreme result is the proof that the electric railway merely has to give frequent and comfortable service to beat the private automobile which while not a competitor in the true sense of the ward was a serious subtractor of electric railway revenue. Jitneys were bad enough, but there was always the hope of keeping them within bounds; but how fight the machine which was not out for gain? The permanently satisfactory answer to both, we believe, will be found in such operating data as we have gathered for this issue from Florida to Washington. It is very gratifying to report that small cities where rides are short and private autos many are providing traffic that equals or exceeds the best days of the past. It is the experience of towns like these—not of the few heavily congested cities—that demonstrates the continued primacy of the electric railway as a common carrier.

With that knowledge certain, we can look more hopefully toward a future when war demands and war prices will no longer complicate the problem of making electric railway transportation pay an adequate return to those who give it.

A Stone & Webster Service to the Industry

IN PRESENTING in this issue a new series on the modern one-man car, supplementing the group published in the ELECTRIC RAILWAY JOURNAL for Sept. 22, 1917, it is fitting to commend what Stone & Webster have done for the industry through their courageous pioneering at Bellingham, Everett, Seattle, Tacoma, El Paso, Fort Worth, Houston, Beaumont, Columbus and Tampa.

The mere mention of these cities is enough to indicate the value of Stone & Webster's contribution. Conceive the meaning of operating the same car on the shores of Puget Sound and the Gulf of Mexico, in towns of 21,000 and a city of 400,000, and of using a semi-convertible car to supersede open-bench and platform gate cars with equal success. These are only a few of the outstanding achievements worth the attention of those who have been believers in that killing phrase: "Our own conditions are different."

It will be evident from the articles on the cities named that they have a few differences of their own, too, in climate, topography, size, variety of population, labor, etc. For all that, they are doing very nicely with a standard car. In this, Stone & Webster have shown that car standardization was retarded not so much by differences in local conditions as by the endeavor to use the biggest car made possible by local clearances.

While the showings made with the Birney car on many of the Stone & Webster properties are magnificent, they do not mean that the electric railway's financial problem has found its *alkahest* or universal solvent. Most of us now realize that no matter how greatly we increase the margin between income and expense, that margin will be wiped out eventually if fares remain fixed in a rising market. The really great service of the modern one-man car is that it will enable so many electric railways to give quickly that increase in quality and quantity of service which can build up a good-will without which all the publicity from Dan to Beersheeba would be useless. That is the wise course which Stone & Webster have taken at Tacoma and Houston in inaugurating more and better service first and asking for a higher rate of fare afterward.

Excessive Ash in Coal an Enormous and Preventable Waste

IT IS HIGH TIME that the influences which ought to be potent in forcing the production of cleaner, much cleaner, coal were brought into action. The present situation is a disgrace to a country with the untold mineral resources that we possess. Not only is power plant coal difficult and expensive to get, but when it is delivered at the power plant much of it can be called *coal* only by courtesy.

What high-ash content means to the power plant was clearly explained in an article published on page 504 in last week's issue of this paper. This was based upon a report prepared by an eminent engineering firm for the National Research Council, and hence having a special significance at this time. The report showed that excessive ash in bituminous coal (considerably over 10 per cent) produces startling results when the country's total consumption is considered. For example, each 1 per cent of excessive ash forces the carrying of 5,000,000 tons of excess freight per annum, to say nothing of the deleterious effects on the power plant output.

And it is not simply a matter of transporting the coal and ash, handling it in the power plant and disposing of the ash and unburned combustible afterward. By no means! The worst of it, after all, is the fact that the ash in this coal prevents effective burning of the combustible, in some cases doubling the amount of combustible discarded. In addition, the ash takes up great quantities of heat which is carried off to the dump to be wasted. Consider in this connection the statement made last week that with coal of 10 per cent ash content, only slightly more than one-half of the number of power plant boilers are required for a given output as compared with conditions under which coal of 18 per cent or more of ash must be used.

The situation is bad enough, but here, as elsewhere, there is ground for hope if something can be done to improve the situation. Surely such important coal consumers as the electric railways have some influence on the coal situation. It is necessary, however, to get at the root of the trouble. This root is the miner. No influence which does not reach him will be effective. There is ample coal, and there are enough men in the country to get it out, once the situation is well in hand. It is just as important to get out coal as to man the trenches. In fact, we cannot man the trenches if we do not mine the coal and mine it properly. There is, of course, quite a gulf between the coal miner and the electric railway manager. How may this gulf be bridged?

Self-interest leads the miner to send out of the mine everything that he loosens up; coal, slate, rock, dirt. He is supposed to discard "gob," all readily separable trash, leaving it in the mine. After the coal has left the mine there is opportunity at some operations for the partial removal of impurities. Two influences will be effective with the miner. First and most promising is patriotism. This must be based on knowledge of the circumstances and can be best fostered through union officials. The mine bosses can help also. Second, government forces must be brought into play to insure a full supply of capable, conscientious mine workers. It would seem that the electric railways, individually and through the Electric Railway War Board, could put the matter squarely up to the government. They ought to be able also to reach the miners indirectly through the coal companies from which they secure their coal supplies.

It is the immediate and patriotic duty of everyone who has influence in this matter to "get busy" and keep busy!

* * *

Chugless Sundays the Railways' Opportunity

THE effect of the request by Fuel Administrator Garfield to automobilists to refrain from using their cars on Sunday has been notable. The streets in city and country, where there are no trolley tracks, are deserted except for an occasional horse-drawn carriage, the carriage looking like a relic of bygone ages and the horse as if he had been borrowed for the occasion from the grocery man or milk man. For those who wish to travel in the city or afield at any speed faster than a horse trot, the electric railway (or steam road) is the only means available. In fact, gasless Sundays offer an opportunity to electric railways to repopularize their service among many people who had almost forgotten how to use electric cars. The deprivation of the use of his automobile on Sunday has been a hardship to many a citizen who has no other time to operate his flivver, but all have borne it cheerfully in the national interest.

While we have no fault to find with the fuel administrator for establishing chugless Sundays if the needs of the government for gasoline require them, and we accept his word for this, we invite his attention to another way in which he can stop the unnecessary use of a large amount of gasoline. We refer to the suppression of jitneys, for whose waste of gasoline, rubber and lubricating oil, all necessary to our military forces, there is no economic excuse. Such action by the fuel administrator would correct a manifest evil so far as the consumption of these war essentials is concerned, and would also release to the essential industries of the country or to actual war service the men who drive these cars and the mechanics who keep them in repair. Electric cars are common carriers and have to run, and where an electric line is parallel to jitney service it can furnish all the transportation needed both on Sundays and on other days.

Provost Marshal General Crowder can well include jitney drivers as among those to be affected in his next "work or fight" order.

Keeping the Wheels Turning in Canada and Great Britain

THE way of Canadian and British electric railways in war time has been a thorny one. As the direct and inevitable result of hostilities, such companies have found themselves virtually compelled to tread the path of competition with the national government in the procurement of labor, materials and new capital. To be more exact, it has not been even a case of competition, for the government's needs were of paramount importance; the railways have had to eke out their livelihood on what was left.

This, of course, is as it should be. Our story is not a lamentation; it is rather a psalm of rejoicing that electric railways have been able to do so much for their country with the limited means at their disposal. The troublesome point, however, is that the public, patriotic as it is to the last heart throb, is none the less selfish in regard to its daily transportation service. In other words, the public is inclined to be decidedly impatient with electric railway burdens in war time unless it is made to understand that these must be undergone in the nation's interest. Hence electric railways have a threefold duty in these days—to serve the nation faithfully and tirelessly; to serve the local public as well as the nation's needs will permit, and to make the patrons realize that they too must do all in their power to keep the wheels turning.

We mention these three points because to our mind they well summarize the work of Canadian and British electric railways during the past four years of war. As shown by the detailed recitals elsewhere in this issue, such carriers have, in spite of many trials and tribulations, served both the nation and the local patrons well. The drain upon man-power, the high operating cost and scarcity of materials, the commandeering of capital—these difficulties, which American operators can visualize so easily, seem of late to be more deeply appreciated by the Canadian and British publics. This is particularly evident in Great Britain, for after assiduous efforts since November, 1916, on the part of railway representatives, and after extensive investigations, the national conscience has been so aroused that Parliament has just authorized fare increases in meritorious cases despite former statutory limitations. Thus the fare relief long needed is now a possibility; let us hope it will soon be an actuality which the public will cheerfully recognize as a necessity.

Does not this action in Great Britain contain a hint of a suggestion for this country? Government authorities there believed that local electric railways needed financial relief; after a certain amount of examination they acted positively and favorably. National authorities here are likewise convinced that electric railways must be aided if their national efficiency is to be preserved and increased; they, too, have acted, but only by suggestion. Conditions here and abroad are different, of course, but they are not so different as to warrant an assumption that centralized action, adopted as a matter of course in Great Britain, would not be advisable here. Some day the Washington administration may realize this fact, but at its present rate of speed, when that time is reached, pulmotors will be necessary for most railways.

What the War Has Meant to Canada's Lines

148TH OVERSEAS BATT 148TH
Information OFFICE
508

In the Land of the Maple Leaf the Electric Railways Have Rallied Nobly to Britain's Aid—Man-Power Shortage Has Caused Reduction in Requirements for Traction Employees—Patriotic Funds Have Been Loyally Supported

INASMUCH as our brethren across the northern border have had to deal with war problems for more than four years, it has been deemed advisable to present a survey of their present man-power conditions, for it is likely that American electric railways will have to go through the same evolution. The following accounts indicate that while the shortage of men has not yet been acute enough to call for the general employment of women, the companies have been compelled to reduce the physical and other requirements for new platform employees. A problem to which the Canadian electric railways have been devoting special attention is the re-employment of men discharged after military service, many of whom are not physically crippled but for various causes are suffering from a reduction in nerve fiber. The articles also show the active work of the several companies in connection with war funds and war publicity.

The Track of War in British Columbia

Vancouver's Early Losses Were Small Owing to the Company's Policy of Favoring Use of Married Men—Few Women Employed as Yet

WITH 536 men out of a total present payroll of 2200 employees serving or having served their country in some military capacity, the British Columbia Electric Railway, Vancouver and Victoria, B. C., is a fair example of how Canadian electric railways have been affected by four years of war.

As these withdrawals of men from their occupations have been gradual and labor only recently became scarce, the situation in British Columbia has not been so serious as might otherwise have been the case.

The figures and conditions referred to hereafter pertain to Vancouver alone, but in the main they are true also of Victoria.

When war broke out for Canada on Aug. 4, 1914, Vancouver was suffering from an industrial depression which had begun nearly a year before and was growing more severe. Not only did the war accentuate this, but the jitney, coming in December, 1914, further curtailed the electric railway traffic. Consequently the enlistments of men in 1914 and 1915 did not require replacements, owing both to the curtailment of service and to the speeding up of cars. Between 1913 and 1916 the company took on no new platform men.

With 1916 came an improvement in business, more traffic and a decrease in jitney competition, and it then became necessary to have more men. This situation became more acute in 1917, when shipyards began operations in Vancouver, creating more traffic and drawing men from the classes which might have been used for electric railway work.

A Brave Railway Man Is with the Colors

During the last year the scarcity of men forced the British Columbia Electric Railway to lower its physical standards in order to obtain men. Prior to 1913 it would take no men of more than thirty-five years of age, but recently it has taken men up to fifty. For some time, before the conscription law was passed in Canada, the British Columbia Electric Railway would accept only married men or single men above thirty-five years of age as motormen and conductors.

Of the 423 men who have enlisted from the company's Vancouver system, platform men have contributed 19 per cent, shop men 13 per cent and electricians 20 per cent. In actual numbers here are the various departments segregated: motormen and conductors, 180; substation operators, forty-six; trackmen, etc., nineteen; gas company employees, twenty-nine; engineering department, sixteen; meter readers, twenty; janitors, etc., five; office staff, seventy-one; car repairers, etc., twenty-seven; laborers, general, five, and station agencies, five. All employees retain their seniority rights.

Owing to the policy of the company for several years of taking married men wherever possible, the call for Class 1 men in the Canadian draft did not affect the men in the electric railway service so much as in other departments. The service has at all times been kept up to standard, and at present sufficient men can be found, although with the counter-attractions of the shipyards they are becoming more scarce.

Thousands of men have returned to Canada from the front and have been discharged from the army. Of these Vancouver has received its share. These men may register at the Returned Soldiers' Club as requiring work, and it is now the practice for all employers to apply there first when needing help.

The British Columbia Electric Railway carries out this policy to the full and at present has sixty-three returned soldiers in its employ. Thirty-eight of them are motormen and conductors, eight are substation operators and six substation floormen. Others are employed as watchmen, meter readers and so forth.

It is impossible to tell from the experience of one company what the mental attitude of returned men is and how their experience at the front has affected them. Many of the men who obtain light work as watchmen do not stay long, but this may be accounted for by the fact that the work at best is considered temporary and also by the fact that the shipyards offer much higher wages for the same work.

All men who have returned so far have been discharged from the army for some physical or mental defect, and their disability often unfits them for the work of motormen and conductors. About 25 per cent of the men who have been taken on in this capacity have been unable to continue, although the physical standards have been lowered.

This inability of returned men to measure up to the platform men's standard does not militate against their obtaining work, because there is plenty in other lines. At present the company has not found it necessary to employ women to any extent. Several are employed as elevator operators and ticket clerks, but men have not been replaced in any general way by them.

Owing to the multifarious branches of military service, Canadian, reservist, naval and so forth, into which men from the company enlisted and the suddenness with which many of them were called away at the outbreak of war, the record of men in the service is not complete. In most cases, the company has had to depend upon the men or their friends for information as to changes in addresses. An attempt is being made to record all addresses. The office association endeavors to keep in touch with its members, and each Christmas hampers and other remembrances are sent to all the men of the office staff in England or France. *The Employees' Magazine* goes to as many of these as are on record.

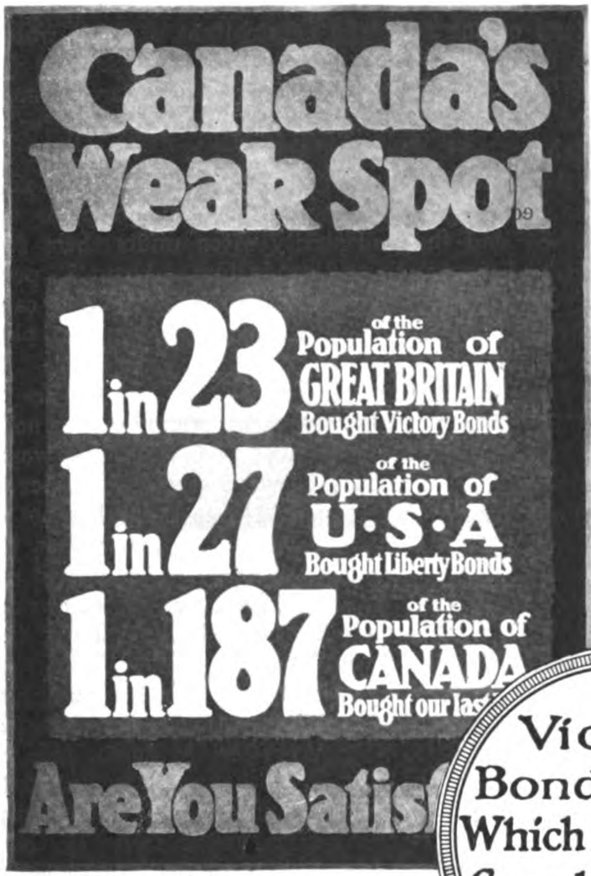
The records kept by the company show that twenty-seven employees have made the full sacrifice; forty-one have been wounded, and at least four are prisoners of war in Germany. Besides a number who have not re-entered the company's service, thirty-three men have come back and are again in its employ. Among British Columbia Electric men in army service there are three majors, three captains and fifteen lieutenants, besides a considerable number of non-commissioned officers.

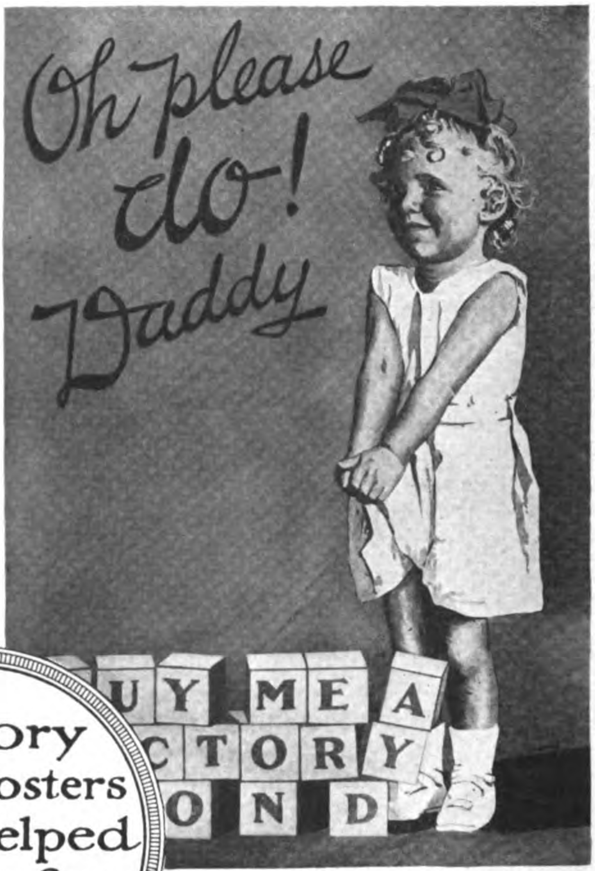
HONORS TO THE GALLANT

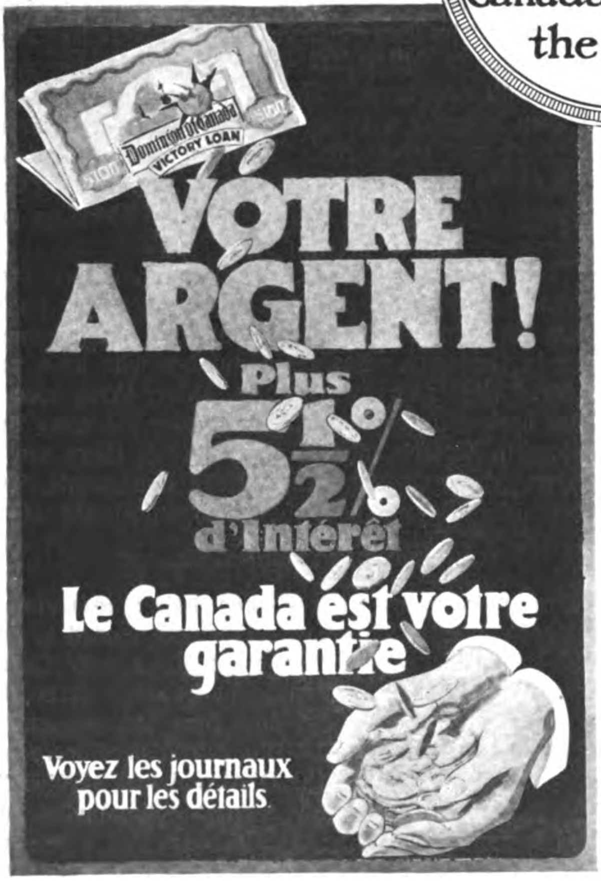
Owing to many of the men being reservists and being in the British army, a complete record of honors and casualties cannot be obtained, as only Canadian lists are published in Vancouver papers. It is known, however, that at least five men from the company have won the Military Medal. One other, previously in the company's employ, won the Distinguished Service Medal for gallantry against an Austrian submarine in the Mediterranean when he was in charge of a steamer.

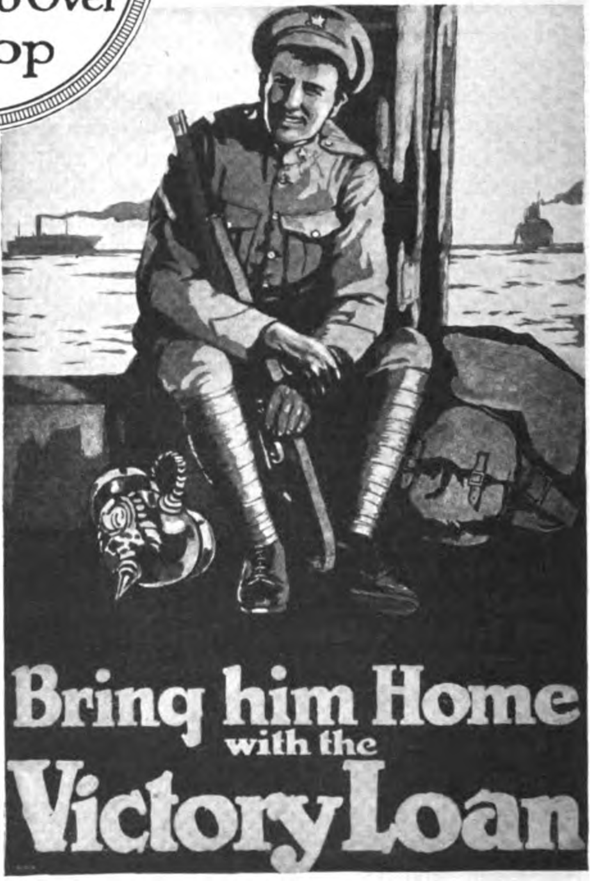
The honor of being mentioned, along with other Canadians, in the despatches of Sir Douglas Haig belongs to Capt. F. R. Glover, general executive assistant of the

Victory Bond Posters Which Helped Canada Go Over the Top


Canada's Weak Spot
1 in 23 of the Population of GREAT BRITAIN Bought Victory Bonds
1 in 27 of the Population of U·S·A Bought Liberty Bonds
1 in 187 of the Population of CANADA Bought our last
Are You Satisf


Oh please do! Daddy
UY ME A
CTORY
OND


Dominion of Canada
VICTORY LOAN
VOTRE ARGENT!
Plus 5 1/2 % d'Intérêt
Le Canada est votre garantie
Voyez les journaux pour les détails


Bring him Home with the Victory Loan

company. He was quartermaster of the Seventy-second Battalion which was in the assault of Vimy Ridge in 1917. Captain Glover was later transferred to the railway construction corps.

PAYMENTS TO DEPENDENTS AND SPECIAL RATE TO CONVALESCENT SOLDIERS

The British Columbia Electric Railway started out in conjunction with many other companies to give half pay to the dependents of employees who had enlisted, but the monthly payment soon reached $1,800. The company therefore turned the families over to the Canadian Patriotic Fund, the official body for that purpose, and itself made a payment of $2,000 a month to the fund. Practically all of this work is now handled by the central fund in order to avoid duplication.

In Vancouver, North Vancouver and New Westminster, where the fare is now 6 cents, the company allows a special 4-cent rate for the convalescent returned soldiers. This ticket allows these men to travel to and from the military hospitals in the 7-cent zone.

While the war in general has adversely affected the revenues of the company, it is difficult to estimate the extent to which the decrease has been caused by the war itself as distinguished from that caused by the jitney and the depression which had set in before the war. The exodus of nearly 20,000 men from Vancouver and the surrounding district undoubtedly caused a decrease in traffic, especially as a large part of the company's revenue came from the younger men who enlisted.

It is only fair to say, however, that business had been on the downgrade in Vancouver before August, 1914, and that people were leaving the district for more prosperous parts. As a consequence, construction work had ceased before the war, and the effect of the outbreak of hostilities was rather to confirm the depression. This condition was not at all changed until war orders began to come to the coast.

On the Way to France

(The Lyric Tribute of a Canadian Electric Railway Man to Uncle Sam)

BY RALPH M. READE

Superintendent City Street Railway Division
Quebec Railway, Light, Heat & Power Company
(All Rights Reserved)

1. "Cheer up, my friends!" said Uncle Sam,
"I've just received your telegram—
A million Yanks are now in France
To lead the Huns a merry dance:
Ten million strong are coming 'cross the sea,
To do the right and keep the jubilee—
Then, here's to our uncle and here's to his gallant sons;
They will teach that right is might with Yankee guns!

Chorus
"Steaming, steaming, over the ocean blue,
Chasing the Kaiser's submarines
And sinking quite a few:
Steaming, steaming, taking a sporting chance,
Sinking the Huns with Yankee guns—
On the way to France.

2. "Our soldier boys across the sea,
Will fight the fight for liberty,
While you and I must do our share
With plow and hoe to keep them there:
In Berlin town upon the River Spree,
Our flag shall wave, the symbol of the free—
Then, here's to our uncle and here's to his gallant sons;
They will teach that right is might with Yankee guns."

Montreal Men Liberal Givers

Those Who Stayed at Home Have Contributed Liberally to War Funds While Management Has Loaned Cars for Promotion of War Purposes

OF MONTREAL'S 600,000 people more than 30,000, or one in twenty, are in munitions manufacture. So important has this work become that the Montreal Tramways has actually been obliged to withdraw its all-day two-car trains from Ste. Catherine Street in order to serve more effectively the munitions factories in the Lachine district. These close their doors at 5.30 p.m. whereas the big downtown stores close at 6 p.m. Fortunately, for the railway and the public, the factory load is practically gone when the business center is reached, so that the trains may go through with a new load or else be turned back.

Last Chance!
Victory Loan

Night Illumination of Victory Loan Advertisement on Montreal Car Float

The fifty two-car trains taken from Ste. Catherine Street are made up of a four-motor leader and a motorless trailer. Fifty other and later two-car trains have multiple-unit control and are made up of a four-motor leader and a two-motor follower. Most of these trains are on St. Lawrence Street, operating on four-minute headway during the morning, noon and evening swings. In both types the motor car is entered at the rear and the trailer at the front—a most effective way to secure quick and even loading. The snappiness of this service is aided in large measure by the door of the Montreal Pneumatic Company, this being the first installation of air-operated doors in Canada.

From this preface it is apparent that Montreal is a busy war center: Hence it is scarcely necessary to add that the shell and other war plants proved potent attractions to tramway workers for both patriotic and financial reasons. It has been simply impossible to replace men as fast as they have gone. In May, 1914, there were 2560 men in platform service; in May, 1918, only 2070—2270 resignations in this period being met by only 1780 engagements. In 1917 alone 1077 men came on and 1166 went off!

The first hard blow to the company came at the opening of the war, when 141 French reservists heard the call of La Belle France. They were followed by hundreds of others. In accordance with the Canadian military service act, 200 selectives between the ages of twenty-one and thirty-four left in July and August,

MONTREAL TRAMWAYS COMPANY

Office of the Superintendent

MONTREAL, November 15, 1917.

My Friend:

It is with much pleasure that I write you these few words as I bring you the good news that our company, always ready to be of service to its faithful employees, offers to aid you in making a safe investment—"Victory Bonds"—and moreover to finance the payment of same for you.

The company's offer—to buy for you the amount which you judge possible to lend to our beautiful Canada—is one of the best, and I sincerely trust that each one of you will appreciate what this encouragement from our superiors means, which for many of us will be the opportunity to make the first step towards economy, so necessary at this time, and to put aside the first dollar which may be the foundation of the future well-being of our families.

The official notices have given the necessary details for us to understand this enterprise thoroughly, and these few additional words of mine only to ask you to study these notices well and to impress on you the advantage which the company offers to obtain for you.

Read these circulars carefully, and I will, during the course of the coming week, go and see you to talk with you of the advantages of this opportunity. I wish to insist right now, however, that every one of you make it his duty to assist at one or other of these meetings which will be held at the stations, as I am anxious to meet you all.

Recent events, I feel sure, will have the result of tying more closely the friendly bonds which have always been so strong between us, will give me the right to expect that my task in this nation-wide campaign will be made easier and will assure my explanation of a cordial reception from all, and I trust that our efforts will result in a great success.

We owe it to ourselves to show that if we cannot, on account of our duties here, go and fight on the battlefield, we can and are willing to aid in another way in fighting the common enemy.

Au revoir, until next week. Think of it well.

Yours truly,
A. GABOURY,
Superintendent.

The Montreal Tramways Makes a Strong Appeal to Its Employees to Buy Victory Bonds

and the company is due to lose 365 more in the same classification. Montreal permits all enlisted men to come back with their seniority unimpaired.

One of the first things the Montreal Tramways did was to seek out as many satisfactory ex-employees as possible, particularly conductors. If these men proved to be in sound health, the company waived its usual age limit of thirty-six years. One of these come-backs is fifty-four years old! Once these men have graduated from the extra list and get back to the old habit of a regular run, they are thoroughly satisfied.

During the period of these changes, from August, 1914, to August, 1918, wages were increased three times to a total of 12 cents an hour over the 1914 rate. No attempt has been made to employ women, owing to the severity of the climate.

At all times the Montreal Tramways has been glad to furnish rolling stock for patriotic floats, like the Y. M. C. A. one illustrated, and even for a recruiting office on wheels as shown in the headpiece on page 538. Cars have also been supplied free to carry parties of soldiers, but this does not apply to individuals.

The employees have always subscribed generously to the different war funds. During the first part of the war, March, 1915, to March, 1916, they gave a day's pay monthly to the Canadian Patriotic Fund. During 1916-1917 this was changed to 1 per cent of earnings, the Red Cross being included. The Patriotic Fund is now maintained by taxation.

The latter part of 1914 saw the first Red Cross drive, to which the men made 50 cents and $1 contributions. In the second Red Cross drive the objective was to form a 10,000 club, each member to pay $1 a month for twelve months. This mark was exceeded by a large margin. The men are also maintaining a bed in a Paris military hospital, and the tobacco fund fostered by a Montreal newspaper has received hundreds of dollars.

Doubtless the biggest thing done so far by the management and the men was the work in the second Victory Loan. Addresses were made by all the department heads, who explained the generous conditions under which the employees could purchase these bonds through the company. An accompanying fac-simile shows the invitation sent (in either English or French) to all trainmen. As the result of the company's campaign $162,000 was subscribed.

The terms under which the bonds were sold follow:

Fortnightly payments required for the purchase of Dominion of Canada Victory Loan Bonds bearing interest at 5½ per cent per annum referred to in circular dated Nov. 18, 1917.

Half Month Ending	$50 Bond	$100 Bond
Dec. 15, 1917	$2.08	$4.16
Dec. 31, 1917	2.09	4.17
Jan. 15, 1918	2.08	4.16
Jan. 31, 1918	2.09	4.17
Feb. 14, 1918	2.08	4.16
Feb. 28, 1918	2.09	4.17
Mar. 15, 1918	2.08	4.16
Mar. 31, 1918	2.09	4.17
April 15, 1918	2.08	4.16
April 30, 1918	2.09	4.17
May 15, 1918	2.08	4.16
May 31, 1918	2.09	4.17
June 15, 1918	2.08	4.16
June 30, 1918	2.09	4.17
July 15, 1918	2.08	4.16
July 31, 1918	2.09	4.17
Aug. 15, 1918	2.08	4.16
Aug. 31, 1918	2.09	4.17
Sept. 15, 1918	2.08	4.16
Sept. 30, 1918	2.09	4.17
Oct. 15, 1918	2.08	4.16
Oct. 31, 1918	2.09	4.17
Nov. 15, 1918	2.08	4.16
Nov. 30, 1918	1.23	2.58
	$49.18	$98.37

Each employee subscribing will pay $49.18 for a $50 bond and $98.37 for a $100 bond and in the same proportion for any multiples thereof, which will return him each year at rate of 5½% per annum or $2.75 on the $50 bond and $5.50 on the $100 bond, when same are fully paid. He will be required to make fortnightly payments as per above schedule and will receive, when the final payment is made, his bond of the denomination subscribed for bearing the interest coupon due Dec. 1, 1918.

RED TRIANGLE FUND
YMCA
75,000

Montreal Helped to Advertise the Y. M. C. A.

One-Man Service May Solve Regina, Sask., Difficulties

THE chairman of the street railway committee of the Regina (Sask.) City Council is reported to have said recently that one-man cars and a 7-cent fare will probably be the ultimate solution of the problem of financing the local municipal railway. He is not in favor of one-man cars, however, until all the possibilities of the present system of operation have been tried out. Various suggestions are before the committee, although both the 7-cent fare and the one-man car proposal have been defeated for the present.

Toronto Men Left by Platoons

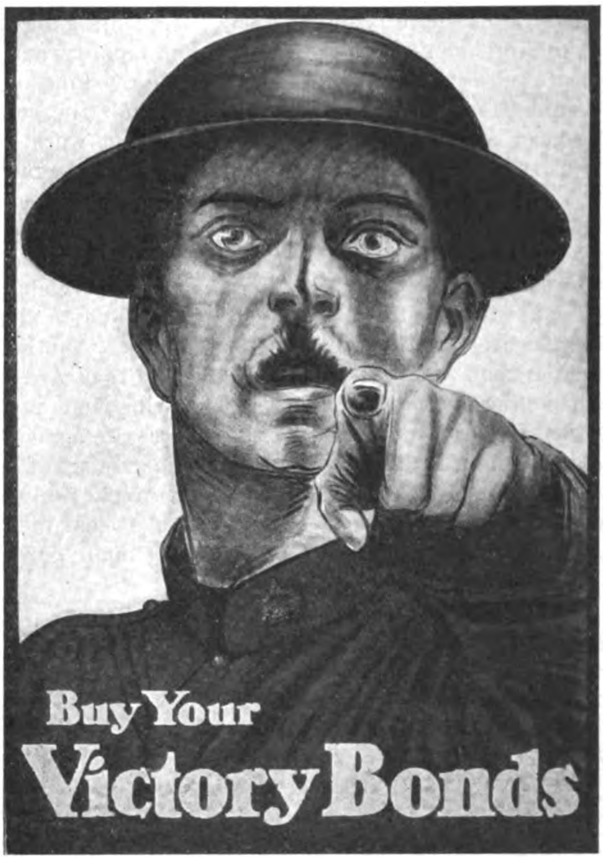
Oratory of Recruiting Officers Depopulated Some Carhouses Almost at One Call—Recovery of Travel Has Made Man Shortage a Most Serious Factor

IN 1914 the Toronto (Ont.) Railway had about 1900 platform men in its employ. To-day the force numbers little more than 1500. The consequence is that even the regular runs have to be served by loyal men who frequently work extra hours and even give up part of their weekly day of rest. The following table of resignations and enlistments will interest United States operators who think they are already as badly off as possible:

	Re-signed	En-listed	Total
1914	243	77	320
1915	275	258	533
1916	1039	318	1357
1917	945	44	989

In all about 800 employees of all classifications volunteered before the passage of the Canadian conscription act. All of the platform men retain their seniority. This does not apply to the large number who resigned to go into munitions work, either because they were urged to do so for patriotic reasons or because the attractively high wage of $5 to $8 a day was offered in the early days of the war.

Toronto's electric railway employees were especially open to the recruiting urge, for that city became the most active military center of Canada. Moreover, the platform men were considered particularly fine material for soldiers because of their high average health, their hardiness toward outdoor life and their education in the value of time and discipline.



The Canadian Fighter's Message Back Home

The railway, of course, gave the recruiting officers every opportunity to address the men at the depots. On top of this, enlisted men who had tasted the joys of camp life would visit their old comrades in company with such forceful speakers that whole platoons of employees would enlist on the spot. Under the circumstances, a car-starter's life was not a very happy one.

At the beginning of the war the coming of many volunteers to be regimented at Toronto swelled the population to about 550,000. By the last quarter of 1914 and the first quarter of 1915, however, the exodus of soldiers from the city had caused such a tumble in receipts that there was no immediate shortage of employees until 1916, when the traffic began to pick up again.

By this time men were so scarce that the company had to relax its old standards of age and physique. In the earnest endeavor to get men it advertised heavily in the newspapers, frequently using quarter pages. While these advertisements did not draw all the men needed, they served as self-evident proof to the public that the Toronto Railway was doing its best to maintain the service. The poor average of applicants may be gaged from the figures in the above table, comparing applications and acceptances.

	Accepted for Trial	Completed Training
Aug. 1, 1914.		
To Dec. 31, 1915..................	752	544
To Dec. 31, 1916..................	2424	1384
Aug. 1, 1914	1491	1023

Up to July 25, 1918, the company had reinstated 122 employees returned from service and employed 238 ex-soldiers new to street railroading. As is the case with other Canadian roads, some of these men who have suffered gas or shell shock are inclined to be nervous, touchy and less amenable to discipline. The restlessness of some is also manifested by their coming back and forth to the job two or three times. Nevertheless, the management continues to prefer the war veteran, believing that much of this jumpiness will wear off in time.

Although the general average of the present trainmen is below that of pre-war days, their wages are about 33⅓ per cent higher. The old maximum was 27½ cents—and the present is 37 cents an hour. The new men are not paid during tutelage, but the platform instructors receive 25 cents a day bonus. Owing to unusual franchise conditions which have prevented expansion, the traffic on much of the Toronto system is considered too dense for one-man car operation. No amelioration has yet been secured in that direction.

The company intimated that women might be employed as a measure of relief. While at first no objection was made by union officials, just as soon as active measures were taken to put the plan into operation, the organized employees by resolution declared that they would not train or work with women employees, although it was the intention of the company to pay the women the same rate of wages as the men. To date nothing further has been done in this matter.

The man shortage is by no means confined to the platform men. The table on page 544 gives the record for the several departments:

	Aug. 15, 1914	April 30, 1917	Loss
Trainmen	1896	1523	374
Carhouses	158	120	38
Shops	767	567	200
Office	42	38	4
Total	2863	2247	616

About 30 per cent of the shop force was lost through enlistments, and the company obviously could not compete with munitions plants in holding on to the others. Indeed, so serious is the shortage of vigorous workers that the company could not build 100 new cars, although its franchise contains a clause calling for home manufacture. The municipality, it may be added, secured the company's release from this provision through the Legislature, but the railway has found it impossible to get the cars from either Canadian or American builders. The only immediate thing it has been able to do is to equip fifty cars for non-bulkhead prepayment operation by installing the peninsular style of conductor's stand and two two-leaf folding doors on the rear platform, the doors to be operated with National Pneumatic door engines. The usual Toronto car has one sliding door in the rear bulkhead and is inclosed on but one side of the rear platform.

HOW CANADA CARES FOR HER OWN

When the war opened the city of Toronto took out a $1,000 life insurance policy for each of its citizens who enlisted. Toronto Railway men who left for the front had certain charges for uniforms remitted and members of the Employees' Sick Benefit Association remained in good standing without paying dues.

As elsewhere in Canada, the Patriotic Fund, which cares for the dependents of soldiers, is now handled by taxation instead of voluntary contributions. As for Red Cross drives, these have been handled in a geographical way at Toronto. The company has not had any special control over the methods of solicitation other than to direct the Red Cross workers to the different divisions and facilitate the collection of pledges.

The Toronto Railway has been glad to furnish cars without charge for the transportation of groups of soldiers to and from theaters, parks, hospitals and sanitariums. For incapacitated soldiers it also waives the rule of rear entrance, allowing them to use the front platform to avoid jostling. It draws the line, however, at indiscriminate free carriage of the large number of soldiers always in Toronto. The comparatively short Toronto Civic Lines carry soldiers free, but the expense is a charge against the municipality as a whole instead of a few stockholders. To be consistent, the municipality ought to present the soldiers with tickets good on the Toronto Railway cars.

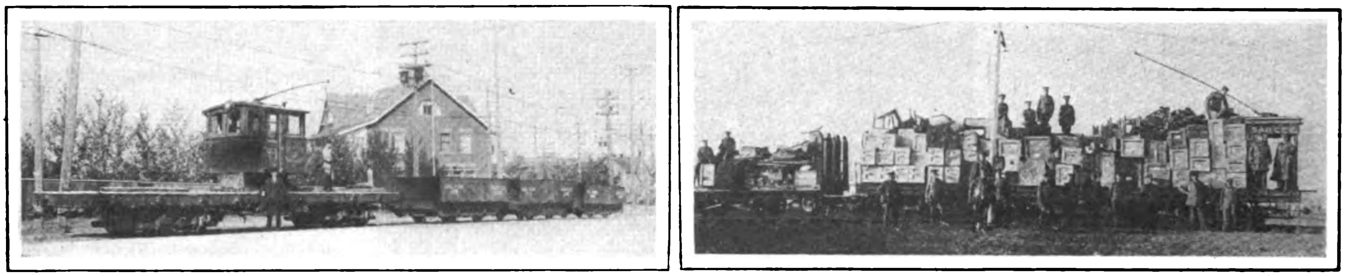
One-Man Operation Kept Calgary Out of Trouble

Fifty Men Have Enlisted But One-Man Operation Reduced the Number of Men by One Hundred and Thirty—Men Who Return Are More Restless

AT THE OPENING of the war, the Calgary (Alta.) Municipal Railway employed 270 men. Of this number about fifty have enlisted to date. Five have been killed in action, and nine have returned as incapacitated for war but not for car service. One of those who has passed to that greater "Over There" was a motorman, L. Webster, who rose from private to major before his gallant death.

The municipality has a standing offer to give its returned men any kind of work for which they are fitted. Only about half the returned men, however, care to go back to the old work. There are various reasons for this. One is that the men have become more adventurous or restless; another that they may be suffering from impaired nerves because of shell shock or gas. Should crippled men come back, light work will be found for them at a wage which will enable them to live comfortably when added to the government pension of $30 to $40 a month. Another outlet for the veterans is in farming, as they are entitled to a free grant of 160 acres. At this time, in fact, a number of men are taking free courses in agriculture under the auspices of Alberta's department of education.

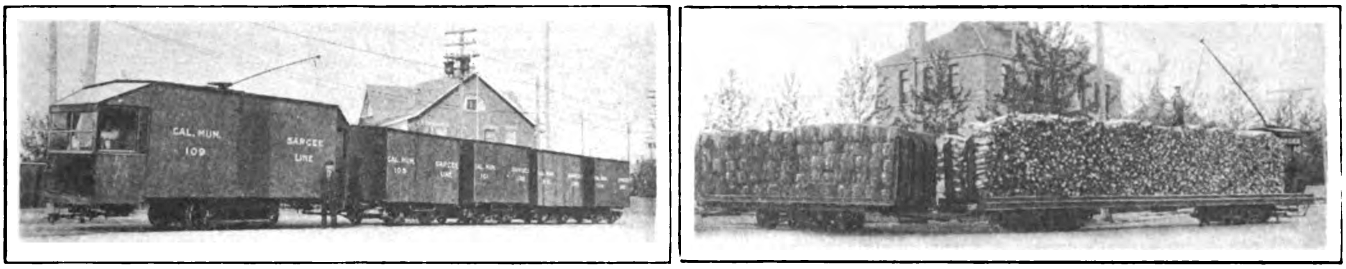
The Municipal Railway introduced one-man cars much faster than it lost men, so that it never suffered from shortage of man power. In fact, the war has taken only fifty men to date whereas the one-man operation has saved 130. Furthermore, few shopmen or other technical workmen were qualified for military service so that, if anything, maintenance is kept up more easily than before.



At Left—Calgary's Truckless Trailers, with Spring Supports Used to Give a Touch of Luxury. At Right—Camp Freight Rides Well on Cars Made of Rails and Ties

An example of the restlessness of some men, particularly while the war goes on, is a "Princess Pat" man. He returned after convalescing from a shot through a lung. He stayed at work for a month and then joined the Provincial mounted police for a month. He returned to the railway's service for a second trial of a month and thereafter tried jobs at Vancouver and Edmonton. Later Supt. McCauley found him wandering idle about Calgary. Now once more he has enlisted, this time in the Dental Corps!

The Municipal Railway did not have to assume any



At Left—Using Old Dump Car Trucks to Carry Bread and Milk to the Soldiers. At Right—Cordwood and Hay on Way to Camp Sarcee, Near Calgary

special burdens for the dependents of enlisted men, as the government provides certain allowances and these are supplemented by the various patriotic funds. For Christmas the Employees' Benefit Association sends a $5 package to every comrade in the service. Recently this association gave $275 to the widow of an enlisted man to pay funeral and other charges. In a Y.M.C.A. drive the men at home showed their patriotism by making an average contribution of $5.35.

While the Municipal Railway makes no contribution to its enlisted men as such, it grants to all soldiers convalescing at the three sanitariums in Calgary the privilege of riding into town free, so that they have to pay fare only when outward bound. There are about 200 men of this class at Calgary. Supt. McCauley has also recommended the free carriage of all amputed cases, of which there are now about seventy-five, and this is being done. Moreover, a 4-cent fare each way has been made to Camp Sarcee, 6 miles away. Formerly the rate was two fares each way.

EXTEMPORIZING EQUIPMENT TO CAMP SARCEE

In addition to regular upkeep, the Municipal Railway constructed a 3½-mile extension out to Camp Sarcee, and then had to extemporize freight equipment to haul building supplies, food and fuel thereto. The equipment thus built up from odds and ends is amusing to look at, but it fulfills its purpose—and what more is to be expected in war time with the nearest carbuilder 2500 miles distant and no cars to be had anyway?

What is most interesting about this equipment is that so much of it was made by using rails for longitudinal sills and wooden ties for cross-sills or platform sills, all borowed from the track department and ready to be returned almost as good as new when the need for these cars has passed! For example, there is the car which carries twenty cords of wood at a time. Each longitudinal sill is just a pair of 6-in. rails laid and fastened base to base; they were formerly drilled for guard rails. The cross-sills are every-day 6-in. ties held together with lengthened track-tie or through bolts. At the truck centers is a 12 in. x 12 in. timber with a reinforcing plate. Truss rods are not needed. The controller and motors were taken from a sprinkler car. The shop cost of construction of the improvised car was about $75.

Its trailer, carrying baled hay, is of somewhat lighter build, each side sill consisting of but one 6-in. rail. The truck under this car is just two pairs of wheel set, journal boxes and connections of oak. The vehicles, numbered 109, 103, 101, 100 and 102, constitute the bread and milk, meat and refreshment train for the camp. No. 109 is a motor car whose truck is built up with wooden framing. The others are trailers mounted on old dump car trucks, the bodies being set so that the weight comes in the center. This makes them flexible and swaying does no harm.

With this equipment the railway has had no trouble to meet all freight requirements of a camp whose population has been as high as 14,000 men.

On the Plains of Abraham

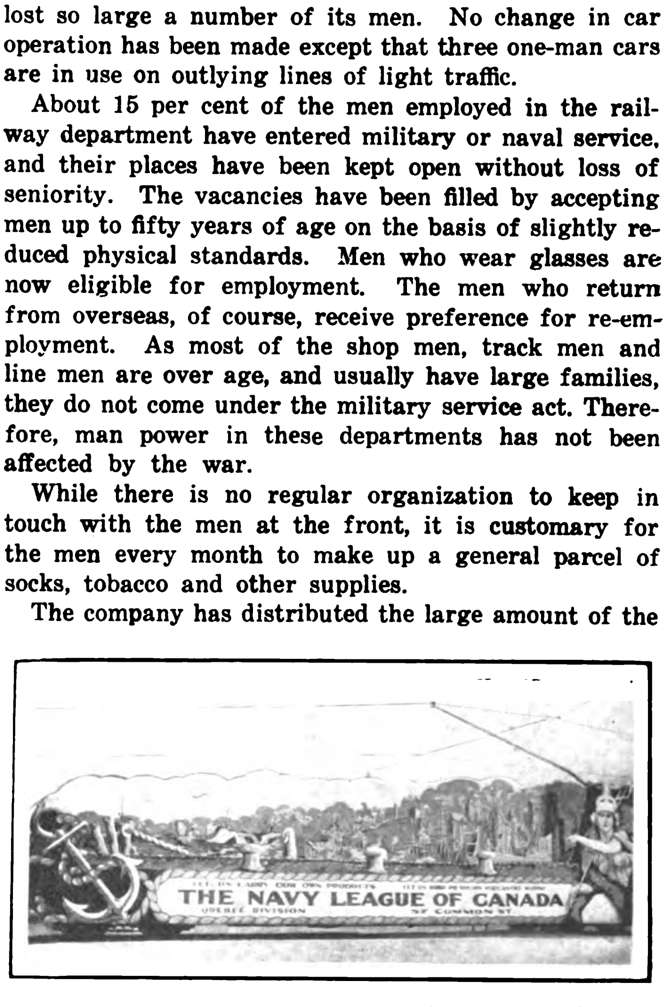
Quebec Utility Company Has Raised Its Age Limit for Employees to Fifty Years—The Average Cost of Supplies Has Risen 109 Per Cent

LIKE the other large systems of Canada, the Quebec Railway, Light, Heat & Power Company has been seriously affected by the war, although it has not lost so large a number of its men. No change in car operation has been made except that three one-man cars are in use on outlying lines of light traffic.

About 15 per cent of the men employed in the railway department have entered military or naval service, and their places have been kept open without loss of seniority. The vacancies have been filled by accepting men up to fifty years of age on the basis of slightly reduced physical standards. Men who wear glasses are now eligible for employment. The men who return from overseas, of course, receive preference for re-employment. As most of the shop men, track men and line men are over age, and usually have large families, they do not come under the military service act. Therefore, man power in these departments has not been affected by the war.

While there is no regular organization to keep in touch with the men at the front, it is customary for the men every month to make up a general parcel of socks, tobacco and other supplies.

The company has distributed the large amount of the



Helping the Navy League's Campaign in Montreal literature prepared by the Canadian government about Victory Loans, Red Cross drives and other war activities. Most of this literature is in French.

No special reduction in fares has been introduced for soldiers and sailors, but the company supplies special cars to carry parties of these men from camps and other places to all functions gotten up for them.

The company has increased its rate of fare by abolishing cut-rate tickets. This has decreased passenger travel by 5 per cent, but the revenue is 10 per cent above that of the same period last year. This compares with a 20 per cent increase in wages of platform men and an average increase of 109 per cent in the cost of fuel and other materials. New cars have not been bought or built and much maintenance has been deferred because of the high cost and scarcity of supplies.

Winnipeg Has Lost One-third of Its Men

Six Hundred Men Called to the Colors—No Women Employed but Age Limits Abolished—Much Free and Reduced Rate Riding for Soldiers

ON THE Winnipeg (Man.) Electric Railway about 600 men have enlisted out of an average of 1800 employees of all departments. In addition, there have been such large defections to other work—particularly to the wheat fields in seeding and harvest time—that out of 1000 trainmen on July 1, 700 had been employed only for eight or nine months. The difficulty of maintaining 100 per cent service is obvious. Except for eight or ten stub lines, the company operates no one-man cars, and it does not plan to employ women.

One necessary result of the shortage has been to eliminate the old arbitrary limits of weight, height and age. For example, the fact that a man is more than forty-five years of age does not debar him from service if his health is sound and his mind active. Returned soldiers who are not too severely incapacitated for car service are also put on, and, if crippled, receive light work, such as switch tending. There is even a one-legged motorman!

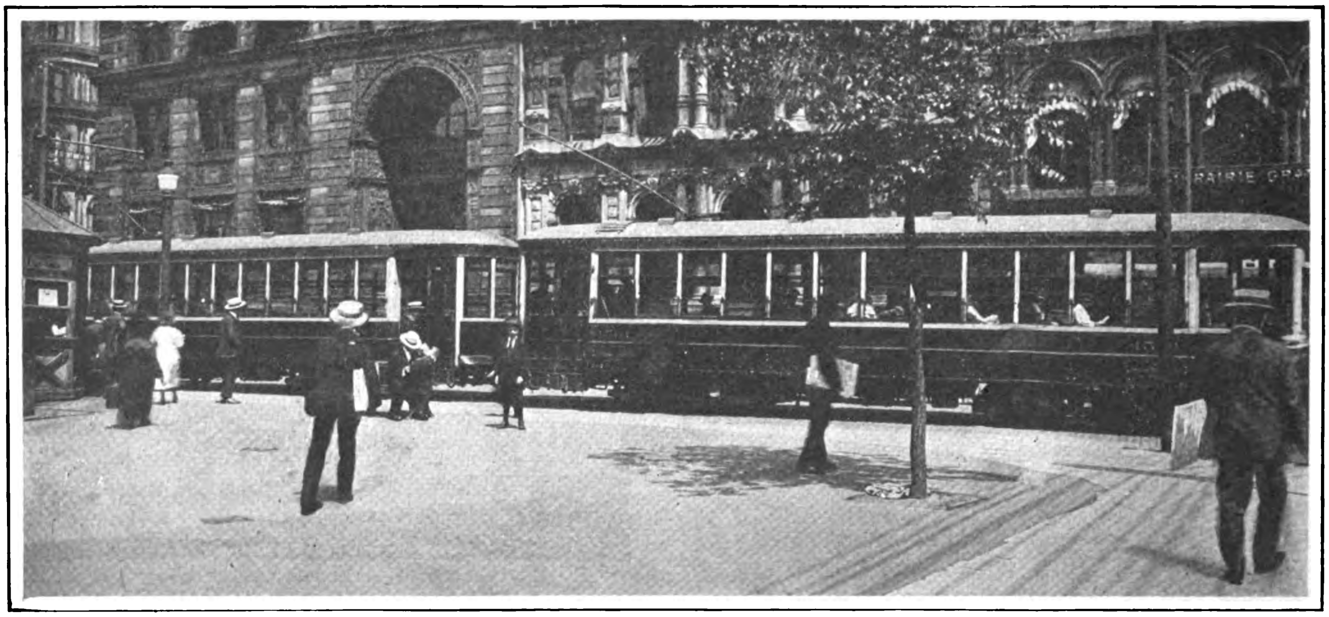
An unfortunate fact is that some of the old-time railway men, through shell shock or other causes, are too nervous to work on the platform or under conditions where noise is common.

A portion of the harvest truants also come back when the weather and work in Winnipeg are more agreeable than on the prairies or, in some cases, when the novelty of outdoor life has worn off and the men want to get back to their people.

Every railway employee who enters the national service retains his seniority. If he returns, he not only is entitled to his relative position but actually receives the cumulative difference between any old and new wages for men in his classification. If he is unsuited for the old work, he gets the top pay customary in the job which he can do.

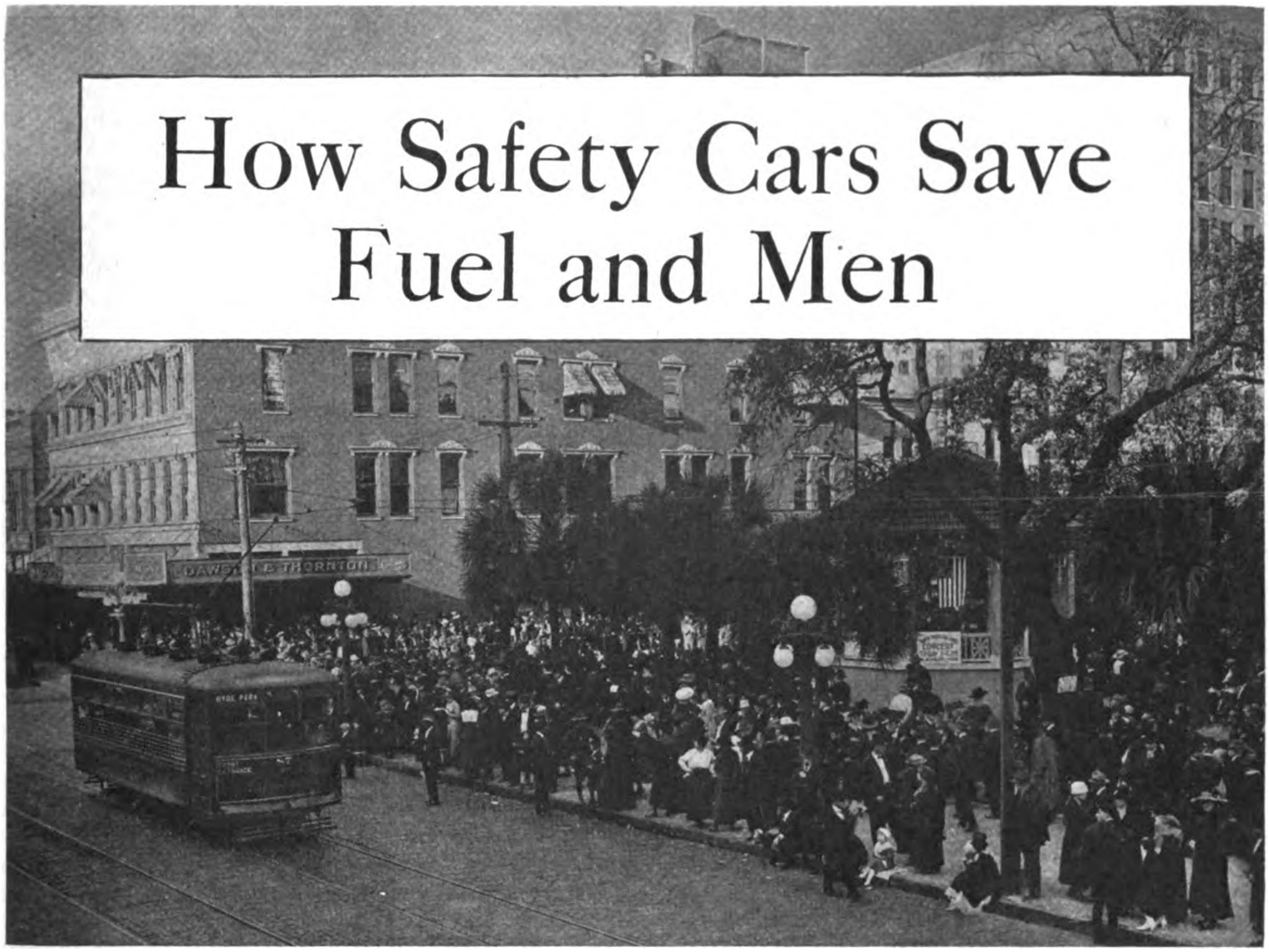
The company and its men have co-operated most effectively in raising war funds of one kind or another. In the 1918 Red Cross drive, they gave $7,200 on the basis of $600 a month. In this case, the trainmen pledged themselves to give 25 cents a month, other employees gave in proportion to their means and the remainder was given by the company. Moreover, at the beginning of the war in 1914, before the Patriotic Fund for dependants of Canadian soldiers was taken over by the government on a taxation basis, the company and its employees co-operated in a similar manner. For two years the men paid $600 a month and the company $500 a month. The war tax, which has supplanted these contributions, now equals $10,000 a year for the company alone.

The Winnipeg Electric Railway has been most liberal to men in military uniform. Any soldier has the privilege of riding on the workman's eight-for-25-cent ticket at any hour of the day. Thousands of rides are given free to returned wounded soldiers attached to the three large hospitals at Winnipeg, and whole carloads of troops are transported to and from entertainments and training grounds without charge.



Montreal Motor-Car Train, at Place d'Armes, Operating to Munition Works

How Safety Cars Save Fuel and Men



Experiences in Twelve Cities From 20,000 to 400,000 in Population Indicate Reduction in Fuel Consumption and Platform Employees, Together With Increase in Patronage—The Scope of One-Man Car in Large Cities Is Widening

DATA obtained in twelve cities ranging in population from 400,000 down to 20,000 show that the introduction of the one-man car with automatic safety appliances has made it possible to operate at great reductions in fuel requirements and platform personnel. Furthermore, an increase in service invariably has been followed by an increase in patronage often greater in percentage than the increase in service, due partly to the elimination of the jitney and partly to the creation of traffic.

It is also shown that the scope of the one-man car as regards service in large cities or on busy track generally is much greater than has previously been considered possible, this being due in large measure to the low step, the high rates of acceleration and braking and also to the decreased number of stops per mile which naturally follow the introduction of smaller cars on shorter headways. These factors have made it possible to secure increased schedule speed despite a sometimes slower rate of interchange per passenger.

Included among the following articles on actual installations is an analysis by John A. Beeler pointing out the possibilities of the safety car in a specific case where operating costs under the old methods have reached a prohibitive figure. In this analysis Mr. Beeler indicates that rerouting, through permitting the overlapping of the cars of various lines within the downtown walking zone, is in this particular example equivalent to shortening the headways of the individual lines. He further concludes that the safety type of one-man car is a good investment on the basis of lower costs alone.

Fort Worth Still Blazes the Trail

Five Lines now Operated With Safety Cars, One a Through Line in Congested Streets—Enormous Increase in Travel, Due to Camp Bowie, Readily Absorbed—Thirty Cars in Use and More Ordered

FORT WORTH has justly become the classic for safety-car operation. From the time, Nov. 1, 1916, that the Summit Avenue line went into operation, hundreds of railway men have gone to Fort Worth for salvation as Mahommedans go to Mecca!

After the ELECTRIC RAILWAY JOURNAL in the Sept. 22, 1917, issue had published its eagerly-read story of the inauguration of this service, there were still many anxious skeptics throughout the land asking tremulously: Will it last? Will the public keep on liking the cars? Will accidents be less? Will it be possible to run these cars, mixed in with big cars, on downtown streets?

What better answer to these questions can there be than the simple statement that since Oct. 1, 1917, there are thirty cars in use in Fort Worth instead of ten; that there are five lines in operation instead of one; that schedule speeds have been maintained under the most arduous conditions, and that the limit to the safety car is set only by the ability of the Northern Texas Traction Company to pay for them and of the car builder to deliver them. In fact, ten more cars are on order now, and plans are in hand to equip fifteen single-truck and eighteen double-truck peak-service cars with the outfits of the Safety Car Devices Company.

ENCHO
KINOS
FRONT ENTRANCE
521
SAFETY CAR
A. HABERZ

On One of Fort Worth's Safety-Car Routes—East Front Street

In the Sept. 22, 1917, story of the Summit Avenue line, the following changes from the old to the new practices were noted: Headway between 8.30 a.m. and 3.30 p.m. and 8 p.m. to midnight cut from fifteen to ten minutes; headway between 7 a.m. and 8.30 a.m. and 3.30 to 8 p.m. cut from seven and one-half to five minutes; maximum number of cars raised from six to eight; schedule speed raised from 8.9 m.p.h. to 10 m.p.h., or 12.5 per cent increase; round trip for 6.64-mile run cut from forty-five to forty minutes.

The foregoing holds true to-day except for slight cuts in the rush-hour service, amounting to 2700 car-miles per annum.

It was also noted in the Sept. 22 article of last year that the traffic for the three months November, 1917—February, 1918, showed an increase of 18.4 per cent over November, 1916—February, 1917, with a 26.4 per cent increase in car-hours and 34.1 per cent increase in car-miles.

To gain a still better conception of the traffic absorption capacity of the one-man safety car, consider also the figures in Table I.

TABLE I—STATISTICS FOR SUMMIT AVENUE LINE DURING APRIL FOR THREE YEARS

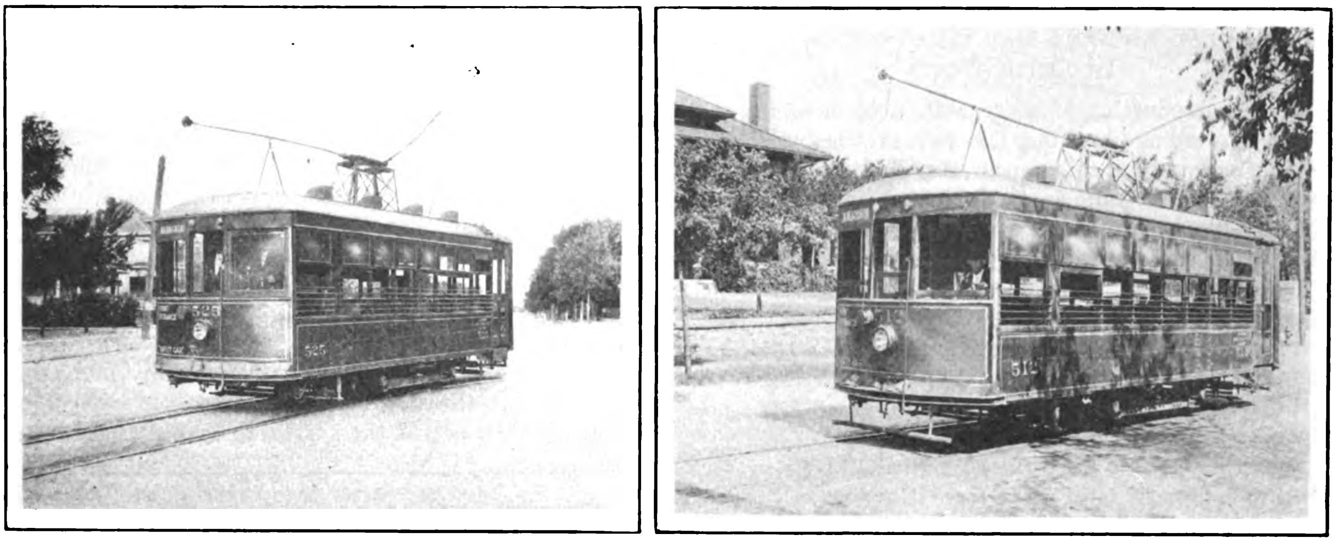
	1918	1917	1916
Passengers carried, exclusive of transfers	147,089	116,803	90,548
Transfer passengers	47,057	31,583	23,705
Car-miles	31,782	34,431	22,148
Receipts per car-mile, cents	22.3	16.2	19.4

It will be observed that the earnings per car-mile with the safety car are now far ahead of the 1916 record of the big cars.

The number of men employed on this line is still twelve owing to the change from swing to straight plus tripper runs hereinafter described. The increase in daily car-hours over the original operation is from seventy-five to 108, but the actual man-hours are as 150 to 108.

We will now take leave of the Summit Avenue line to see what its followers are doing.

East Front-Samuels Line. This is a through-routed line 6.06 miles round trip, with eighteen blocks on Main Street and twenty-four blocks in all on busy streets.



Fort Worth's Safety Cars Also Serve Fine Residential Sections

The original headway of fifteen minutes has been retained. The running time is also, as before, forty-five minutes. Any increase in schedule speed for this line would be extremely difficult because of the congested section through which it passes and because many of the riders are strangers from the railroad station who are laden with baggage.

The increased earnings of this line, like those of the rest of Fort Worth, are not ascribed to the use of safety cars, especially as there was no increase in service. Therefore, in studying the traffic figures for this and other lines it should be remembered that the earnings of the Fort Worth lines as a whole in April, 1918, were 26.8 cents per car-mile compared with 21.4 cents per car-mile in April, 1917. The big thing to take into consideration is the fact that the safety car unhesitatingly has met a much larger increase in traffic than was looked for at the time these cars were ordered. The figures for the three cars in operation on the East Front-Samuels line as compared with three large cars in use the year before are given in Table II.

Owing to the change made on May 12, 1918, from split runs to straight runs it is not possible to compare man-power conditions on a direct basis. At present as many runs as possible are made nine hours straight, but any man who desires may work several hours longer in tripper service on any line. There are left a few split runs where the men come on to work from 5.30 to 9 a.m., then leave off for a sort of siesta until 3 or 4 p.m.

Because of this change, only the man-hours can be compared to gain any idea of saving in labor. A direct reduction in man power is observed on the East Front-Samuels line because it is not confused by tripper service, the reduction in men being from twelve to six and the car-hours (with one operator per car) rising from 53.5 to 56.25. This is really 107 man-hours against 56.25 man-hours.

Henderson-West Weatherford Line. This first runs over downtown track to serve a residental section, like the Summit Avenue line. The round trip is 6.07 miles made in fifty minutes. It is difficult to compare this line with its predecessor because the West Weatherford section was formerly a part of the Third Ward line and was added to Henderson Street with the opening of safety-car service. This change added 1½ miles to the round-trip mileage. The headway for the greater part of the day is still ten minutes, but the peak service morning and evening has been increased to a five-minute headway. Thus three cars do the regular work and three are added for the heavy hours. The schedule speed of 9.9 m.p.h. is the same as before. A comparison of car-mile receipts is given in Table II.

While fourteen trainmen are in service throughout the day compared with twelve, there is no real increase in personnel, for all the trippers or nearly all are regular men who have made their straight nine-hour run elsewhere. The daily man-hours for April, 1918, compared with April, 1917, decreased from 142 to 121. It must also be borne in mind that this line was lengthened so that five cars instead of four are required to make the ten-minute headway.

TABLE II—STATISTICAL COMPARISON FOR VARIOUS LINES IN FORT WORTH FOR APRIL, 1918 AND 1917

Name of Line	East Front-Samuels		Henderson-West Weatherford		St. Louis Avenue		Forest Park	
	1918	1917	1918	1917	1918	1917	1918	1917
Fare passengers	73,068	48,604	139,697	77,559	87,340	62,177	46,664	34,635
Transfer passengers	16,357	10,285	20,802	9,161	13,489	9,583	10,852	9,599
Car-miles	13,210	13,068	26,162	17,506	15,454	13,827	11,283	10,559
Receipts per car-mile, cents	25.2	16.9	25.8	21.1	26.8	20.8	19.9	15.7

St. Louis Avenue Line. This line first runs over busy track and then through a residential section. Its round-trip length is 5.1 miles, made in thirty-six minutes, as before, giving a schedule speed of 10.2 m.p.h. The service throughout the day has been kept on a twelve-minute headway; the peak service is doubled. The operating figures are given in Table II.

Instead of ten men on this line there are now twelve, but the daily man-hours were 110 in 1917 and are fifty-six now.

Forest Park Line. This line overlaps the Summit Avenue line for 2 miles on its way to Forest Park and the Texas Christian University. The round-trip is 9.05 miles long and is made in one hour, as before. Two cars are run on a thirty-minute headway as previously. Following the custom of the past this line has occasional extra service with double-truck cars when necessary, as for concert crowds.

The Forest Park line has four men instead of six and the man-hours for the months in question were seventy-six in 1917 and thirty-nine in 1918.

In view of the detailed study made of the Summit Avenue line, the management did not consider it necessary to make similar tests of energy consumption, loading speeds, etc. The figures and other data presented should cast illumination enough.

SOME OPERATING AND MAINTENANCE EXPERIENCES IN FORTH WORTH

In the introduction of a car with a much higher rate of acceleration and braking, it is natural to expect a temporary increase in collisions. However, the new cars have caused no noticeable increase in this respect. There is also this difference: While more damage may be done to the car than in "battleship" operation less is done to the other vehicle. It is cheaper to repair a car than to pay claims for heavy damages! Then, too, the men naturally take less chances with these cars than with bigger ones.

As to platform and step accidents, these have been practically abolished.

The first ten cars have Hess-Bright ball-bearing journals; the twenty later cars have Gurney ball-bearing journals in addition to the Gurney ball bearings on the armatures of the motors, all of which are GE-258. The journals were formerly lubricated every three months, but for absolute safety these are now lubricated monthly. The lubricant is Pierce-Fordyce cup grease No. 2 in summer and No. 3 in winter. It is squirted in with a gun. There have been some broken raceways and a few minor troubles with the journal bearings, but this is ascribed more to lack of accurate fitting into the trucks than to the ball bearings.

The motors themselves have done all that was expected of them. The K-10 controller is on the first ten cars because the K-63-B used on the others could not be delivered in time. The K-10 weighs 212 lb. and the K-63-B, 140 lb. The latter, according to the shopmen, has better wearing fingers than the K-10. Furthermore, the deadman's handle of the K-63-B cannot be slugged with a piece of wood by negligent motormen.

A slight change in the type of piston packing in the circuit-breaker cylinder has resulted in the lower maintenance cost of that item.

Too Many Bosses Would Kill Municipal Ownership

A NUMBER of residents of Calgary, Alta., contend that the City Council should not have withdrawn the eight-for-25-cent tickets in the evening from the Calgary Municipal Railway without having first taken a vote of the people.

In commenting upon this contention, the *Canadian Railway and Marine World* says: "If every matter affecting the operation of a municipal public utility had to be submitted to a vote of the people—which would be the outcome if the claim of the residents referred to were admitted—municipal ownership would not have the slightest chance of success anywhere."

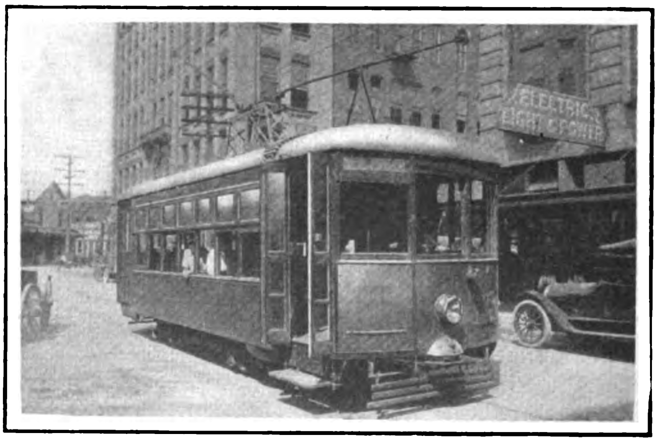
Beaumont Converts Cars to the Safety Type

After Two Years' Operation of Hand-Brake Cars in This Noted Texas Oil City, Safety Devices Are Added and Service Improved

ON JULY 10, 1918, the Beaumont (Tex.) Traction Company put into operation the first of fourteen safety cars. These cars were not strangers to the 35,000 inhabitants of Beaumont, as one-half the cars had been operating for two years and the other half for one year as rear-entrance, hand-brake Birney cars with conductors. It was not until this summer, however, that they were equipped by the Safety Car Devices Company.

Up to this time Peacock geared brakes had been used exclusively, with gooseneck handles on seven cars and with vertical wheels on the other seven. On several occasions the cars were operated successfully as one-man cars, owing to the shortage of men.

Through the use of the safety devices and consequent one-man operation, it will be possible to give increased service on the Calder-College, Royal and Park Lines, which will eventually be entirely equipped with safety cars. Double-truck cars will be continued in operation on the Sabine-Magnolia line, but it is intended that during the rush-hour periods the safety car will be put in operation.



Beaumont Has Added Electro-Pneumatic Safety Equipment to These One-Man Cars

The first lot of the converted cars has Westinghouse 328 motors with K-36 control; and the second, GE-258 ball-bearing motors with K-10 control. With the safety devices added to these fourteen cars and the additional five new cars of the safety type, which are promised for October delivery, the company feels that its needs for the time being will be well taken care of.

Owing to the lack of equipment and the shortage of labor, the company's program has been slowed down. By the middle of August, however, it had four safety cars in operation on the Calder-College line, and two more were ready to be placed in operation.

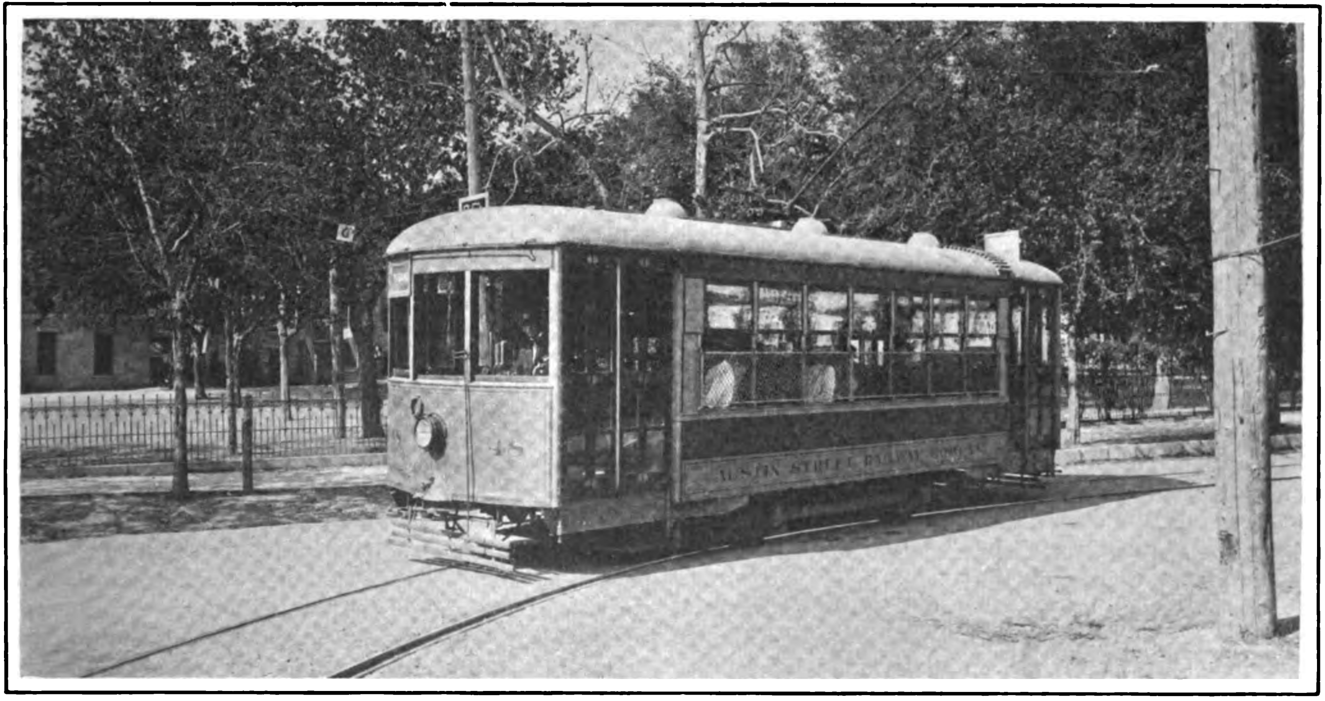
The schedule on the Calder-College line has not been changed since the introduction of the safety cars, but it has been better maintained with the new equipment.

There will be a decrease of ten men on the three lines on which safety cars will be operated, on the basis of the present schedule. The men seem to like the cars and are anxious to break in on them, and the company has received no unfavorable comments from the public.

Fighting the Private Automobile at Austin

Jitneys Not a Factor, but Traffic Carried by Private Automobiles Equals Railway Load—One-Man Operation Absolutely Necessary to Keep Up Service

ALTHOUGH Austin, capital of Texas, has but 40,000 people, it has some streets of sufficient width to solve the congestion problems of a world city. In other words, there are no physical limitations to the use of automobiles. Ten years ago there were about 100 machines in Austin, five years ago, 2000, and now this city of 40,000 people has 6000 automobiles. It will therefore be clear why these statistics of railway passengers carried in April of each year show so little increase: 1915, 458,602; 1916, 538,198; 1917, 523,036; 1918, 541,089. The figures for July, 1918, are a little more encouraging as they include the period of operation with one-man cars. They follow: 1915, 531,246; 1916, 592,473; 1917, 568,563; 1918, 636,447.



At Austin This Safety Car Has Made the Continuance of Service Possible

Seven cars with safety equipment are operated in Austin. Three of these were bought in 1916 and the rest delivered in August, 1917. These cars are double-ended with platforms 12 in. longer than the Birney car, an increase which permits three more seated passengers in the rear vestibule and two more in the front. The first three cars were operated by two men with manual control until the fall of 1917, as the question of one-man operation was then pending before the municipality. Then these cars, like the four delivered in August, were equipped with the apparatus of the Safety Car Devices Company for one-man operation. These seven cars have double doors on each side, but in future cars there will be but one opening per vestibule. In general, these cars replaced types weighing 5 tons more each, but as seventeen other cars are operated in Austin from the same plant the company has no exact data to show the power saving due to the new cars.

These safety cars are run on four lines. Rio Grande, 2 miles long; S. M. A. (School of Military Aeronautics), 2 miles; South Austin, 2½ miles; Duval, 2 miles. A six-minute service is maintained all day long from the Colorado River along the main business streets and through the heart of the city as far as ½ mile north of the University of Texas, a total distance of 2 miles. During the morning and evening peaks, the headway is three minutes in this section. The safety cars actually make the one-way trip in five minutes less than before, thus giving the operators longer layovers. Because of the criss-cross or paralleling layout of the lines the company believed that it would not be good policy to increase the service unless it could do so on all lines. Of the lines named, the S. M. A. serves the only war institution within Austin, the School of Military Aeronautics, a ground school of the Signal Corps. It has 1500 students.

The pickings for any jitneys in Austin would be small indeed after obeying the ordinance, which calls for bonded liability, schedules and routes.

Fares in Austin are 5 cents cash; 4½ cents for tickets sold in stores at $2.25 a book, and school tickets, 2½ cents. Cash is counted in Johnson fare boxes, and all paper is registered with an International register.

As many regulars are employed as ever, although the extra list has been cut from twenty to eight or nine. Swing runs have just been abolished in favor of straight nine-hour runs with the privilege of taking out trippers.

This appears to be very satisfactory, for many men who stop at 3 p.m. or about that time are glad to work the trippers after their regular run.

The change from two-men to one-man operation has enabled the company to break even on platform expenses, for the nine-hour wages of all men are equivalent to their twelve-hour earnings before the war. In addition, the operators of safety cars get a bonus of 5 cents an hour. These increases, combined with the plan of straight runs, have done much to keep good men in the service.

Just to prove that operating costs are high in any event the following July operating ratios are quoted; 1915, 62 per cent; 1916, 61 per cent (general economies not due to one-man cars); 1917, 66 per cent; 1918, 56 per cent. The company hopes to run one-man cars eventually on all lines except those with heavy colored travel.

Over the Way from Mexico

Introduction of Safety Cars at El Paso Followed by 35 to 40 Per Cent Increased Travel and 15 Per Cent Greater Service — An Ideal City for Safety Car Operation Throughout

SEVENTY-FIVE THOUSAND people live at El Paso, Tex., in normal times; and as many as 100,000 have been served by the El Paso Electric Railway at the height of the encampment period. Therefore El Paso is not a small town for which any kind of electric railroading will do. It demands and gets good service.

But for several years past the management had realized that with the competition of the automobile and constantly rising costs of operation, the accepted heavy car with a man on each platform would no longer do. It surveyed the situation and decided that the time had come for light-weight, one-man car operation provided the cars eliminated heavy manual labor and proved as fast or faster than the existing cars.

Thus it came about that ten safety cars were ordered. The first four went into service on Feb. 14, 1918, with such instantaneous success that the company quickly asked for ten more and ordered safety equipments for the remodeling of twelve of the present cars. With these thirty-two cars in operation, about three-quarters of El Paso's mileage will be given in this modern way. Financial and manufacturing resources are the two controlling factors in making El Paso a 100 per cent safety-car city. "Potter's Jitneys," as they were named by the newspapers for H. S. Potter, manager, have come to stay.

THE PIONEER LINES

The double-tracked Washington Park line, 6.5 miles round trip, was the first to get the new service beginning Feb. 14. This was followed within a few days by the Sunset and Depot line, 3.33 miles round trip, and the Mesa line, 4.4 miles round trip. The last is merely a single-car proposition with a thirty-minute headway through a thinly-populated territory.

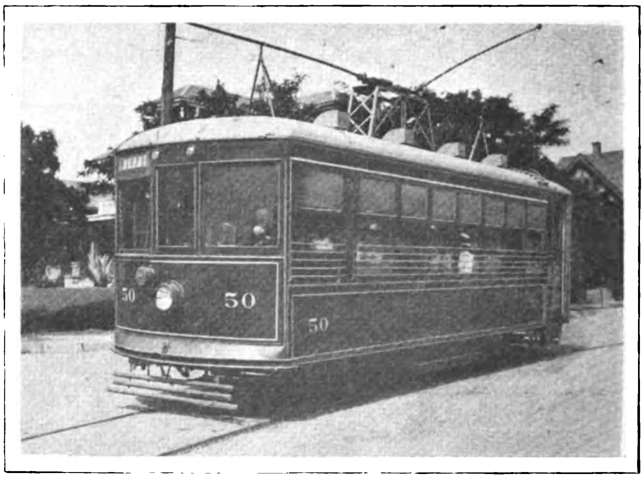
The Washington Park line had four regular cars, with two trippers afternoon and morning. Rush headways were seven and one-half minutes; ordinary, ten minutes. Now there are five safety cars in regular service, with one morning and evening tripper, and the respective headways are six and one-half and seven and one-half minutes. These improvements also were made possible by raising the schedule speed—and maintaining the raise—from 9.25 to 10.11 m.p.h.

While the Sunset and Depot service was just a replacement of two cars for two, the greater schedule speed of the new cars permitted the headway to be cut from fifteen minutes to twelve minutes.

CAR TRAVEL UP—JITNEY TRAVEL DOWN

Meeting the jitney has been an exceptionally hard task in El Paso because of the many Mexican residents and the Mexican "jitneurs." The former like the aristocratic feeling of riding in an automobile, be it ever so dilapidated; the latter are satisfied to earn $1.50 a day, for their demands on life in the way of food, raiment and lodging are modest. Nevertheless, even these conditions are being overcome by the increased and speedier service now given. From the very beginning, the jitneys on the Washington Park line lost ground. From fifty the number was reduced to thirty-five by Aug. 1. The three jitneys on the Sunset line also suffered a quick drop in revenue. In short, the management is satisfied that the service has done much to discourage the jitneys.

The safety car had the immediate effect of attracting the American travel in the case of the Washington Park line and of turning walkers into riders on the shorter Sunset line.



35 Per Cent Increased Travel—15 Per Cent Greater Service Is the Safety Car's Record in El Paso

Coming down to figures, the company finds that a 15 per cent increase in service at the faster speeds named has increased travel on the Washington Park line by 35 per cent and on the Sunset line by 40 per cent as of May 31. An interesting point about the Washington Park line is that the earnings per car-mile in April, 1918, 15.7 cents, were exactly the figure obtained with the larger cars in April, 1917.

The old single-truck car of equivalent capacity took 1.8 kw.-hr. per car-mile; the new cars of lighter weight and favored by the use of anti-friction bearings and higher rates of acceleration take but 1 kw-hr. per car-mile.

The saving in man-power has been appreciable. Washington Park has six men for ten; Sunset, four men for eight, and Mesa two men for four. This makes the total for these three lines twelve men instead of twenty-two.

Everyone familiar with the shifting of platform men even in normal times knows that to absorb a reduction like this without discharging a man, one need only stop hiring. In selecting men for this service the management made a hit by allowing the men to apply in the order of seniority. Those who proved incapable were allowed to find this out largely for themselves, thus avoiding friction. As a matter of fact, however, the cars are very popular with the men. There is every reason to believe that the higher-paid men who have these cars will be far less likely to change than in the past.

Safety Cars Lighten Tacoma's Burden

Loss of One-third of Tacoma Platform Effectives Because of Defection to Shipyards Made Good in Part by These Cars, Which Are Also Standing Up Under the Punishment of Big Loads on Heavy Grades

EVER since the spring of 1918 the problem of the Tacoma Railway & Power Company has been not "How many cars shall we run?" but "Where shall we get the men to run them?" Under the circumstances the presence of thirty-two new safety cars installed during the year has proved a real help, although the man shortage has made it necessary for these cars to render greater service than was ever intended. Loads of eighty people, some on seats and some on sills, but all determined to get there, have been a common feature in this mountain-grade town. Yet the equipment has stood up wonderfully with nothing worse than the failure of a single cross-channel. The great difference between light load, 13,000 lb. and maximum load, 24,200 lb. (13,000 + 80 × 140) has also made it necessary to raise the braking power to 120 per cent of load with car empty.

Pending the receipt of new cars the company had equipped six cars in 1917 with the safety combination. These cars are much heavier and less attractive to the men and the public. Therefore they have been withdrawn until such time as it is possible to use them for tripper service. Since June, 1918, men who operate safety cars have been receiving a 4-cent instead of a 2-cent bonus. The company tries to keep the same men on these cars, but on account of the rapid turn-over it has been unable to do so to its entire satisfaction.

The safety cars are used on four lines, all of which except the one on Tacoma Avenue come downtown. On Tacoma Avenue a one-man car replaced an old single-truck car on a forty-minute headway. This is the pioneer one-man car line and is too unimportant for the presentation of traffic details. The accompanying report gives in tabular form the results on the three other lines.

It will be noted that the schedule speeds have been lowered. This is exceptional and is simply indicative of the desire to play safe in a city full of heavy grades.

The company's experience shows that there has been no material change in the accident situation through the use of the one-man safety cars. There is no record of an instance where a patron has figured in a step accident—namely, getting on or off a car while it is in motion. This undoubtedly is due to the fact that the operator has control of the entrance, and doors are kept closed and steps folded up while the car is in motion.

SAFETY-CAR RESULTS SECURED IN TACOMA

Portland Avenue Line Began Safety-car Service on Dec. 7, 1917

Headway changed from fifteen and twenty minutes to ten, twelve and fifteen minutes.
Average speed reduced from 9.3 to 8.1 m.p.h.
Number of operatives lowered from twelve to nine.
Total passengers, including transfers, May, 1917, 97,241; car-miles, 16,370.
Total passengers, including transfers, May, 1918, 122,713; car-miles, 18,892.
Passenger increase, 26.2 per cent; mileage increase, 15.4 per cent.
Total passengers, including transfers, June, 1917, 95,815; car-miles, 15,856.
Total passengers, including transfers, June, 1918, 128,766; car-miles, 18,974.
Passenger increase, 35 per cent; mileage increase, 18.5 per cent.

Sixth Avenue Line Began Jan. 28, 1918

Headway changed from six and ten minutes to three and a half and five and a half minutes.
Average speed reduced from 8.5 to 8 m.p.h.
Number of operatives reduced from twenty-six to twenty-five. (This small reduction was due to the addition of so many cars to the schedule.)
Passengers carried, including transfers, May, 1917, 194,715; car-miles, 24,295.
Total passengers, including transfers, May, 1918, 301,719; car-miles, 41,222.
Passenger increase, 55 per cent; mileage increase, 69.6 per cent.
Total passengers, including transfers, June, 1917, 197,560; car-miles, 23,515.
Total passengers, including transfers, June, 1918, 306,513; car-miles 39,303.
Passenger increase, 55.3 per cent; mileage increase, 67.1 per cent.

Old Tacoma Line Began Nov. 19, 1917

Headway reduced from ten and twelve minutes to eight and ten minutes.
Average speed reduced from 8.3 to 7.5 m.p.h.
Operatives reduced from twelve to eight.
Total passengers, including transfers, May, 1917, 83,082; car-miles, 10,966.
Total passengers, including transfers, May, 1918, 106,591; car-miles, 15,000.
Passenger increase, 28.3 per cent; mileage increase, 36.8 per cent.
Total passengers, including transfers, June, 1917, 84,700; car-miles, 14,909.
Total passengers, including transfers, June, 1918, 101,529; car-miles, 13,746.
Passenger increase, 19.9 per cent; mileage decrease, 1.09 per cent.

Transporting Soldier Visitors from Camp Lewis Played No Mean Part in Tacoma's Success with the Safety Car

Chicago Elevated Railways in War

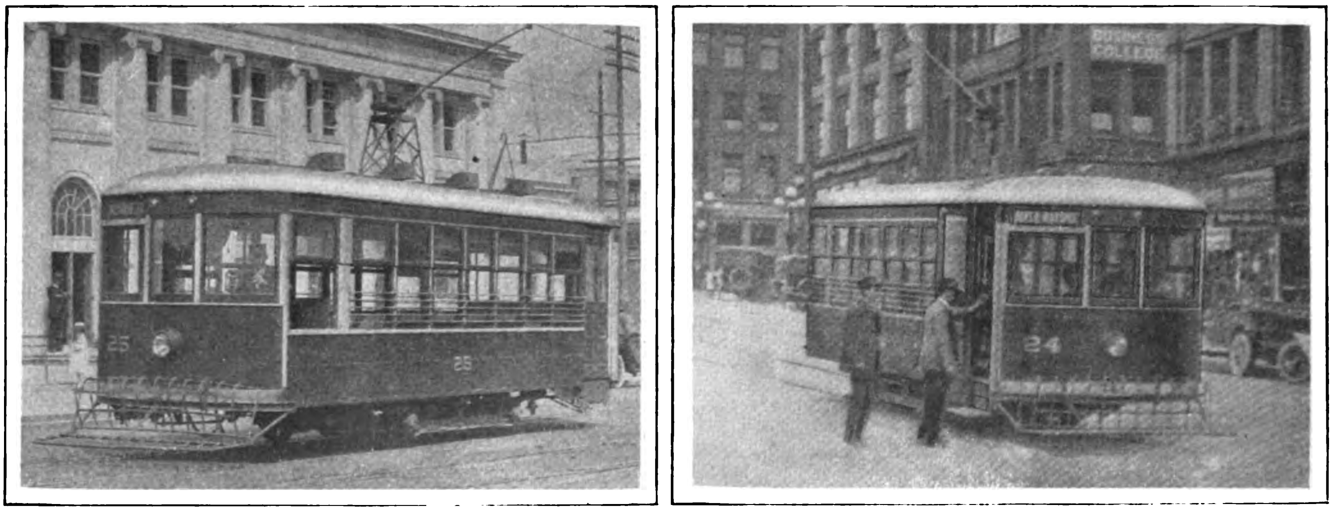
THE war score of the Chicago (Ill.) Elevated Railways, as recently compiled, was 609 employees in the United States Army and Navy. This total included four ensigns in the Navy and one major, five captains, five lieutenants, eleven sergeants and eight corporals. For the first three Liberty Loans the company had 8463 subscriptions among its employees for a total of $588,850 of bonds.

Everett and Bellingham Have 100 Per Cent Safety Operation

In Both Cities the Jitney Has Disappeared and Car-Riding Is as Good as or Better Than Ever—Unquestioned Proof That With Good Service at Safety-Car Costs the Electric Railway Is Without a Peer

IN SOME CITIES the effect of increased service with the safety car is obscured by war prosperity. This is not the case at Everett, Wash., which was practically at a standstill up to the spring of this year, when the United States government began to make heavy purchases of lumber. Therefore, any figures on Everett are exceptionally interesting. The figures apply to the city as a whole instead of individual lines, for with the coming of the new-type cars considerable rerouting was done.

As described in the Sept. 22, 1917, issue of the ELECTRIC RAILWAY JOURNAL, the Puget Sound International Railway & Power Company in Everett began operation of one-man cars by equiping existing cars of single-truck type, weighing 22,000 lb., with air brakes and by using double-truck cars weighing from 48,000 to 50,000 lb. Of these cars, only four are in use to-day, all on the Colby line. Three more are held for heavy traffic conditions.



Short-Headway Safety Cars in Everett Are Creating Short-Haul Traffic

Most of the present safety service is carried out with fourteen Birney cars, two others of Birney type being operated at Ballard. The company is also planning to build three bodies of this design and mount them on existing 21-E trucks. The line-up of cars at Everett is now as follows:

Smelter, four cars, ten instead of fifteen-minute service.

River-Bay Side, five cars, five instead of ten-minute service.

Colby-Rucker, four cars, eight instead of ten-minute service.

Lowell-Grand, three cars, fifteen instead of twenty-minute service.

One-man operation with two of the air-braked cars began in March, 1915; two more were added in October, 1915. The first four safety cars went on in October, 1916. Some of the effects of the change to 100 per cent safety-car operation in a city of 25,000 people are shown in the accompanying table. The increases of from 37 to 43 per cent in the number of cash passengers carried in a town of stationary population speak for themselves. The jitney, regardless of ordinance or no ordinance, has simply faded away because it could not stand up against the service.

BELLINGHAM CARRYING MORE PASSENGERS THAN EVER BEFORE

The Sept. 22 "More Service—Less Cost" issue also told how the Bellingham (Wash.) Division of the Puget Sound Traction, Light & Power Company had gone into the safety-car game by equipping its York Addition-Court House line, 2½ miles long, with three cars in place of two in order to shorten the headway from fifteen to ten minutes.

This change in operation was made in December, 1916. In July, 1916, the earnings were only 11.4 cents per car-mile; by July, 1917, they had risen to 15 cents and by July, 1918, to 18.6 cents. For the same months the

EFFECTS OF CHANGE TO 100 PER CENT SAFETY-CAR OPERATION IN EVERETT

	April		May		June		July	
	1916	1918	1916	1918	1916	1918	1916	1918
Car-hours	6,227	8,773	6,452	9,103	6,249	8,870	6,484	8,977
Kilowatt-hours per car-mile (city lines)	3.34	1.91	3.32	1.81	3.26	1.75	3.28	1.79
Total kilowatt-hours	221,127	160,570	249,014	168,029	236,671	159,151	245,902	171,610
Collisions with vehicles	4	2	3	5	1	5	4	3
Cash passengers	222,198	305,659	228,041	328,178	230,432	326,435	255,688	357,936
Transfer passengers	43,087	49,814	44,263	54,660	43,521	54,299	47,841	63,296
Car-miles	63,257	77,204	64,866	81,006	63,794	78,436	65,814	81,782
Cars operated	13	18	13	18	13	18	13	18
Receipts per car-mile	$0.195	$0.211	$0.194	$0.215	$0.199	$0.224	$0.220	$0.239

passengers carried were 42,084 in 1916, 62,882 in 1917 and 73,653 in 1918, demonstrating that the public was showing a continuing appreciation of the service offered by the safety cars.

To-day there are twenty-four cars in service, eight of which are home-built Birney bodies on 21-E trucks whose wheels were changed from 33 in. to 30 in. diameter. These cars are now used on all lines, except in the case of the 5-mile Lake Whatcom suburban line, as follows:

Eldridge Avenue and South Bellingham—4.6 miles long, fifteen-minute service changed to ten-minute service on May 27, 1917, with six cars for four.

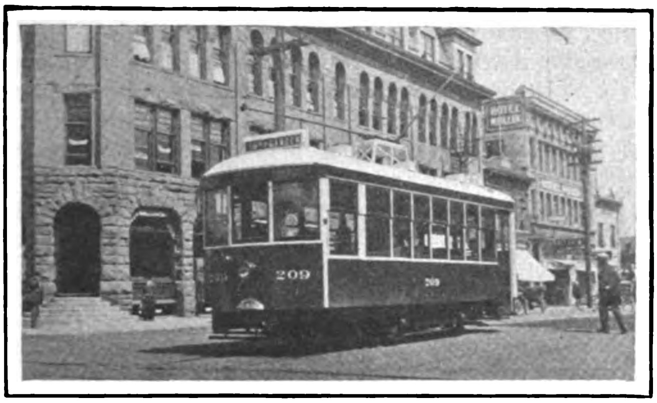
North Street—2.8 miles long, fifteen-minute service changed to ten-minute service on Aug. 8, 1917, with three cars for two.

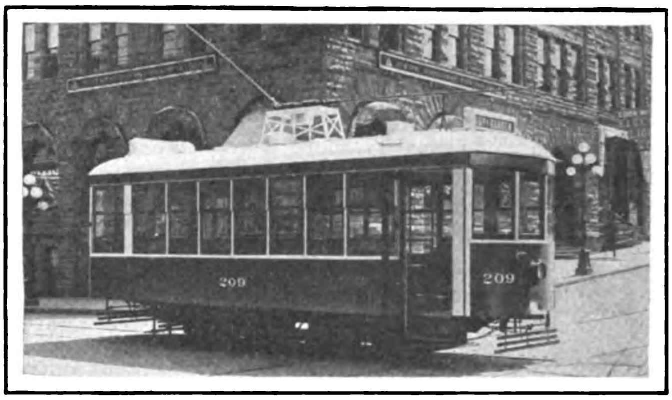
Schome Wharf—½ mile long, fifteen-minute service as before, but new car in August, 1917, replaced old-style car operated with one man in August, 1917.

Typical scenes in Bellingham, Wash., the first 100 per cent safety-car city of its size.

THE OWL
THE MOST OF THE BEST THE LEAST

The evident popularity of the safety-car with the ladies promotes midday shopping travel





Garden Street—2½ miles long, fifteen-minute service unchanged but two new cars replaced old two-men cars in June, 1917.

Happy Valley—1.4 miles long, thirty-minute service as before, but new car in August, 1917, replaced old-style car operated with one man.

These changes are reflected by the comparative power statement. In July, 1916, 190,800 kw.-hr. were used, or 2.36 kw.-hr. per car-mile; in July, 1918, 132,100 kw.-hr. were used, or only 1.41 kw.-hr. per car-mile. The car-miles for the same periods increased from 74,627 to 93,740, the passengers carried from 326,389 to 463,609—a marvelous increase in a city of 37,000 and higher than the best records of the past. It is pertinent to add that the last jitney—the Bellingham dodo as it were—departed this life in June, 1918, despite the fact that the operator had built up a brisk consistent service on a street without tracks.

While the safety car replaced rolling stock of larger capacity, it is worthy of note that the earnings per car-mile in July, 1918, were 18.7 cents; in July, 1917, with partial safety-car operation the figure per car-mile was 15.2, and in July, 1916, it was 15 cents. That the size of the car must be considered in comparing car-mile earnings is evident from the case of the Eldridge line, which showed 20.9 cents in July, 1918, compared with 17.3 cents earned with the earlier double-truck cars; but for the same period the passenger traffic rose from 116,712 to 192,312.

The flexibility of the new cars is illustrated in another way by the North Street line, on which the original schedule of 11.2 m.p.h. is maintained without any difficulty.

From the man-conservation standpoint, it is noteworthy that despite the great increase in service forty-nine instead of seventy to seventy-five men are now in platform service.

"More Service—Less Cost" Issue to the Rescue

In all the company's experience with the public, only one important group of objectors arose. On Feb. 12, 1918, the Washington Public Service Commission called a hearing on the complaint of the Central Labor Council that the one-man car was "hazardous"—and a few other dangerous adjectives. This was the result of two accidents between cars of the old and new types—a front-end fog collision in which the small car got the better of the big one, and a rear-end collision in which the reverse occurred. The company had no difficulty in showing that the new cars were anything but inferior to the older ones. The Sept. 22 "More Service—Less Cost" issue of the ELECTRIC RAILWAY JOURNAL formed an important exhibit. The commission dismissed the complaint of the Central Labor Council the very night of the hearing.

According to Superintendent Hickok, collision accidents with automobiles are less with these cars than before, largely because the cars can be stopped so much more quickly by the experienced operators.

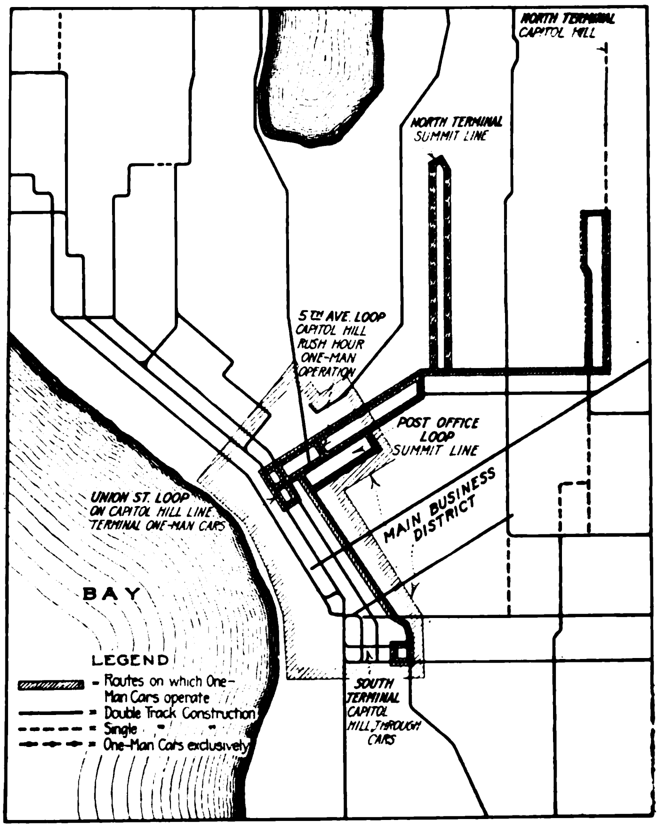
In a City of 400,000

Seattle's Safety Cars on Summit Avenue Line Have Increased Receipts 67 Per Cent with 55 Per Cent Increase in Service

AS EARLY as the summer of 1915 the Seattle division of the Puget Sound Traction, Light & Power Company advocated the use of one-man cars in real city service. After some operation with shuttle lines in 1914 and 1915, two cars were put on the Summit Avenue line, in June and October, 1915, respectively, to operate in with the regular cars. One of these cars was No. 108, a remodeled car weighing 22,000 lb., seating thirty-six passengers; the other was No. 142, a single-end Birney car weighing 10,000 lb. Both cars had safety-door, braking and sanding outfits. Through the use of these cars, as described in the ELECTRIC RAILWAY JOURNAL of Sept. 22, 1917, the service was increased by 24.5 per cent with a resultant growth of 35.3 per cent in receipts. Although the Summit Avenue cars came downtown over tracks where the headway of the combined lines was as low as thirty-five to forty seconds, no difficulty was found in keeping the safety cars properly spaced.

SAFETY CARS RESULT IN 67 PER CENT INCREASE IN TRAVEL

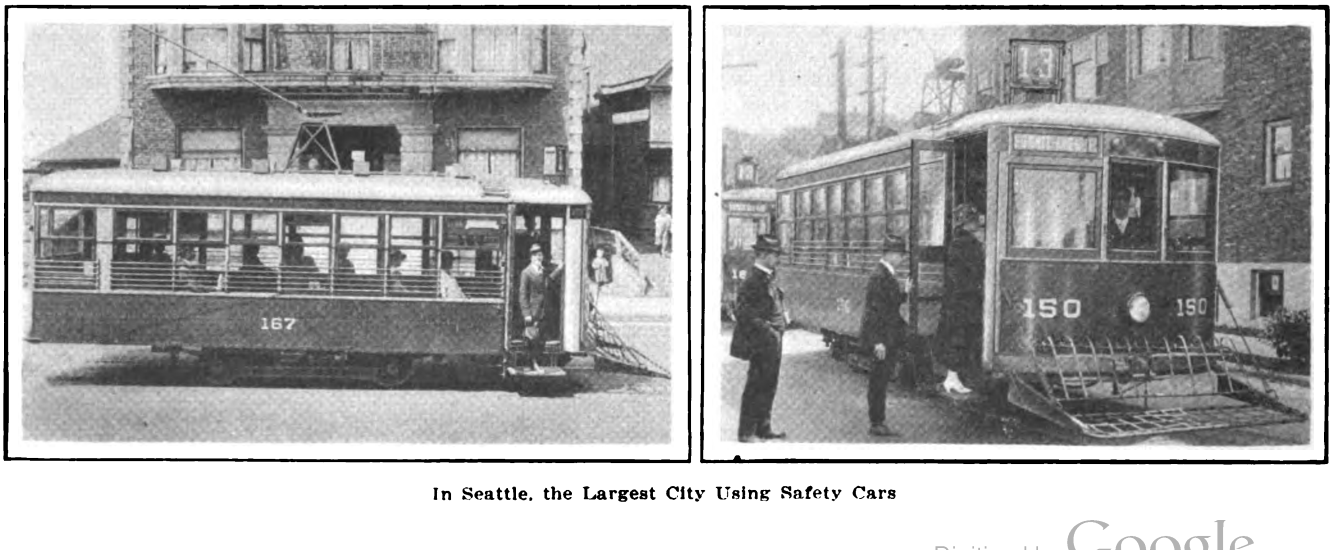
By the summer of 1917 there were in operation two cars on the Summit Avenue line and one each on the Twelfth Avenue line and the Fremont, Ray and Ballard shuttles. At that time the company had on order twenty-five single-end cars and was planning to remodel twenty-nine. At present the new cars are on hand, but only five cars have been remodeled, for the great shortage of both shop and platform labor and the necessity of meeting the extraordinarily heavy shipyard service have hindered the more extended application of the safety cars.


NORTH TERMINAL CAPITOL HILL
NORTH TERMINAL SUMMIT LINE
5TH AVE. LOOP CAPITOL HILL RUSH HOUR ONE-MAN OPERATION
POST OFFICE LOOP SUMMIT LINE
MAIN BUSINESS DISTRICT
UNION ST. LOOP ON CAPITOL HILL LINE TERMINAL ONE-MAN CARS
BAY
SOUTH TERMINAL CAPITOL HILL THROUGH CARS
LEGEND
- Routes on which One-Man Cars operate
= Double Track Construction
= Single " "
= One-Man Cars exclusively

Where the One-Man Cars Travel in Seattle

Rather than scatter such safety cars as it could use all over the system, the management has followed the policy of changing over a single line entirely. This is the Summit Avenue line, which has been equipped since Feb. 20, 1918, with ten cars necessary for the maximum schedule. The length of a round trip on this line is 4.9 miles, the running time forty-two minutes, the layover three minutes and the schedule speed, exclusive of layovers, 7.53 m.p.h. Some morning and evening cars are turned back at the Post Office, which is in the livest part of the city.

The progress of service on this line may be gaged by the following three dates covering the period of no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150
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13

In Seattle, the Largest City Using Safety Cars safety-car operation, of partial safety-car operation and of complete safety-car operation:

PROGRESS OF ONE-MAN OPERATION IN SEATTLE

	June 27, 1916	Oct. 12, 1916	June 27, 1918
Car-miles per day	661	834	1,003
Cars per hour	7.33	9.11	11.35
Longest headway (minutes)	12	12	12
Shortest headway (minutes)	5	4.5	4
Per cent increase in service	....	24.3	55
Daily receipts	$124.43	$168.24	$208.23
Per cent increase in daily receipts	....	35.3	67

These ten cross-seat cars replaced only eleven of the old longitudinal-seat type, but they seat thirty-five instead of twenty-six each. Furthermore, the short-lining to the Post Office during rush hours is another element in giving more service.

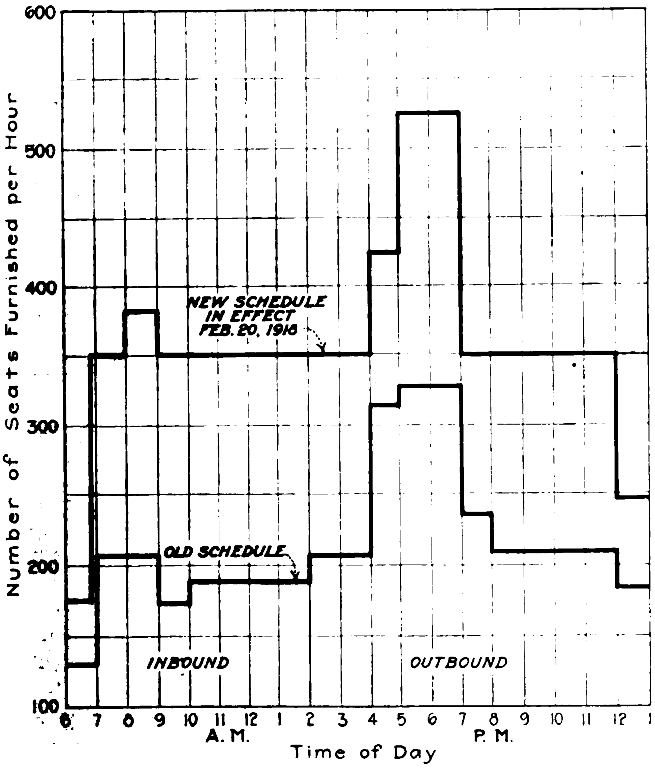
The average increase in seats per hour from the Post Office loop is 46 per cent. The increase in service afforded by the new cars was fully explained to the public through the company's organ, *The Electrogram*, which is distributed on the cars.

ACTUAL OPERATION WITH TWO MEN PROVED ONE OF THEM UNNECESSARY

Regardless of the question of higher pay, the men convinced themselves that one man could operate a safety car with ease. The following simple experiment by the management accomplished this conversion.

When the cars arrived, a number of the men affirmed emphatically that they would not and could not operate them. They were told that the shortage of cars demanded that these modern equipments be used in any event; but if they felt that these cars could not be operated by one man, the management would try the experiment of operating them with two.

This was done. After the first day, the conductor was so much in the way at the entrance that the motorman would ask him to "go back and sit down." Passengers soon caught on to the absurdity of the extra man and would ask the conductor what his purpose in life was. Before long the extra man was seeking instruction from his mate in regard to the operation of the safety car. and then the motorman alternated as idler. In one week the men realized that their objections had been based purely on unfamiliarity with the car. The men gracefully withdrew their opposition, and the incident was closed. All safety cars have ten-hour straight runs.



Comparative Number of Seats Per Hour Before and After Adopting One-Man Car Operation on Summit Avenue Line in Seattle

FUTURE PLANS

The value of the safety car in these parlous times may be judged from the fact that even with the 4-cent premium, the operating cost is in the ratio of 2 to 3 as compared with all the cars in Seattle. Other lines using safety cars, including rebuilt cars with recessed steps, are the Twenty-third Avenue crosstown line, with three cars on a fifteen instead of twenty-minute headway, making a forty-five minute round trip of 6.68 miles; and the Fortieth Street crosstown, with one car on a 2-mile round trip.

The latest line equipped is the one on Capitol Hill, where five one-man cars are interpolated over the densely settled portion of the line. The other cars are of two-man type, of which six are in service all day and eleven more go on as trippers. This change in schedule is in line with the expressed policy of the management to use the safety car first as a builder of traffic and good-will, and second as a reducer of operating costs.

One-man cars are operated on the Capitol Hill line from Union Street Loop to Fifteenth Avenue and Mercer Street, alternating with the larger two-man units except between 4 and 6.30 p.m., when they turn back at the Fifth Avenue loop to avoid the serious congestion at Second Avenue and Pike Street. This is the type of supplementary service which the company plans to introduce on a number of lines as soon as men are available.

SCHEDULES SHOWING EFFECT OF SUPPLEMENTARY ONE-MAN CAR SERVICE ON SEATTLE CAPITOL HILL LINE

		New Schedule		
	Old Schedule	Two-Man Cars	One-Man Cars	Total
Car-miles per day	1,106	973	562	1,535
Cars per hour	7.26	6.95	6.78	13.72
Longest headway (minutes)	12	9	9	4.5
Shortest headway (minutes)	5.5	6	6	3
Per cent increase in cars, per hour	....	....	....	89
Per cent increase in seats per hour	....	....	....	54
Men required	28	24	8	32

	Through Cars	One-Man Cars
Length of line (miles)	7.0	4.5–4.0
Running time (minutes)	54–60	36
Scheduled speed (miles per hour)	7.8–7.	7.5–6.7

The accompanying table shows the difference in service under the old schedule and the new schedule of combined one-man car and two-man car operation, which went into effect on Aug. 5. It gives an excellent idea of the operating results that may be obtained where, by the addition of four men in an eighteen-hour day, there are increases of 54 per cent in seats per hour and 89 per cent in cars per hour.

It is proposed to curtail the services of the Glasgow (Scotland) Corporation Tramways by about one hour in the evening, owing to 100 motormen being called into military service.

Greensboro Keeps Its Railway

By the Use of Safety Cars, 40 Per Cent in Man-Power Is Saved; Payroll Lowered 21 Per Cent While Individual Wages Are Increased 26 Per Cent; Energy Cut 35 Per Cent with 2 Per Cent More Mileage; Accidents Nearly Nil

IN A TOWN that runs only eleven to twelve cars on its regular schedule, the line between profit and loss is a very thin one. In fact, the step from some street railway service to none at all is very short. Now when a property of that size can invest $50,000 in something and get it back at the rate of $1,000 a month or more, that "something" is surely worth investigation and emulation. The town is Greensboro, N. C.; the "something" is the one-man safety car with automatic equipment.

GREENSBORO'S TOTAL POPULATION ABOUT 25,000

According to the census Greensboro itself numbers 18,000 to 19,000 people. With contiguous built-up territory, however, the population may be placed at 25,000. There are four lines, as follows: Pomona, 4.48 miles; White Oak, 3.75 miles; South Greensboro-North Elm, 2.85 miles; Glenwood, 2.60 miles. For these lines the normal daily schedule was and is operated by twelve cars. Ten out of twelve safety cars are regularly in use. The company was anxious to cut the headways at the same time that it introduced safety cars. Owing to shortage of labor, however, it has been impossible to add new sidings and shift old ones. Therefore the new service is a unit-for-unit replacement. The headways as still maintained are fifteen minutes on the White Oak and Pomona lines and twenty minutes on the other two lines. Schedule speeds of 8 to 10 m.p.h. are kept up far more easily than they were with two-men cars.

For Saturday afternoons and other special occasions, four extras are available. These are big cars recently converted to one-man service.

TRAVEL STICKS DESPITE RAISE IN FARE

From the satisfaction expressed by the public it is evident that the new cars have made a hit. However, it is not possible to gage their effect in this regard. The cars were installed in September, 1917, during a period of increasing travel. Until the end of the year also there was a distressing variety of cut-rate tickets which produced about 50 per cent of the gross revenue, 30 per cent in value being six for 25 cents; 10 per cent being school and college tickets at eight for 25 cents, 5 per cent being workmen's tickets at eight for .25 cents and 5 per cent being children's tickets at ten for 25 cents. Upon petition to the North Carolina Corporation Commission these old franchise regulations were abolished in favor of a straight 5-cent fare. In spite of this increase in rates, traffic has held up so well that the gross earnings for June, 1918, were $568 or 6.8 per cent in excess of the gross for June, 1917. The simplification of fare collection is also an advantage to the car operators as now they need handle only cash and transfers, using a non-registering box for the money and International registers for transfer registration.

OVER $1,000 A MONTH ON A $50,000 INVESTMENT

While siding limitations have prevented the North Carolina Public Service Corporation from creating traffic and so getting more net through shorter headways, the company has taken full advantage of the economy possibilities of the safety cars. For example, a comparison of March, 1918, with March, 1917, shows:

Payroll decreased 20.7 per cent or $510.42, despite the fact that men average $12 a month more.

Energy consumption decreased 35 per cent or $487.57 with 1 per cent increase in car-miles.

Kilowatt-hours per car-mile decreased from 2.54 to 1.55.

DEPARTMENT STORE
CAFE

The Safety Car Has Saved Greensboro's Street Railway

The fact that nine thirty-passenger cars with an average weight of 25,000 lb. and three forty-five passenger cars weighing 40,000 lb. each were replaced by twelve 15,000 lb. twenty-eight passenger safety cars, accounts for the energy reductions. As the gross revenue also increased $568, the net was raised approximately $1,600. This increase is a fair monthly average. Since the twelve safety cars were ordered in the fall of 1916 they did not cost more than $50,000. The higher reward of getting there first is obvious! As Manager Hole says: "We wouldn't be operating any cars at all to-day if we hadn't secured one-man safety cars."

Prior to the inauguration of service at Greensboro, Superintendent Frazier spent a week at Fort Worth studying the famous safety-car tryout line of the Northern Texas Traction Company. On his return he found that the safety cars had already been delivered. To train the men, the dead-ended North Elm line was selected as a trial track. Here the cars were run up hill and down for several hours every afternoon until all the operators had been broken in. One-man service was begun in September when the two men who were considered the most capable began running cars on the Glenwood line. This was soon followed by the service of two other cars on the North Elm line. The complete installation was actually accelerated by the interest displayed by the public in this innovation. No extended publicity was necessary—merely a descriptive circular setting forth the merits of the car along the lines of the circular used at Fort Worth and described in the ELECTRIC RAILWAY JOURNAL for Sept. 22, 1917.

It may be said here that the management realized very well that the only way to introduce one-man operation was to use a better, safer car. If the railway cannot show the regulatory body that the new way is better than the old, it can hardly expect to secure public approval. Hence the air brake, the pneumatic door and step, the deadman's handle, the interlocking of control and doors are sure to have great weight with the regulators, the public and the men. Instead of increasing liability, it is the company's experience that the safety car decreases it. In nearly a year's operation there has not been a single platform accident, and the number of collisions, both front and rear, has decreased. These accident savings add to the net earnings and add to the mass of favorable public opinion.

The Greensboro company has also found a very real psychological advantage in operating small, light cars instead of big, heavy cars, to wit, in the matter of placing blame for collisions and side-swipes. In the old days the traction battleship was held to blame as a matter of course, and the railway paid. To-day the vehicle owner realizes that these light cars are not trouble-hunters and that they also move fast in emergencies. The result is that when a careless chauffeur or driver backs into a fender or shows other damaging carelessness, the owner is likely to receive a little bill from the railway, and he pays it, too! Collections up to $200 have been made for damages of this kind. Times have changed.

Fewer Men at Higher Pay

At no time has there been any difficulty with the men. Shortly before the cars arrived the company voluntarily increased their wages to 3 cents an hour, making the rates 19 cents first year, 21 cents second year and 23 cents third year. These rates have been recently increased to the following schedule: First year 21 cents, second year 23 cents, third year 25 cents. The men like the cars. Not a single legitimate complaint has come from them.

At the time the cars were ordered in 1916 the company was thinking far more of giving additional service than of reducing the number of platform men. As matters have turned out, the one-man car was its salvation, for in saving 35 per cent man-power the losses due to the draft and the lure of war-work were absorbed with little disturbance. The company has a few conductors who are too old for service on the front end of the car, but these men are taken care of as extras on the two-men cars.

Maintenance Is Easy

So far as maintenance is concerned, the company has reason to expect a considerable cut over the big cars. It notes as a pleasing phenomenon that due to the truck design or some other cause, flats on chilled-iron wheels have the habit of rolling themselves out. At first the doors of these cars were too fast, but this was remedied by a slight relocation of a pin to shorten the main lever. Last winter, which was unusually severe for the section, also caused some freezing in the air compressor piping. It was so slight, however, that the operators could correct the trouble with a newspaper torch and with less delay to service than would have occurred in the case of the old-fashioned rolling stock.

It may be added that in the later air equipments on cars of this type the main reservoir capacity is divided into two units. The Safety Car Devices Company also recommends 25 ft. of discharge radiating pipe between the compressor and the first reservoir, and a corresponding length of pipe between the first and second reservoir, for the purpose of precipitating the moisture in the main reservoirs and preventing its entrance into the brake system. All operating valves also are now placed inside the car. These changes have been found to avoid

HUNTLEY-STOCK
FURNI

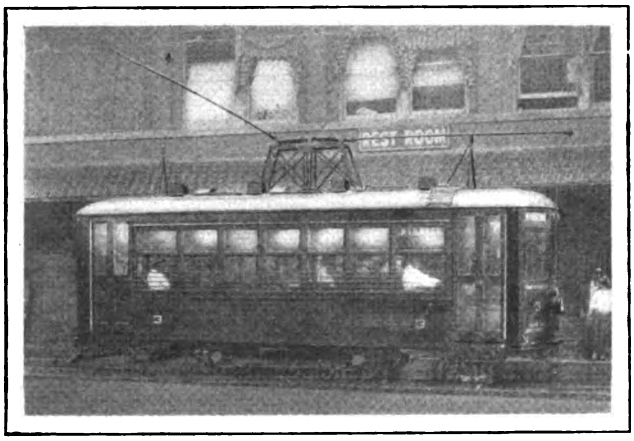
Greensboro Is a Small City with Ample Street Width for Automobiles troublesome freezing in cities with harsher weather than Greensboro.

The Greensboro company's tracks cross the Southern Railway at six different places in the city. Three of these crossings are at double-track points and one is at a six-track crossing. At the last place the trolley company keeps a flagman during the hours of operation, but at the other crossings the car operator stops the car and observes the rules of the usual crossing agreements with steam railroads.

Energy Consumption Halved in Columbus, Ga.

Only Drawback of Safety-Car Service in Georgian City Is that Residents on Other Lines Are Clamoring for Same Operation While Company Cannot Get More Cars at Present!

WHEN a public utility has a power department which bills the railway department so much per kilowatt-hour for energy used, the railway part of the organization is likely to have a keen appreciation of the meaning of car weight. If it is stated bluntly that the safety cars average 1 kw.-hr. per car-mile as compared with from 2.1 to 2.3 kw.-hr. for the single-truck cars replaced, it is easy to understand why Columbus, Ga., would like to be 100 per cent equipped with the new cars as fast as financial and manufacturing conditions permit. Yet there is a difference of only two seats per car.



In Front of the Transfer Station at Columbus, Ga.

Safety-car operation was begun at Columbus on April 15, 1918, on the belt line, a 6-mile run through everything that a Georgia town of 21,000 could be expected to have, namely: Business section, negro quarters, mansions, park and section of middle-class whites. Only the mills are not directly on this route.

Eight cars were purchased, of which six are in regular use. The twenty-minute service was replaced by a twelve-minute headway up to 8 p.m., and the running time for the 6-mile round trip was reduced from forty minutes to thirty-six minutes. The speed was thus increased to 10 m.p.h. There are several railroad crossings, but only one which must be flagged.

The change was a most radical one to both the public and the men. It had been customary for years to have a rear entrance with gates, no farebox and no air brakes. The only preparation for the change lay in the fact that the company had vestibuled some cars a few months before so that pending the arrival of the new cars the converted rolling stock was used as two-men, near-side cars. The men in this service were permitted to take turns as conductor and motorman.

When the safety cars arrived, the men were trained first on a stub track and were then double-headed around the belt line. Those who entered the service were paid 2 cents an hour more than they received in two-men service. Although there were two or three who said they would not operate a safety car under any circumstances, the use of air brakes and air doors, the easier control, the comfortable chair, the larger pay—and possibly the pleasure of seeing the words: "The Operator of This Car Is Mr. Joseph Jones"—brought a quick reversal of opinion. At present nine men are giving 50 per cent more service than was formerly given by twelve men.

SIMPLE FARE COLLECTION AND TRIP SHEET

The fare collection on the safety cars is simplified by the fact that in Columbus there is a common transfer station at Broad and Twelfth Streets. The transfers are given out by a man in the street. The fare-collecting mechanisms on the car are a one-denomination Johnson fare box and an International R-5 square register for transfers. Still further to simplify the work, the men are asked to make out only one report covering the period they have been continuously on the car, instead of making out individual trip reports.

The transfer station, when built, was not in the center of the best business section. At what was originally the more logical spot, the neighboring merchants protested against the plan as injurious to them. Now they actually have built a transfer station for the company. As two transfer stations will not be practicable, the new building can serve only as a waiting room.

OTHER LINES WANT SAFETY CARS

One of the little problems that has followed the introduction of the safety car on the belt line is the reluctance of the riders on the Rose Hill line to accustom themselves to front-entrance operation without being rewarded by new cars! The employees, too, want to know why they cannot have the comforts of the later equipment. Hence the company is wishing for the day when it can order and have a total of twenty-five instead of eight light-weight cars.

CAR AND LINE EQUIPMENT FEATURES

According to tests over an individually-feedered part of the belt line, the cars thereon average only 1 kw.-hr. per car-mile. This is due not only to the low weight but also to the use of Gurney ball bearings on motors and journals. The motors are GE-258 and the control K-63-B. The inter-operating equipment is, of course, that of the Safety Car Devices Company, including foot valve for emergency use.

To maintain safe and quick service along the route, the company has installed seven blocks of Nachod signals—two counting, directional type CD and five non-counting, non-directional type P—as well as two Collins non-splashing automatic track switches.

Less Fuel, Less Personnel, More Business at Tampa

Rich Men Have Stopped Automobiling and Poor Men Have Quit Walking Since the Coming of the Safety Car—Air Operated Doors and Steps With Safety Devices Are Also Used on Big Rebuilt Cars

NESTLING on the gulf side of Florida, Tampa is off the beaten track of business travel; but it does not represent a case of "the world forgetting, by the world forgot." Tampa, for its population of 65,000, is indeed a most attractive city with its fine public buildings, its tourist hotels and its thoroughly-alive electric railway. But the success of the latter, in meeting the harsh conditions caused by the automobile and aggravated by the war, is the particular subject here.

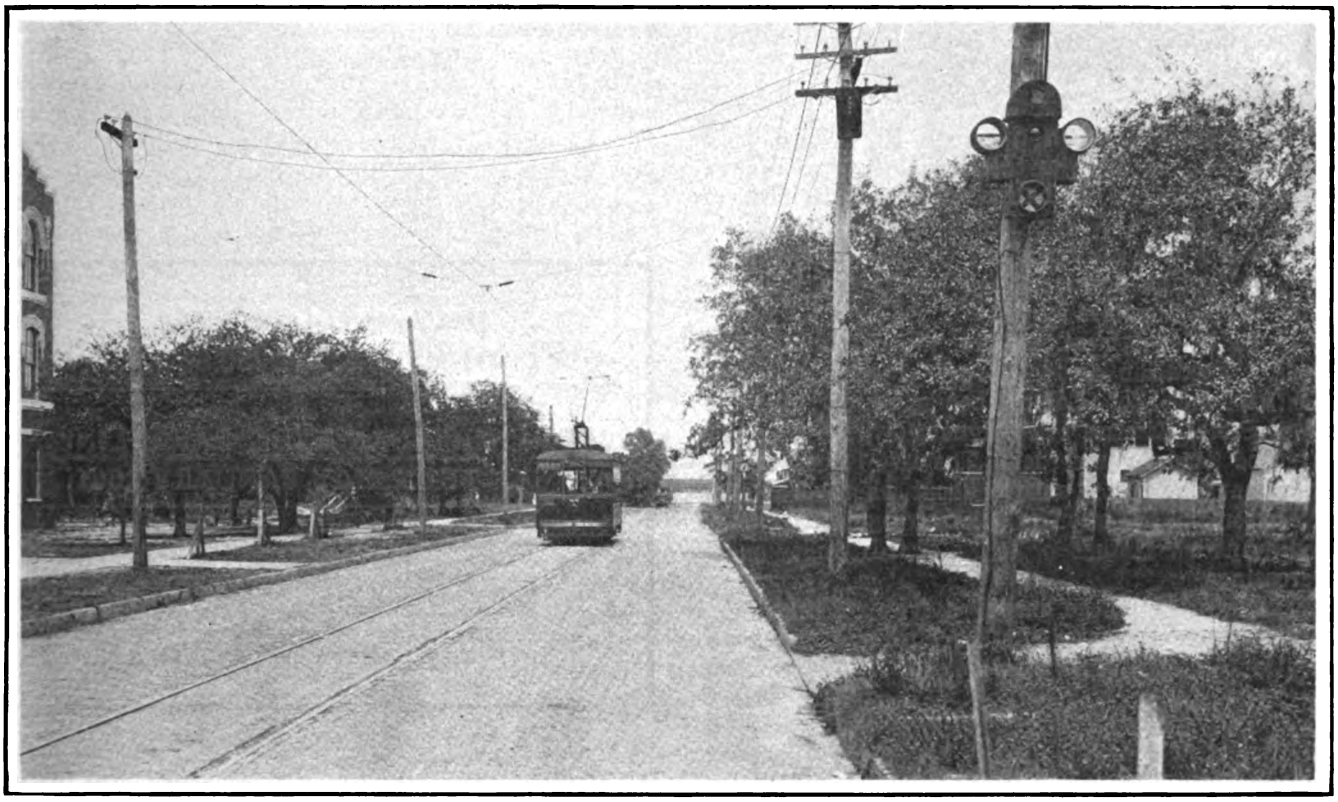
Immediately after the Fort Worth demonstration with the safety car in November, 1916, Stone & Webster made a study of its applicability to their southeastern properties. In the case of Tampa, two lines were considered—Michigan-Hyde Park and West Tampa-Ybor City. Only the former line was ordered equipped, owing to lack of funds. The success of the first line, however, soon led the company to order more equipment to carry out the original plan. With the eight cars recently delivered the company has twenty-three in all, of which two are considered as spares.

The Michigan-Hyde Park line was placed in service on Jan 10, 1918. It is believed to be the first through crosstown route to be operated with safety cars. Its round-trip length is 12.22 miles. This line is the most cosmopolitan in the city. At the Michigan end are cigar factories with Latin workers; next is a residential section; then the business section, and finally the highest class residential section in the city.

It was thought unwise to begin with the West Tampa-Ybor City line, covering 25 per cent of the city mileage, because the traffic is preponderantly Latin. After a goodly proportion of the cigarmakers had become familiar with the more general line, however, it was decided to make the change on the second line.

The change to safety-car operation in Tampa was a far bolder step than in other communities because of other radical changes in practice. With the exception of four cars on the semi-interurban Port Tampa line, only open cars had been run all the year round. Prepayment, of course, was unknown. Passengers had the cheerful habit of getting on and off whether the car was standing at a corner or running in the middle of the block. Furthermore, they had not the slightest apparent knowledge of the request: "Please tender exact fare." Then, too, the employees had to adapt themselves to the new ways of near-side entrance, prepayment, closed car and positive stops before entering or leaving.

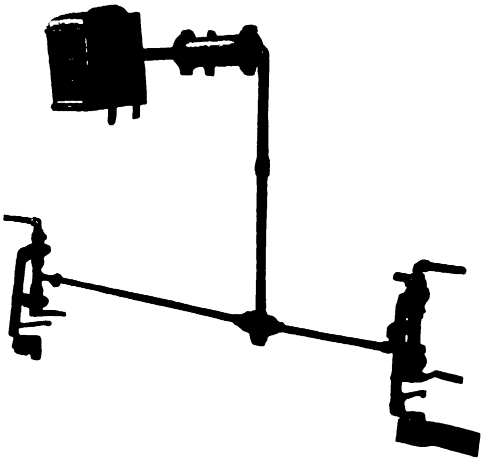
At present eleven safety cars are operated during the morning hours up to 9 a.m., eight between 9 a.m. and noon; eleven between noon and 8.30 p.m., and eight to five cars thereafter. The old headway of ten minutes has been replaced by one of seven and one-half minutes (eleven cars), and the fifteen-minute headway by one of ten minutes (eight cars). In the late night hours the service is tapered to a fifteen-minute headway (five cars). In this way the traffic curve is met better than with the two headways used before.



Automatic Trolley Contact Signals Keep the Operator from Leaving the Safety Car

The twelfth out of the fifteen safety cars first ordered was used on the Woodlawn line which operates over the intown end of Sulphur Springs line (suburban) and accepts transfers from other city lines.

The West Tampa-Ybor City line, which has been operating with nine safety cars since July 7 of this year, is also a crosstown route, 4 miles long. It has a six-minute headway during the rush hours. The headways for other periods are gradually being adjusted to meet the changes in traffic.


Air-Operated Transfer Register Used in Tampa

With these three classes of service 40 per cent of Tampa's mileage is operated with safety cars.

THIS IS SNAPPY SERVICE! NO LAYOVERS!

Only 28 per cent of the Michigan-Hyde Park line is double track. In practice this means that with eleven cars and a seven and one-half-minute schedule, meets are made every three and three-fourths minutes. C. W. Wetterer, manager, is authority for the statement that the men have gotten down to their work with such precision that slip-ups are a rarity.

Important equipment factors in maintaining this clean-cut operation are: The use of seven automatic track switches (of Collins non-splashing type), of United States Electric block signals (type K 2) and of a Nachod headway recorder. The last is not confined to any one line but is shifted about whenever a check on layovers or detection of other irregularities is desired. Another feature is the use of O-B trolley guards at crossings.

Further proof of the snappy service on this line is the absence of layovers. At the Michigan end a man is stationed to turn the trolley poles.

AIR OPERATED REGISTERS AND GONGS, TOO!

Although the safety car does so many things by power instead of brute force, the Tampa management has gone two steps farther by adding an air-operated register and an air-operated gong.

As the fare collection equipment was first installed, the International square-type transfer register was operated by foot power through vertical rods running to the ceiling at each end of the car and actuating a transverse rod running the full length of the car. To relieve the operator of ringing up this register by foot power through the heavy lever mechanism, the device shown in the illustration above was invented by E. T. Smith, master mechanic.

The register remains mounted on the bulkhead, and its air engine has been placed beside it. To actuate, the operator simply depresses a pin in the platform. The travel of this pin is regulated by a set screw. At the right in the illustration is an exhaust valve which is held open when not operated. Above is the inlet valve from which air is supplied. When the pin is depressed, the lever goes down, the exhaust valve is closed and the inlet valve is opened. This causes air to go through the three-way valve shown in the center, to the engine, which operates the register much more effectively than by foot power. The engine used is the standard controller cylinder used by the Safety Car Devices Company for opening the circuit breaker.

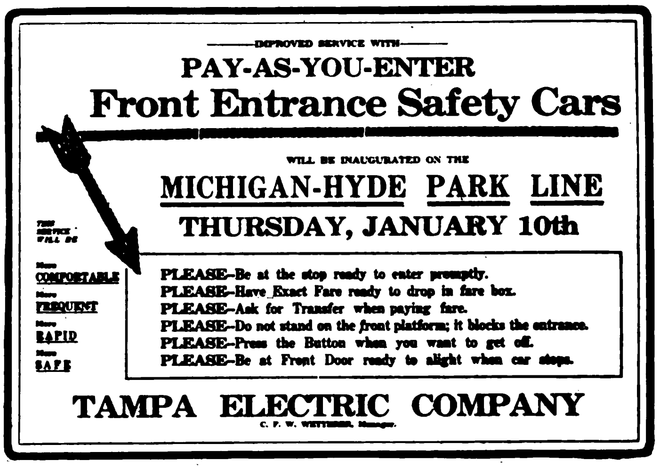
The air-operated gong is another novelty for making the operator's life easier. It has a remarkable tremolo ranging from a gentle, persuasive "Baby Ben" tinkle to a set of clanging vibrations calculated to unkink the curliest head in Tampa.

TAKING THE CAR TO THE PRESS, THE MUNICIPALITY AND THE PUBLIC

While the local newspaper men knew that a new kind of car was coming to town, Manager Wetterer asked them to say nothing until the cars had actually arrived. In the meantime he referred them to the Sept. 22, 1917, "More Service—Less Cost" issue of [illegible] AILWAY JOURNAL, from which they could get a good idea of the car and some of its installations.

On Jan. 9, 1918, a day before regular service, a demonstration run was made for the newspaper men and the officials of Tampa, West Tampa and Gary. This proved most satisfying to all concerned.

In addition the company had paved the way with the general public by large newspaper advertisements and car circulars for a period of three days. The newspaper advertisements covered not only the regular English and Spanish papers but also the "literary digest" which professional readers expound to cigarmakers at work.


IMPROVED SERVICE WITH

PAY-AS-YOU-ENTER

Front Entrance Safety Cars

WILL BE INAUGURATED ON THE

MICHIGAN-HYDE PARK LINE

THURSDAY, JANUARY 10th

This service will be

More COMFORTABLE

More FREQUENT

More RAPID

More SAFE

PLEASE—Be at the stop ready to enter promptly.
PLEASE—Have Exact Fare ready to drop in fare box.
PLEASE—Ask for Transfer when paying fare.
PLEASE—Do not stand on the front platform; it blocks the entrance.
PLEASE—Press the Button when you want to get off.
PLEASE—Be at Front Door ready to alight when car stops.

TAMPA ELECTRIC COMPANY

C. F. W. WETTERER, Manager.

Introducing the Safety Car to the Tampa Public

After this preliminary publicity the cars were allowed to speak for themselves in their usual persuasive way. The favorable feeling of the public, however, was increased shortly afterward by two pieces of outside publicity. In the first place, the Feb. 16, 1918, cover of the ELECTRIC RAILWAY JOURNAL, which featured the use of Gurney ball bearings on these cars, showed a car with the famous Tampa Bay Hotel in the background. When Mr. Wetterer explained that the ELECTRIC RAILWAY JOURNAL reached thousands of influential men who would see these evidences of Tampa progressiveness, the pleasure of the patrons was evident.

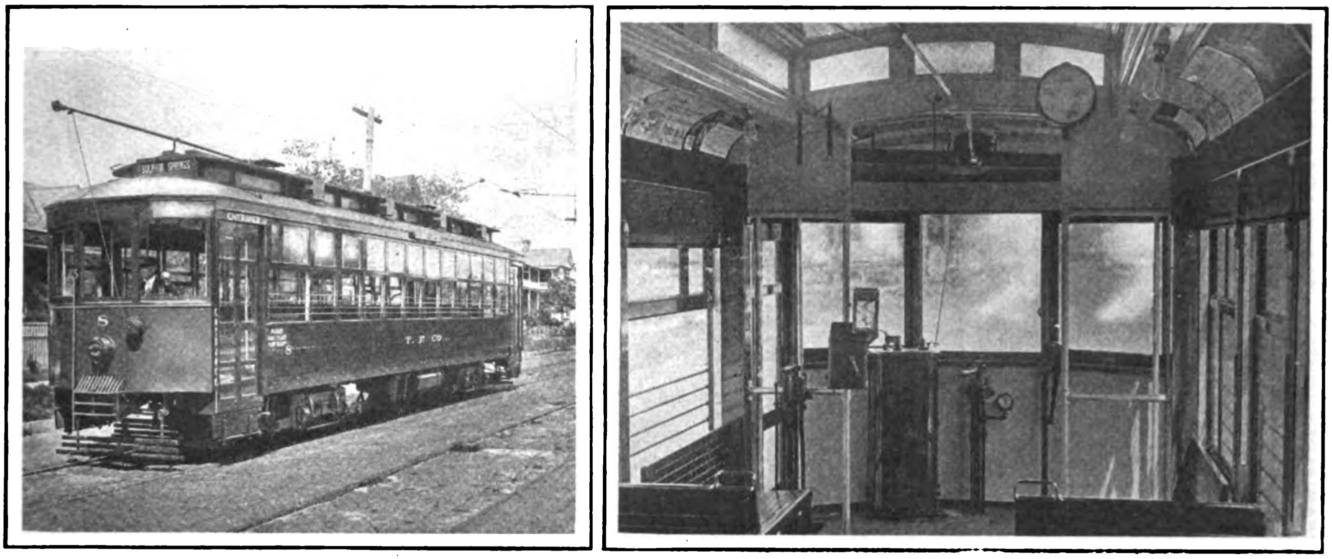
But the climax of gratification came when they saw their car and their hotel reproduced for all of America to see in the *Saturday Evening Post* of a few weeks later. The management heard from people all over town: "Say, did you see that picture in the *Post?*"

PERFORMANCE OF THE SAFETY CAR

The average number of passengers handled per day by the safety cars over the Michigan-Hyde Park line since they started operation is as follows:

February	8670	May	7560
March	8700	June	7880
April	8540	July	7470

This represents an increase of approximately 20 per cent in the riding.



Large Car Rebuilt for Operation with Safety Devices Combination

The reduction in energy consumption is proportional to the weight of the cars, say, 7½ tons as compared to 14 and 15 tons, or a saving of about 50 per cent.

The following table gives comparison of the car-miles and earnings of the safety versus the old open-type of equipment:

MICHIGAN-HYDE PARK

	1918		1917	
	Car-Miles	Cents Per Car-Mile	Car-Miles	Cents Per Car-Mile
January (27 days)	34,800	20.5	26,650	21.9
February	44,331	22.0	37,309	22.5
March	48,866	22.0	37,437	23.8
April	48,528	20.4	36,848	22.2
May	50,222	18.5	38,004	21.6
June	48,203	19.4	36,778	20.2
July	49,220	18.8	37,987	20.1
August	49,041	19.2	37,852	19.9
WEST TAMPA				
July (26 days)	31,670	20.5	21,740	18.8
August	39,335	20.9	25,822	20.6

The rich are leaving their automobiles at home, while many a cigarmaker who formerly walked a half dozen blocks to his home cannot resist the temptation to ride on those new safety cars.

Another fact which proves the interest of the public is that the proportion of riders with exact fares has been as high as 75 per cent. On two occasions negroes stopped Mr. Wetterer himself to get change, saying: "You know, Mister, they don't like to make change on those new cars." Accidents of every type have decreased, and step accidents are practically unknown.

FEWER MEN—HIGHER WAGES

Through the introduction of the new cars on the Michigan-Hyde Park line alone, or 25 per cent of the mileage, the thirty men formerly needed to make fifteen runs have been changed to twenty men for twenty runs. No men had to leave the service, however, as the extra list had been decreased just before the new cars came.

On the old cars the men now average 32 cents an hour. On the new cars they average 36 cents an hour, for 4 cents an hour in addition to the regular scale is given for operation on the safety cars. By addition of 30 per cent service the actual ratio is 64:47, or 25 per cent saving.

All men have a chance to operate these cars, but the company reserves the right to refuse those who prove unsuitable. The men capable of operating the safety cars choose their own runs on a seniority basis. The three or four men who went back to the old cars soon wanted to return to single-headed management and the name plate in the vestibule.

SAFETY CARS FOR TWO-MAN OPERATION

So successful has proved the air-operated door and safety combination that the company has applied it to five forty-eight passenger cars on the Sulphur Springs semi-interurban line. These were open cars which have been vestibuled and fitted with cross-seats.

These cars have two control stands at each end. From the motorman's valve only the right-hand front exit is under control. At the same time, the conductor at his rear stand controls the entrance and exit at his left. In case, however, the motorman throws his brake handle to emergency, the door at the right of the conductor will also be unlatched and can be opened by hand. When all doors are closed, a pilot lamp lights up in the cab. The door engines for these cars are of National Pneumatic manufacture embodied in the safety combination of the Safety Car Devices Company.

Why Calgary Makes Money on a Four-Cent Fare

Eighty Per Cent Short-Haul Riding Through Encouragement of Cut-Rate Ticket Sales and the One-Man Operation Thereby Made Possible Are the Big Reasons. Manager Says Railway Would Earn Less on a 5-Cent Cash Fare

IN THE "More Service—Less Cost" issue, Sept. 22, 1917, Thomas McCauley, superintendent Calgary (Alta.) Municipal Railway, told how he had introduced one-man car operation throughout a city of 65,000 to 70,000 people with 75 miles of track and with cars up to 46 ft. long. Since this article appeared the number of regular cars has been raised from forty-two to forty-four, with about thirty-two trippers. A schedule ranging from 8 to 15 m.p.h. is being successfully maintained, although on some downtown blocks the combined headway is only one to two minutes.

Complete one-man operation dates from Nov. 6, 1917. This includes the operation of two-car trains to the Ogden shops of the Canadian Pacific Railway. In these trains the motor-car operator cares for seventy seated passengers and the conductor of the center-entrance trailer for eighty-four.

It is unnecessary to recapitulate here the ingenious mechanical changes made in the cars by Mr. McCauley in order to suit them for one-man operation except to emphasize the importance of the novel entrance door, illustrated on page 565, which was cut into the front dash without interfering with the operator or his apparatus.

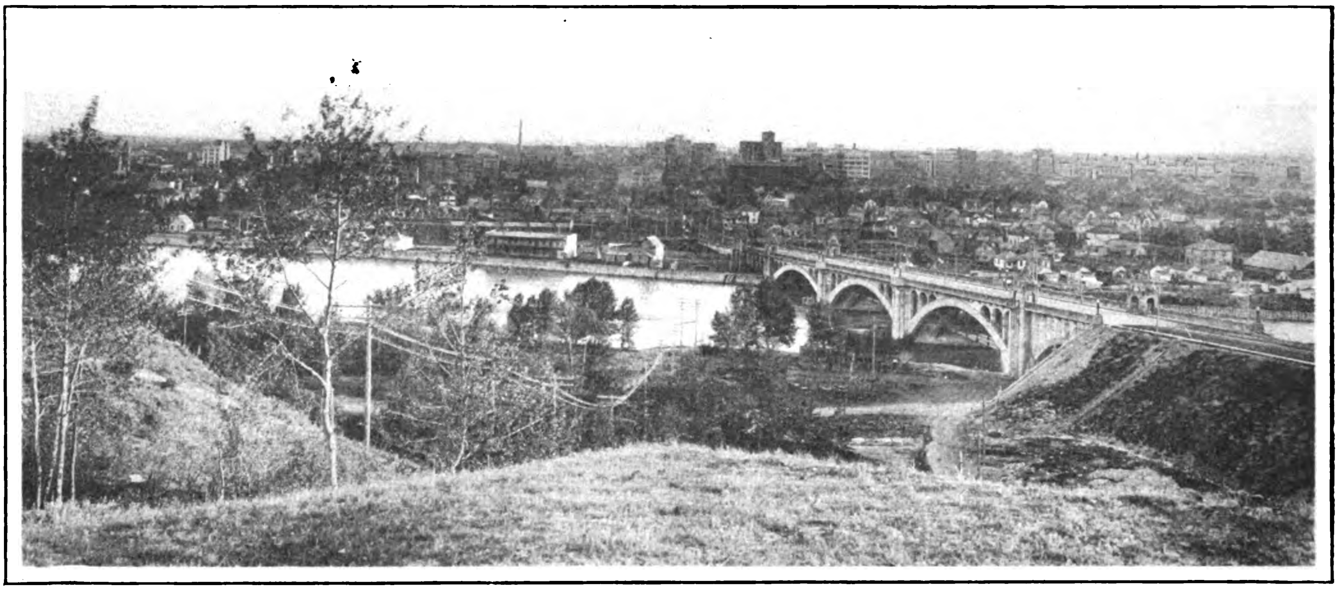
This door, although it does not lengthen the platform 1 in., makes it perfectly feasible for people to enter and leave at the same time even better than in long-platform cars with exit and entrance side by side. In the traffic on a June evening, at Eighth Avenue West and First Street, it was observed that passengers were interchanged with astonishing celerity, owing partly to the door arrangement and partly to the fact that out of a dozen passengers only one had no tickets. And even he stopped to buy some!

Except in the limited cases of people having their clothing caught in doors and jumping on the few fixed steps that are gradually being changed for folding ones, accidents have been almost nil.

The automatic fender installed to prevent backing-up accidents has not had a single opportunity to prove its necessity. The double-truck cars have both Westinghouse air and Peacock hand brakes. The latter are boxed to form a change table for the operator. On the eighteen single-truck cars only the Peacock is used. Mr. McCauley has patented a spring attachment to the brake whereby the operator must wind up the brake to store energy while the car is standing. This is done by a down pressure of the operator's foot. A slight turn then causes the application of the brake in stopping the car. This plan also prevents dragging brakeshoes.

As to braking safety on grades, the worst accident of the kind occurred in 1916 on a two-man car just when the management was planning one-man operation throughout. This has led the mangement to believe that many a braking accident occurs just because there are two men on the car who are engaged in talk instead of business—a sight common enough on the outlying parts of a route. The air-brake cars have a passenger's emergency pull-cord and valve for use if the operator becomes incapacitated.

An objection made to the use of the altered cars was that the front doors were open on a non-bulkheaded car in a temperature as low as 40 deg. Fahr. below zero. As a matter of fact, nothing serious occurred because the rear end was always closed except for a door which was opened only in emergencies or when inspectors were helping off crowds, as at the annual fair. Hence, with the cars closed at one end, there were no drafts, so the cars really were warmer than with the rear platform in use. The inclosed rear is now used as a smoking compartment, which is a popular feature. It is heated by a portion of the motor rheostat by energy otherwise lost.



Calgary, Where the Public Likes One-Man Car Operation

One-Man Cars Carried All These People

Loading Calgary One-Man Cars

An unusual combination of car lighting and ventilation control is being installed. In replacing the old clusters by individual lamps wired with Crouse-Hinds condulets, the lamps are set close to the carline partitions (see page 566). With the light thus thrown downward, dazzle in the operator's vestibule is avoided and no curtain is necessary. The partitions will be used for publicity purposes. A rod passing through these partitions enables the operator to control all the monitor sash with the exception of the pair nearest to him. These he is able to control through the original mechanism.

Whatever the reasons, one-man operators are doing less damage to special work and using less energy per car-mile for more travel than in the old days. Thus for the period ended April 30, 1918, the cost of power per car-mile was 3.318 cents and for the same period of 1917, 3.588 cents.

OBJECTORS WERE WON OVER

Of course, the general introduction of one-man operation was by no means a walk-over. Labor is strong in Calgary, and its voice is potent in municipal chambers. But frankness and demonstrations won out in the end, as note the following quotation from *Fair Play*, a local critical review, for May 4, 1918:

"Mr. McCauley has been frequently criticised, sometimes with reason (that's when we've weighed in), sometimes without. But, 'to give the devil his due' (a most unfortunate quotation, but we can't think of another at the moment), he is certainly a competent official and succeeds in making both ends meet. He also makes the cars from both ends meet at the City Hall (see the schedule in the bright and witty bulletin suspended from the roof by a string), and if they don't meet, it isn't his fault.

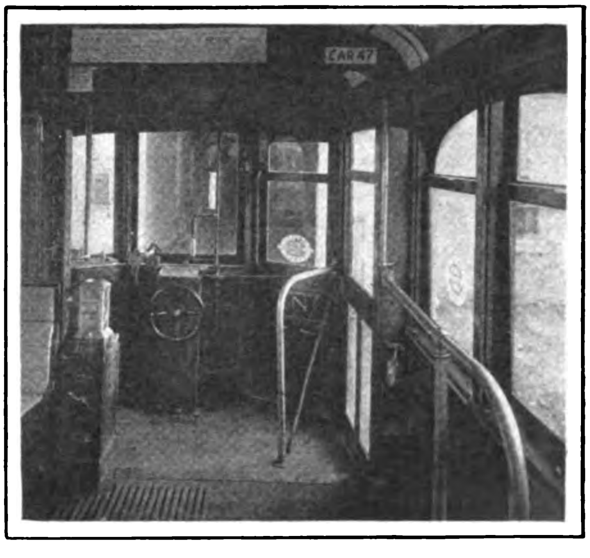
"We were opposed to his introduction of one-man cars until we saw what a success they were. Now nothing would induce us to hazard our safety in a car controlled by a plurality of men. Mr. McCauley is welcome to make what use he likes of this unsolicited testimonial. (Other papers please copy)."

One of the amusing protests was that the rebuilt cars were not suitable for carrying baby go-carts. When this was brought up for a hearing by the Women's Council, Mr. McCauley asked them if they would indorse the one-man car if he made the desired changes. Their consent was a sad blow to certain disgruntled individuals who had tried to use the Woman's Council as a stalking horse.

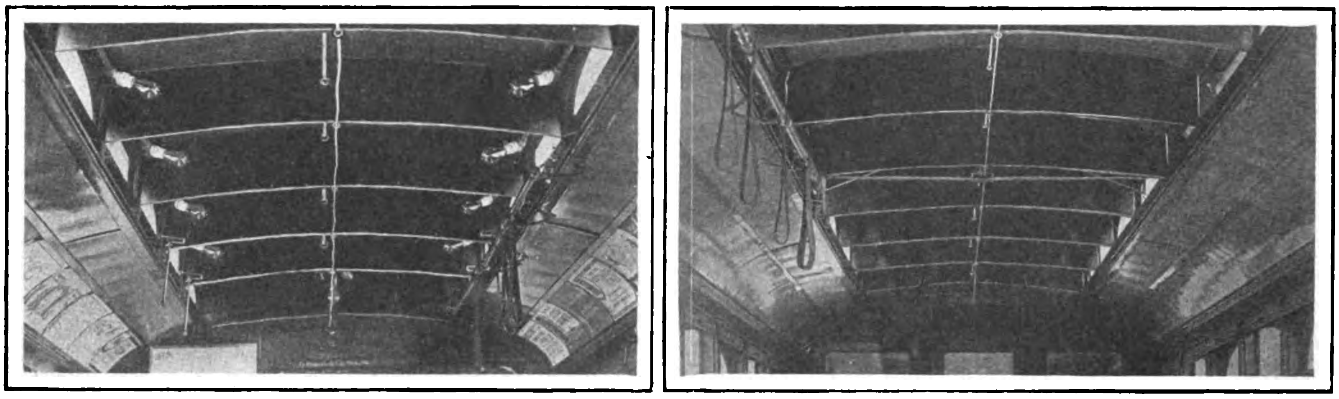
CUT-RATE TICKETS PRODUCE RIDING

When a community of 65,000 to 70,000 people has 42,500 revenue riders a day during January, February,

Unique Front Loading Door of Calgary One-Man Car



Front Vestibule of Calgary One-Man Car



Looking Forward — Looking Backward

Calgary Lighting Arrangement Prevents Light Reflection in Front of Motorman

March and April, with 45,000 a day in spring and summer, it is evident that some things are inducing the people to use the cars. One of these things is good service; the other is a low rate of fare that is making money for the municipality even in these days. Of course, only the operation of the cars by one man instead of two still makes such happy results possible.

About 80 per cent of the traffic comes from people riding 2½ miles or less. Owing to an agreement which brought the Canadian Pacific shops to Calgary, the steam shopmen going to and from Ogden travel at the same rates as in the city, although Ogden is 6 miles out and some of the men can get a 12-mile ride for one fare.

The proportion of people riding on tickets is at least 80 per cent. There are workmen's tickets at eight for 25 cents; regular tickets at six for 25 cents; books at twenty-five tickets for $1, school and children's tickets at ten for 25 cents. Ten drug or cigar stores throughout Calgary and all car operators sell tickets gladly. In all cases the railway advances $50 of tickets. The stores are known to be reliable; and as for the men, not a penny has been lost in years.

Mr. McCauley says that he would certainly oppose a flat 5-cent fare. The latter would eliminate the excellent mid-day travel, increase losses in fare collection and virtually make one-man car operation impossible at the present schedule speeds. It should be the aim of an electric railway, he says, to give good service at a rate of fare that will keep people from buying automobiles or using them regularly for business if they already own them.

TABLE I—WAGE COMPARISON OF CALGARY MUNICIPAL RAILWAY FOR FOUR MONTHS ENDED APRIL 30, 1918

	Hours	Wages One-Man Operation	Wages Two-Men Operation	Saving
Motor-car hours	94,307	$45,267	$81,104	$35,836
Trailer hours	4,358	1,874	1,874	....
Total	98,665	$47,141	$82,978	$35,836

The foregoing calculations are on the basis of the maximum rates in force to June 30, 1918:

One-man operation, 48 cents an hour
Two-men operation, 86 cents an hour
Trailer operation, 43 cents an hour

On the same number of hours the payment in wages since July 1, 1918, would be:

	Hours	Wages One-Man Operation	Wages Two-Men Operation	Saving
Motor-car hours	94,307	$47,153	$84,876	$37,722
Trailer hours	4,358	1,961	1,961	....
Total	98,665	$49,114	$86,837	$37,722

The annual saving would be $112,618 on the basis of the maximum rates which will be in force:

One-man operation, 50 cents an hour
Two-men operation, 90 cents an hour
Trailer operation, 45 cents an hour

The saving in supplies would be:

Caps, 130 @ $3	$390
Suits, 130 @ $28 50	3,705
Overcoats, 60 @ $25	1,500
	$5,595

The only ticket now up for elimination is the eight-for-25-cents workmen's ticket, as this is for long-haul non-profitable peak riding which costs more than any other. Then, too, the shopmen who use it are earning more than many a clerk and commercial man. At a meeting held in June, the Calgary Trades & Labor Council protested against a fare increase on the ground that it was not needed to cover an operating deficit but was a scheme to tax the railway, the poor man's carrier, in order to relieve the rich taxpayer, who rides in automobiles over the public highways. They pointed out that the workman taxed on an average holding of $2,000 would have to pay far more for extra fare than he would get back in lower taxes, whereas the gain to the rich man assessed on $50,000 or more would be appreciable.

The odd point about the Council's proposal to take $25,000 a year taxes instead of $4,400 is that it could readily have taken much more money from the Municipal Railway's funds without raising any talk about taxation. The railway now has a surplus of $94,000 and a fund of $750,000 to cover depreciation reserve and sinking funds. It is credited by the city with 6 per cent interest on $300,000 of the foregoing total.

TRAFFIC ACCELERATORS INCLUDE WHISTLE SIGNALS

All cars with air brakes carry deep-toned air whistles for use in signaling to cars of intersecting lines. These signals save not only time and accidents for the cars, but also time and disappointment for passengers who wish to transfer. The code is as follows:

One whistle: Wait for transfers.
Two whistles: All clear; go ahead.
One whistle from a waiting car: Have you transfer?
One whistle in reply from approaching car: Yes.
Two whistles in reply from approaching car: No.

People with sensitive ears are certain to make some objection to audible signals, but in view of the great number of automobiles now carrying all kinds of horns and sirens such complaints lack merit. In any event, the people of Calgary have long accepted this signal practice as a matter of course for their own convenience.

Another practice, and one made possible by the limited number of routes, is the use of colored disks and lamps to indicate the routes. These are mounted on

TABLE II—COMPARATIVE REVENUES AND OPERATING EXPENSES OF CALGARY MUNICIPAL RAILWAY FOR SIX MONTHS ENDED JUNE 30, 1917 AND 1918

	1918	1917
Car earnings	$316,538.34	$263,500.08
Miscellaneous earnings	3,855.27	4,148.83
Revenues	$320,393.61	$267,648.91
Track and roadway	$3,862.85	$2,378.08
Electric line	1,851.28	1,019.81
Buildings and fixtures	354.51	10.80
Maintenance of way and structures	$6,068.64	$3,408.69
Cars, bodies and trucks	$22,835.17	$22,069.61
Electric equipment of cars	10,609.95	7,339.66
Miscellaneous equipment	178.49	89.44
Shop expenses	1,880.29	1,401.44
Maintenance of equipment	$35,503.90	$30,900.15
Power	$47,258.78	$43,692.63
Superintendence of transportation	2,230.00	1,356.13
Wages of conductors	2,826.17	28,761.24
Wages of motormen	6.06	28,761.25
Wages of motor-conductors	78,080.14	22,361.82
Wages of car service employees	73.76	....
Wages of car house employees	3,539.94	3,348.83
Car service supplies	8,537.20	8,861.25
Miscellaneous car service expenses	153.04	294.08
Cleaning and sanding tracks	2,428.43	1,381.98
Removal of snow and ice	3,147.08	973.20
Operation of sprinklers	165.74	152.95
Wages of freight motor-conductors	2,094.56	195.91
Transportation	$152,840.90	$140,141.27
Salaries of general officials	$3,799.99	$3,231.03
Salaries of clerks	1,707.00	1,455.00
Printing and stationery	256.50	217.75
Miscellaneous office expenses	223.82	280.13
Store expenses	923.43	782.18
Advertising and attractions	259.10	65.00
Miscellaneous general expenses	1,431.77	1,107.28
Miscellaneous legal expenses	....	238.00
Rent of land and buildings	250.45	192.80
Insurance	1,063.12	1,096.88
Administration charges	1,993.98	1,993.96
Bowness Park improvements	2,857.09	5.81
Caretakers' salaries, Bowness Park	208.00	....
Sarcee Line	290.42	859.82
General	$15,264.67	$11,525.91
Operating Expenses	$209,678.11	$185,976.02
Balance	$110,715.50	$81,672.89
Conduit rental	$414.96	$414.95
Land rental	181.98	182.00
Debenture, interest	55,091.40	55,091.43
Sinking fund	22,253.94	22,253.93
Depreciation	17,838.24	17,838.25
Taxes on land	267.48	267.50
Taxes on line construction	1,209.96	1,210.00
Bad debts	375.00	375.00
Contingency accident reserve, 2 per cent car earnings	6,330.76	5,270.00
Overhead and fixed charges	$103,971.82	$102,903.06
Surplus	$6,743.68	†$21,236.17

†Deficit.

STATISTICS	1918	1917
Miles operated	1,482,876	1,201,665
Hours operated	151,314	132,994
Passengers carried	7,431,394	6,518,801
Revenue per car mile (cents)	21.606	22.273
Operating expenses per car mile (cents)	14.139	15.476
Operating expenses per car hour (cents)	1.385	1.398
Cost of power per car mile (cents)	3.187	3.636
Average fare per passenger (cents)	4.106	4.001
Average daily receipts	$1,770.13	$1,478.72
Average daily operating expenses	1,158.44	1,027.42
Average daily operating expenses, including fixed charges	1,732.87	1,596.02
Percentage of operating expenses to revenue (per cent)	65.4	65.8

both the front hood and the sides; the sockets or bases are interchangeable. The indications per route are white, blue, red, red and blue, red and white, yellow, yellow and blue, blue and white.

Transfers are of simple directional type with paper and ink colored in the same way as the route signs. Obviously the car operator has no difficulty in rejecting wrong transfers quickly, for the red line does not take red transfers issued thereon and the same principle applies to the other lines. If the car operator does not use up all the transfers punched for a given date, he merely makes a punch for the following day, which then makes the transfer valid. All transfers also are punched for a.m. or p.m. hours and fractional hour limits.

An odd transfer, which is really a half-rate ticket, is that given to riders patronizing the city market. This transfer permits them to ride home free during the marketing hours.

The men pick their runs every three months. They are on the nine-hour two-swing basis, as on from 6 a.m. to 11 a.m.; off from 11 a.m. to 2 p.m.; on from 2 p.m. to 6 p.m. Owing to the successful encouragement of mid-day travel, trippers get three hours in the middle of the day in addition to three hours each morning and evening. Overtime is paid as straight time, and there is no allowance for dead-mileage runs, make-ready time, etc.

On July 1, 1918, the wage schedule of 37 cents to 42 cents an hour for conductors and motormen was raised to a minimum of 40 cents for the first year and a maximum of 45 cents for the second year and thereafter. The only "conductors" are on a few trailers, freight cars and sprinkler cars. Even the combination baggage and freight car to Camp Sarcee, Bowness and Ogden is run by one man. So practically all men receive 45 or 50 cents an hour, a 5-cent bonus being paid for one-man service.

The railway is 26-cents an hour better off than with the two-man operation of 1913-1914, and 40 cents an hour better off over two-man operation at present wages. Car-hours average 836 a day for 365 days a year.

TABLE III—OFFICIAL STATISTICS OF CALGARY MUNICIPAL RAILWAY FOR LAST FIVE YEARS ENDED JUNE 30 AND FIRST HALF OF 1918

	1913	1914	1915	1916	1917	1918	Six Months Ended June 30, 1918
Investment	$1,777,262	$2,176,148	$2,240,227	$2,253,250	$2,343,412	$2,343,969	$2,343,969
Miles of track	63	71.5	71.5	71.5	75	75	75
Cars operated—Regular	60	60	60	38	42	44	44
Cars operated—Trippers	5	18	20	23	24	32	32
Car-hours operated	307,980	366,367	298,185	250,556	277,525	301,768	151,314
Car-miles operated	2,647,674	3,213,132	2,189,804	2,524,860	2,573,993	2,900,042	1,482,876
Fare passengers	16,986,658	17,787,860	14,073,298	12,986,234	13,909,238	14,519,256	7,431,394
Passenger revenue	$692,430	$724,402	$593,437	$533,094	$563,621	$595,681	$305,133
Average fare (cents)	4.008	4.072	4.216	4.118	4.052	4.100	4.106
Earnings per car mile (cents)	26.227	22.797	21.328	21.304	22.278	20.796	21.605
Wages paid motormen and conductors per car hour (cents)	65.7	70.6	70.6	71.3	61.7	54.6	53.5
Wages paid motormen and conductors per car mils (cents)	7.641	8.054	7.47	7.081	5.772	5.688	5.456
Operating expenses per car mile (cents)	18.960	17.752	15.191	14.868	14.944	14.416	14.139
Debenture interest	$83,904	$106,359	$106,359	$106,359	$110,182	$110,182	$55,991
Sinking fund and depreciation	30,723	41,478	72,986	73,499	78,392	78,463	40,092
Surplus	64,942	8,769	8,894	4,980	21,794	16,848	6,743

NOTES.—1. One-man operation began on a few lines in 1915; the system was completely changed over in November, 1917.

2. Maximum wage to conductors on trailers and motormen on freight work cars, 43 cents from Jan. 1 to June 30, and 45 cents from June 30.

3. Maximum wage of motor-conductors to June 30, 48 cents; from June 30, 50 cents.

4. Time and a half holidays, with free uniforms, suits, overcoats and caps yearly.

5. Three holidays and time and a half caused the wages per car hour to represent 53.5 cents for the first six months of 1918; moreover, two men were occasionally used when double fares were collected on the Camp Sarcee and Bowness lines.

In addition to $121,056 a year saving in platform expense, on the basis of the first half of 1918, the Municipal Railway also saves $5,595 a year in the purchase of uniforms and other equipment for 130 men. Table I gives a detailed wage comparison for the four months ended April 30, 1918. Discipline is also easier. since there are fewer men to handle and the men are more content because of the higher wages, the variety of work and the absence of argument with conductors behind.

Tables II and III are detailed comparisons of revenue, operating expenses, fixed charges and traffic statistics for the years ended June 30, 1913 to 1917, inclusive, and the first half of 1918. They cover a period when both two-man and one-man car operation was used, and they indicate that the change and the continuance of ample service were rewarded. From Jan. 1 to June 30, 1918, the car earnings increased from $267,648 to $320,393. Hence in spite of larger allowances for maintenance and other expenses, a deficit of $21,230 was turned into a surplus of $6,743. The car-miles operated increased from 1,201.665 to 1,482,876, but the operating expense per car-mile decreased from 15.476 cents to 15.139 cents. The operating ratio in the face of rising prices declined from 76.69 per cent in 1914 to 65.4 per cent in 1918.

The wages per car-mile to motormen and conductors have decreased from 7.641 cents in 1913 to 5.688 cents in 1918. In 1913 fewer men were getting maximum wages, but in 1918 practically all would receive 43 cents an hour if two men were used and 45 cents after July 1, with 50 cents on one-man cars.

Up to the present one-man operation has taken care of increased service at the old fare, increased wages and better working conditions, and the higher material costs. Two-man operation would require a 25 per cent increase in fares to obtain the same results for the same traffic, but an increased fare would reduce traffic.

Analysis of One-Man Car Possibilities

Data for Specific Case Show How Desirable One-Man Safety Car Operation Would Be in Connection With Rerouting to Save Walking and Transfers

BY JOHN A. BEELER

Consulting Engineer, New York, N. Y.

OF AVAILABLE operating economies the modern light-weight one-man car with automatic equipment is most important in the extent of its applications, in the largeness of its savings and above all in the fact that it increases travel.

By "extent of its applications" is meant all the service in practically all communities of 75,000 or less; a large part of the service in cities of the middle size, and service on such lines of metropolitan cities as are not routed over the more congested streets.

By "largeness of its savings" is meant the reduction in power and platform expense aside from economies in track and car upkeep.

By "the fact that it increases travel" is meant the stimulation of traffic through increased service, which has had the twofold effect of eliminating automobile competition and of encouraging short as well as long rides.

IN A CITY BELOW 100,000

Let us consider the modern one-man car as applied to a specific case, say a city of less than 100,000. The community is served by 25 miles of single track. It should be a splendid electric railway town because of hills which are responsible for grades up to 10 per cent. Slow schedules, bad track, poor cars and two-man crews, however, have made the cost of operation equal 90 per cent of the gross revenues. That the town itself is prospering is indicated by the fact that the car-mile earnings rose from 20 cents in 1911 to 22.5 cents in 1916, with a further rise to 24.5 cents in 1917. Yet the small passenger earnings of $1.66 per car-hour (due largely to slow schedules) and average annual earnings of but $5 per capita indicate that the riding possibilities of this city are far from exhausted.

The reasons why the maximum riding possibilities have not been attained might be classified as follows:

1. Unsatisfactory routing and headways.
2. Low speeds.
3. Unattractive cars.
4. Financial impossibility of increasing service, in view of the low number of miles per man and car, excessive energy consumption and high maintenance.

REROUTING OFFERS BIG SAVINGS IN TIME

Ordinarily the first thought in connection with improving service is to shorten the headways; the second is to raise the schedule speed, and the third (if considered at all) is to improve the routing. Yet in the present case rerouting was the most important factor.

Analysis showed that lines Nos. 1, 2 and 3 were satisfactory as to routing, since they brought the passenger directly to the business center. Line No. 4 not only passed at some distance from the center but was also at the bottom of a steep hill. It is true that a transfer to the center was obtainable, but transfers are an inconvenience at best. This circumstance, plus a ten-minute headway, doubtless tempted persons who lived a mile or two along this line from the business center to walk instead of ride.

The remaining three lines, Nos. 5, 6 and 7, did not reach the business center directly but relied on transfers. The headways on these lines varied from ten to twenty-five minutes. Since the one-way trip length of line No. 5 was 2 miles and of Line No. 7 only 1¼ miles, it is obvious that people in their vicinity could not save much time by riding. As far as crosstown riding was concerned, three and even four transfers might be necessary to ride an equal number of miles!

Hence the basic recommendation was to route all of the lines via the center of the city so that riding would be encouraged by minimizing walking and transfers. To put the matter in another way: 'Five minutes saved a person in waiting for a connection or in walking from an offside line is in effect almost as good as cutting a ten-minute headway to a five-minute headway.

As this rerouting was considered in connection with one-man car operation, it is proper to mention that the concentration of all lines in the business section would be well below the saturation point for this character of operation. The averaged combined headway would still be only two minutes, compared with less than one minute in cities where such cars are now in use.

The railway was found to be using summer and winter sets of rolling stock. The open cars were of ten-bench capacity, while the closed cars were of one-man car size, as they seated only thirty to thirty-two passengers each. Because of the duplication and age of the equipment only 40 per cent of the rolling stock, including trippers, was in use on any one day.

Energy consumption was high, ranging from 2.5 kw-hr. per car-mile in summer to 3.75 kw.-hr. per car-mile in winter for cars averaging 25,000 lb. loaded. Thus while the cars were not so heavy as the over-sized cars of other properties, their age and antiquated design were figured as responsible for 200 watt-hours rather than the 125 watt-hours per ton-mile possible with modern, faster one-man cars over the grades of this city. Yet the old schedule speed averaged only 7.5 m.p.h. or little more than twice walking speed. The cost of car maintenance was 2.5 cents per mile.

To supersede this service the one-man safety car, which has since become increasingly popular, was recommended. Under the conditions then obtaining this would have reduced platform expense from 35 per cent to 18 per cent of passenger receipts after allowing a 3 cent differential in wages—an annual saving of nearly $50,000. It would also have reduced energy consumption (the use of thermostats and coasting recorders being assumed) from 15 per cent to 8 per cent of passenger receipts by cutting the cost per car-mile in half —an annual saving of $20,000.

Other possibilities of the one-man safety car in promoting economy and increasing travel will be noted in the following analysis of several reroutings:

In the case of two lines the present direct routing and the ten-minute headway were to be unchanged, but the round-trip running time was to be reduced from forty minutes to thirty-five minutes, so that seven cars would do the work of eight. In light hours the round trip could be made in thirty minutes, with six cars instead of eight, or six men in place of sixteen!

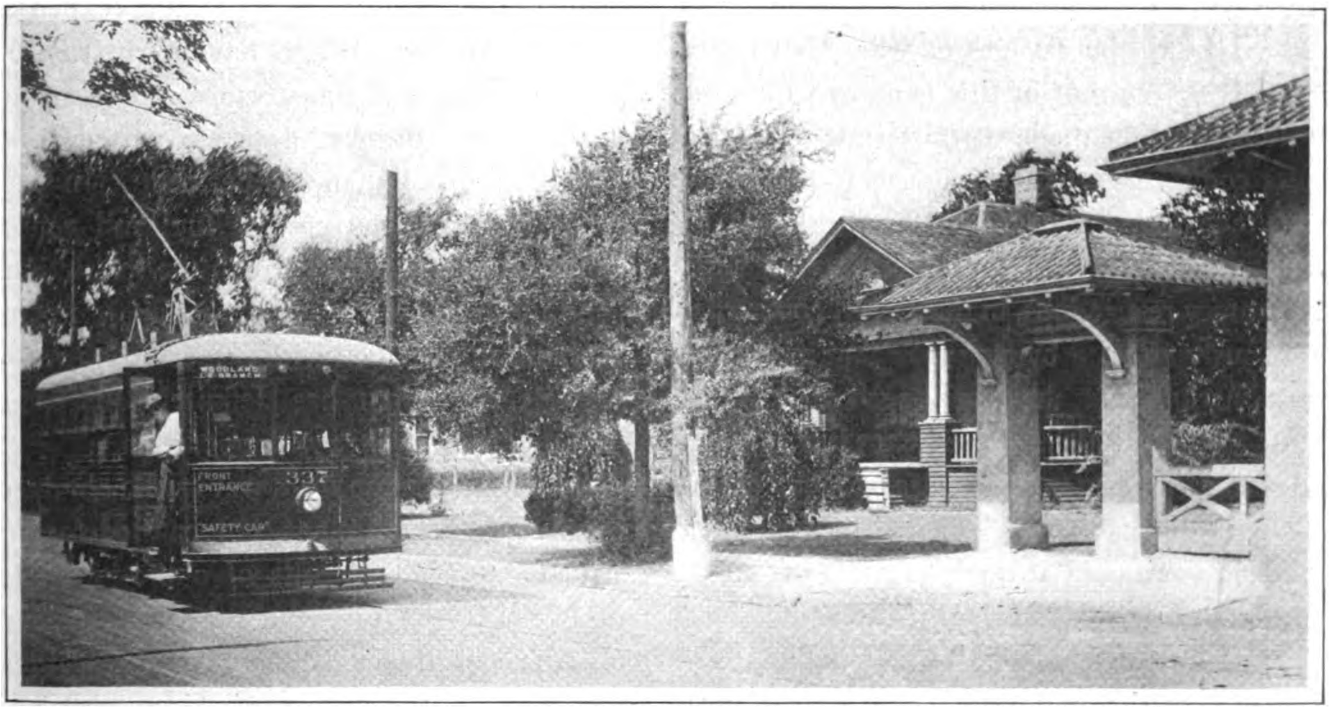
A third line was to be lengthened from 4 miles to 6.5 miles, round trip, by being extended to the business center. Theoretically the headway was to be ten minutes as before, but actually the overlapping of another line (also on a ten-minute headway) would give the downtown part of the line a five-minute service, thus helping to draw the pedestrian off the sidewalk. The new schedule speed on this line would be 10 m.p.h. instead of 8 m.p.h.

The remaining lines were recommended to be so combined for through operation that on part of the route a twenty-minute headway per line would give a combination headway of ten minutes, while overlapping further downtown would give a two and five-tenths minute service that only a miser could withstand.

To go into further descriptions of the reroutings would lead to needless complexity. In general it was apparent that on the basis of lower operating costs alone it would pay to change over to one-man safety-car operation over the rerouted tracks without making any allowance for those increases in travel and popularity that have been noted in so many communities.

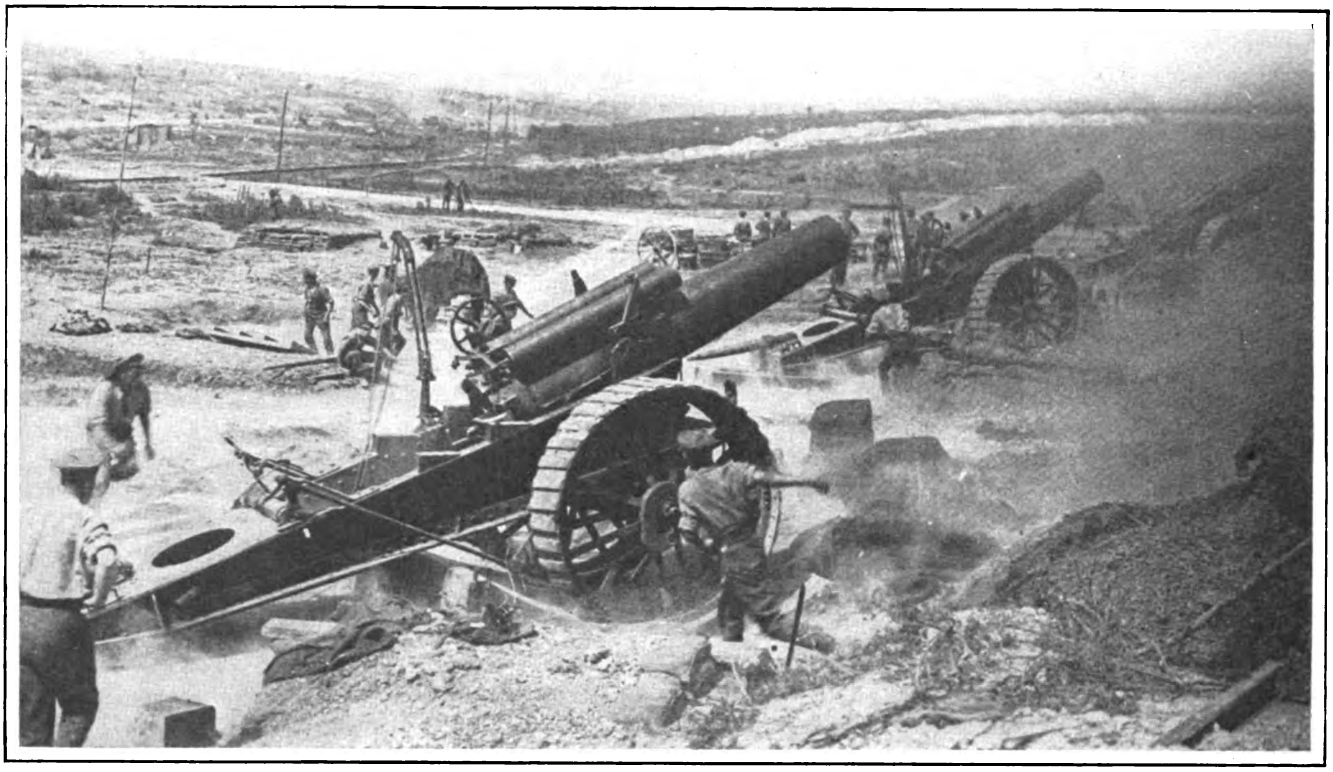
Passenger Increase in Liverpool

THE increase in the number of passengers who traveled on the Liverpool (England) Corporation Tramways during 1917 as compared to pre-war years amounted to 40,000,000, which is about equal to the total population of Great Britain. This enormous increase was brought about by various causes, including the increase of 50 per cent in steam railroad fares, the abolition or great reduction of steam railroad service, the diversion of shipping from other ports to Liverpool, and the great amount of munition, aircraft and other war work in and around Liverpool.



In Houston, Tex., the Latest Big City Convert to the Safety Car

British Tramways Seriously Affected by War



Wages Have Jumped 60 *to* 100 *Per Cent and Costs of Material* 100 *to* 200 *Per Cent—Municipal and Private Lines Feel Urgent Need of Fare Relief—More Than Half of Employees Have Gone to the Front*

PRIVATE and municipal tramways in Great Britain and Ireland have not been immune from the ravages of war. No better proof of this is needed than the recommendation made a short time ago by a select committee of the House of Commons to the effect that the Board of Trade should be empowered to permit fare increases, in spite of statutory restrictions, in the case of companies injuriously affected by causes arising out of the war. Recognizing the urgent need of the local transportation utilities, Parliament has passed a bill authorizing rate increases sufficient to enable with due care and management a common dividend to be paid at three-quarters the maximum rate or three-quarters the pre-war rate, whichever is lower. The text of this act was published in the ELECTRIC RAILWAY JOURNAL of Sept. 7, page 418.

British authorities are unanimous in declaring that all tramways have been injuriously affected by the increased operating expenses caused by the war. Wages have risen from 60 to 100 per cent, and the advance in the cost of materials since pre-war days has varied from about 100 to more than 200 per cent. In particular, the increased cost of fuel and consequently of power, coupled with the restrictions on supply, has given rise to a serious problem, and an order in council with respect to tramway materials and plant has definitely indicated substantial interference with operation.

The larger revenue from war traffic obtained by many tramways has not compensated for the constantly advancing costs of operation. In most of the large cities, where the tramway systems are generally owned by the municipalities, a small margin has still remained, inasmuch as the fares charged have been in most cases lower than the statutory maximum. In the case of the smaller municipal tramways, and in the case of most of the privately owned companies, which operate in less densely settled territory, the revenues have reached the vanishing point and fare relief is needed.

An additional burden upon British tramways has been the serious drain upon man-power. More than half of the male employees of the average tramway have entered military or naval service since the war began, and this has created the problems of substituting female labor, providing for the dependents of men in service, utilizing crippled soldiers and the like.

In all things, however, the tramways of Great Britain and Ireland have been eager to serve the nation's interests. Their trials and their patriotic efforts to endure these are well described in the following statements prepared from data before the select committee and also reviews by prominent tramway officials through the London office of this paper.

Municipal Lines Have Suffered

Municipal Tramways Association Reports That Small Companies in Particular Have Felt the Burden of Increased Operating Costs

THE Municipal Tramways Association includes eighty-seven undertakings—practically every municipality operating tramways in Great Britain and Ireland. The cities own about 1800 miles of line, representing nearly £56,000,000 of capital, and they carry 2,697,000,000 passengers annually.

In the large cities, according to C. J. Spencer, honorary secretary of the association, the practice has been to charge fares considerably lower than the Parliamentary maximum, the general rate being about a penny for 2 miles with correspondingly low rates for workmen. Municipalities are peculiarly sensitive to the wishes of the residents, and they have usually reduced the fares as much as possible, but not so much as to cause the tramways to become a burden on the taxpayers. The principle has been generally accepted that the tramway passenger must pay for the cost of his ride.

The large municipal tramway systems, with their heavy density of traffic, have in the past been fairly remunerative, but they have lately been getting into difficulties. Now the fares are being raised throughout the country in order to meet the increased costs of operation. The usual method is to increase the fare per zone rather than to shift the zones, although in some cases the zones have been shortened. The general effect on traffic, it is said, has been to reduce traffic but to increase revenues. A common experience is for a 50 per cent increase in fare to result in a 25 per cent increase in revenue, but this depends largely upon the traffic characteristics of the district concerned.

SMALLER TRAMWAYS HAVE BEEN HARD HIT

On account of the less density of traffic, the smaller municipal tramways have not been able to keep the fares down so much as the large undertakings have done, and they have charged well up to the Parliamentary maximum. Consequently they have not been so advantageously placed as the large tramways for securing fare increases. They have needed relief much more, however, for they are bound by the national awards of the committee on production to pay practically the same war bonuses and advances to their men as the large undertakings, and they bear the same burdens in regard to power expenses, cost of materials and the like. Eventually these tramways which are restricted by statutory fare limitations will upon proof of their case before the Board of Trade receive relief, for the act just passed by both Houses of Parliament authorizes an increase up to 50 per cent in the maximum fare for municipal tramways.

In the munition centers there has been in general a great increase in traffic and consequently in revenue. Had it not been for this fact, the municipal tramways would all have been in difficulty a year or two ago. Even in such sections, however, the expenses have shown a tendency to outrun revenues, and of late they have quite done so. No further increase in traffic is expected, for many systems, in munitions centers and elsewhere, are considered to have already reached the saturation point on account of overcrowding. They cannot carry more passengers without running more cars, but they cannot secure the cars. They might even have to curtail mileage in order to reduce the coal consumption.

On the other hand, some of the municipal tramways have been approached in regard to carrying parcels and freight to relieve the present transportation difficulties. In Mr. Spencer's opinion, the tramways could at the present time serve the nation with considerable advantage. With the present rates, however, it is impossible to do so without incurring a big loss. The Board of Trade, he feels, should have power to vary the rates so as to remedy this defect.

EXPENSES WILL CONTINUE HIGH

One of the chief causes of increased expenses has been the increased cost of labor. Wages of motormen and conductors have been increased approximately 70 per cent by the granting of a war wage. Some of the wages have been increased from 70 to 100 per cent. This, however, does not entirely represent the increase in cost, for the labor which must be used to-day is generally not so efficient as the labor employed before the war.

The cost of power has gone up on the average about

20 per cent over pre-war figures. A rough estimate of the increase in cost of materials would be from 100 to 200 per cent. The variations have been wide, but the things that are absolutely necessary, tires and rails, have advanced greatly. Rails have risen from £7 to £15 and £16 a ton, and tires have gone up even more than that.

There is no doubt in Mr. Spencer's mind that expenses will keep very high for some time after the war. As far as one can see, materials will cost as much and wages are not likely to go back. What will happen to revenues, however, is difficult to prophesy. It all depends upon the business of the country. Probably some systems will suffer decreases in revenues, while others may not.

RENEWALS HAVE TO BE NEGLECTED

The reserve and renewal funds have been built up in the majority of cases on the basis of a penny per car mile to meet the ordinary depreciation. With materials at anything like the present cost, however, this amount is altogether inadequate. The municipal tramways cannot undertake any but the necessary renewals during the period of the war, and they are obliged to look forward to a period when they shall have to renew at prices probably much higher than those existing before the war.

Ordinarily, it is conceded, this would be a bad policy, but the tramways cannot help themselves. They are breaking the old adage that one stitch in time saves nine. The tramways will have to make renewals after neglecting the undertakings to such an extent that increased renewals will be required, and in addition they will probably have to pay more for the material when it is needed.

The higher costs of materials and the shortage of materials have even made the carrying out of ordinary maintenance a matter of difficulty. As for new construction, this has been practically suspended by the war.

SIXTY-THREE PER CENT OF MEN IN SERVICE

Approximately 63 per cent of the men employed by municipal tramways in Great Britain and Ireland have entered military or naval service. Considerable female substitution has taken place as far as conductors are concerned, almost every tramway being largely operated by women conductors. The male conductors remaining are men who are unfit for military service on account of some medical disability or are beyond the military age. Returned soldiers have also been utilized both as drivers and as conductors. As nearly as can be estimated, about 80 per cent of the vacant places have been filled by women and other substitutes, the remaining 20 per cent being met by running fewer carmiles.

There has been very little substitution of men employed in the depots, with the exception of cleaners. In many undertakings the whole of the cleaning staff has been replaced by women, and in others by men above military age and men unfit for military service. Skilled and semi-skilled men in the depots, however, have not been taken to any great extent and are considered as being in a protected occupation.

Very few one-man cars are being used, and no increase has been noticed since the outbreak of the war. No great increase has occurred in the use of automatic devices, owing to the fact that it is impossible to secure the material on account of war conditions. Engineering firms are almost exclusively engaged on munitions of war, and the purchase of new apparatus is almost out of the question.

The extent to which a crippled soldier can be utilized in connection with tramway work is mainly dependent upon the disability. There are few jobs where a badly crippled soldier is of any use at all. Shell shock certainly interferes with a man's suitability as a motorman. As far as known, blinded men have not been utilized for the winding of armature coils, but men who have lost the use of one eye are being used at present for work of this sort.

Municipal tramway undertakings have been able to keep in touch with the men at the front by supplying various comforts and the like. No hospital cars have been built, but soldiers and sailors in hospitals are allowed to travel free on most systems.

Revenue Gains Eaten Up

Majority of Privately Owned Companies of Tramways & Light Railways Association Have Enjoyed War Traffic, but the Net Gain Has Been Negligible

IN GENERAL—so says R. J. Howley, vice-chairman of the Tramways & Light Railways Association—there have been increases in revenue for the privately owned companies belonging to this association. In certain districts the increases have been considerable, and in others they have not been so great. In all cases, however, the greater part of the increases has been absorbed by the increased expenses. In some cases the increases have been wholly absorbed. In Mr. Howley's opinion, an estimate of doubled expenses as compared to pre-war times is conservative.

To a large extent the companies have been obliged to defer repairs wherever possible. Pole painting, repaving parts of track and a large amount of what is called ordinary repair work is now deferred on account of scarcity and cost of labor and materials. The deferring of these repairs will make them more costly.

In connection with permanent way at least £100 a year of what is ordinary maintenance work per mile has to be deferred—this is quite apart from renewals. Generally the cost of repairing permanent way in pre-war days varied from £130 to £200 per mile per year.

The present increase in wages, it is felt, is going to last. The present higher cost of materials may, and it is believed will, come down, but it will take a long time before normal conditions are revived. Just now the question of maintaining revenue to meet such increased costs is of serious concern to all the companies.

PRIVATE COMPANIES HAVE LOWER TRAFFIC DENSITY

The companies belonging to the Tramways & Light Railways Association operate very largely in the less populated areas and in the outskirts of municipalities, where the return per mile is much less than it is in the cities or towns. This makes a big difference when one is considering the strength of the undertaking for resisting higher wages and material prices. Yet the investment does not vary in any such proportion as does the earning power, for the average cost per mile of the privately owned tramways compares quite well with the average cost of all the tramways in the country.

Many of the privately owned tramways are working on the outskirts of big cities which are growing outward. The traffic is continuing to grow, because of the extension of the population into the country areas and because of the larger amount of money which the workingman has to spend. In recent years a number of factories have been placed in the country at some distance from the cities, and they have produced traffic. The main reason for the increase in the long-distance passengers, however, is that the workingman to-day likes to live on the outskirts in the fresh air and does not mind the cost of a penny or 2d. or even 3d. a day so much now.

ABNORMAL REVENUES WILL NOT LAST, BUT EXPENSES WILL

Some private companies are securing a considerable abnormal revenue from special causes—munitions factories built on the outskirts of towns, and the housing difficulties experienced by munitions workers, which necessitate their traveling 3 or 4 miles in the morning and in the evening. Very soon after the war part of this revenue will disappear, and it will keep on disappearing for some time. Yet there will be a considerable lag in the reduction of expenses, Mr. Howley believes, and the effect on the companies due to causes brought about by the war is likely to last many years thereafter.

The privately owned tramways have not been affected by the traveling of soldiers to so great an extent as have the steam railroads. Most of the camps are not in close proximity to the towns, and there are really few soldiers quartered in towns. Early in the war, during the winter-time, the soldiers were billeted in towns, and then there was a large amount of soldier traffic. Now the travel is mainly between the larger camps and homes when the men go and return from leaves, and the steam lines handle this traffic.

FREIGHT RATES ARE TOO LOW

Typical freight rates are 2d. per ton per mile for coal, charcoal, sand or material for repairing roads, 2½d. for iron, iron ore and sheet iron; 3d. for sugar, grain, flour, etc., and 3d. for the first rate in the case of a 7-lb. parcel. It was impossible even before the war to carry goods at a profit, and with the increased expenses of to-day the situation is still worse. The difficulty arises from the fact that a haul of tramway or light railway is short and the initial cost is high. It is said to be a great pity, from the national point of view, that the private tramways cannot carry goods at a profit, because there is a great scope for the hauling of goods and farm produce.

Costs of Material Up 120 Per Cent

Higher Operating Expenses Lead to Two Fare Increases in Manchester—Railway Has Kept in Close Touch with 2900 Men at the Front—Tokens Allow Wounded to Ride Free

BY J. M. MCELROY

General Manager Manchester (England) Corporation Tramways

IN DECEMBER, 1917, the Manchester Corporation Tramways increased its revenue by reducing the lengths of the various zones by about 600 yd., discontinuing the half-penny zones and withdrawing workmen's fares. In the latter connection, it should be remembered that the ordinary fares remained less than the statutory fares for workmen of a half-penny per mile. This revision had the effect of improving revenues by about £50,000 a year. At the present time, the railway is putting into operation by degrees a further revision, adopting a 2-mile 1d. zone from the center of the city and adjusting all other zones in the same ratio.

The basic wages of drivers, guards, etc., have been increased by a bonus of 25s. a week. This is paid to all adult male employees, while a bonus of 13s. a week is paid to all the adult female staff engaged in the operating section of the department. The tradesmen and semi-skilled men in other branches of the service receive a bonus of 20s. per week, plus 12½ per cent calculated on wages and bonus combined. In addition the dependents of men in service receive generous allowances. More than £240,000 has been expended by the railway under this heading since the commencement of hostilities.

Tramwaymen To-day—Heroes To-morrow

AVERAGE RISE IN COST OF MATERIALS 120 PER CENT

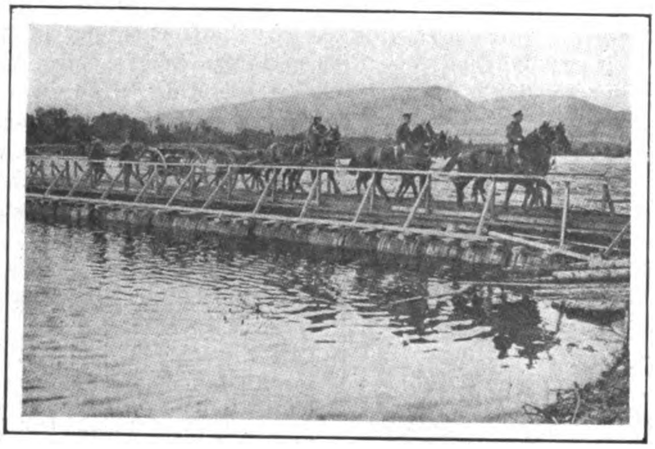
The increase in the cost of materials has been exceptional, the average rise being about 120 per cent. It should be borne in mind, however, that some articles have risen in price as much as 300 per cent, but for a flat rate to cover all, the figure first stated is approximately correct. The cost of electrical energy has advanced by 15 per cent. This is supplied by the electrical department of the municipality, and the generating stations are under the control of that department.

No additional track has been constructed since the war began. We have been able to keep up the maintainance of the permanent way, but not, of course, as efficiently as in pre-war days. This means much additional work when peace comes about, if material and labor can be obtained. These remarks apply, perhaps with added force, to rolling stock.

FIFTY-FIVE PER CENT OF EMPLOYEES IN SERVICE

The number of employees who have joined the colors is 2896, or 55 per cent of the total staff. The places of the conductors who have enlisted have been filled as follows: (a) By women, to the extent of 85 per cent; (b) by men unfit for military service, 10 per cent, and (c) by men discharged from the army and the navy, 5 per cent.

The places of many of the drivers who have joined the colors have been taken by male conductors who were called upon to qualify for the work. This enabled us partially to solve our difficulties in this connection. These men are putting in considerable overtime and sacrificing their usual days off. Moreover, holidays have been almost entirely suspended, so that on the whole our car service has been well maintained. We have not as yet had recourse to the employment of women drivers.



Bringing Up the Field Artillery

The places of the employees hitherto engaged in the carhouses, etc., have been filled by women to clean the cars, etc. The male cleaners (who are not in the army for various and legitimate reasons) have, where suitable, been transferred to semi-skilled work in connection with car maintenance.

Up to the end of July last, 521 former employees had been discharged as unfit for further military service. In nearly all these cases work was found for them. Some were reinstated as drivers and conductors after they were proved capable of performing the work. When it was found that they were incapable of the duties they originally had, other and easier jobs were found for them. For instance, it was not deemed wise to put back on the front platforms men suffering or just recovering from shell shock, and we have up to the present refrained from doing so. We have had no experience of blinded men returning to us.

The railway has, from the beginning, kept in touch with the men engaged in the several theaters of war and sent periodically parcels of food, cigarettes, etc., through the medium of the Employees' Social & Athletic Society. It intends to continue this practice in the future. Our efforts in this direction have been much appreciated by the men who are abroad and in hospitals.

We do not permit indiscriminate free riding by soldiers and sailors. Wounded men, however, housed in the various hospitals in Manchester and district are provided with tramcar tokens, made of celluloid, which permit them to travel free. These tokens are supplied on application to the hospital authorities, who undertake to distribute them and prevent their abuse. In addition, tokens have also been granted for recruiting purposes and in connection with war charities. The value of free tokens granted has amounted in the aggregate to £8,000.

How Croydon Is Carrying On

Material and Labor Costs Have Necessitated Two Fare Revisions—One-Man Car Operation Is Step in Right Direction but Time is Not Opportune in Great Britain

BY T. B. GOODYER
Manager Croydon (England) Corporation Tramways

SIXTY per cent of the employees of the Croydon Corporation Tramways have left the service to join the naval and military forces, and each man has an understanding that his position will be open to him on his return to civil life. Allowances are made to the men's dependents according to their circumstances, this practice being general throughout the country.

By far the larger portion of men enlisting have come from the traffic staff, and the positions of conductors have been filled by the engagement of women. A large number of the vacancies arising in regard to motormen has been filled by training conductors unfit for military service, and by engaging applicants unfit for military service and, in a few instances, discharged soldiers.

So far as Croydon is concerned, we have not yet dealt with the question of women drivers, but on several systems, as shown in Table I and Table II, the experiment has been made and reported upon as satisfactory. The congested traffic conditions of the London area would undoubtedly have an important bearing upon the success of such an experiment in Croydon and other parts thereof. Another important point would be the difficulty of obtaining new equipment for cars, where existing brake power is considered insufficient for the less experienced handling of cars by women.

In a few instances, discharged soldiers have made very efficient motormen. If a man is seriously disabled, however, his chances of proving a success in the arduous duties of a driver are not considerable. I have had no experience with a man suffering from shell shock taking on the duties of motorman, but presumably the somewhat strict medical examination which all applicants have to pass before being licensed to drive public vehicles in the metropolitan area, would prevent any man in this condition from being passed as suitable for such work.

I have been much interested in the several articles which have appeared in the ELECTRIC RAILWAY JOURNAL relating to coasting and saving recorders. We

TABLE I—MEN AND WOMEN EMPLOYED AS DRIVERS AND CONDUCTORS ON TWENTY-THREE ENGLISH UNDERTAKINGS REPORTING IN APRIL, 1918

Name of Undertaking	Drivers Men	Drivers Women	Conductors Men	Conductors Women
Barking	7	....	7	.....
Bexley	39	....	3	45
Colchester	22		...	24
Croydon	79	....	9	104
East Ham	63	....	30	42
Erith	21	....	1	19
Felixstowe	.....	....	...	...
Great Yarmouth	25	....	21	4
Ilford	32	....	9	31
Ipswich	46	....	10	46
Leyton	105	....	27	95
London	2,067	....	1,047	1,474
Lowestoft	11	9	.....	20
Southend-on-sea	33	9	7	39
Walthamstow	56	....	1	81
West Ham	85	....	62	173
Walton-on-the-Naze	....	....	.....	.....
Luton	13	....	3	9
London United	297	....	48	270
Metropolitan Electric	413	....	45	448
Norwich Electric	52	....	(Boys) 9	50
Peterborough	(Boys) 4 9	7	(Boys) 1	13 ....
South Metropolitan	52	....	1	52
Total	3,628	25	1,341	3,040
Per cent	99.32	0.68	30.61	69.39

have used wattmeters for saving electrical energy on our cars for a number of years, with very beneficial results, and I am glad to know that many of the American systems are following along what amounts to similar lines.

I have not had time to read so carefully the other articles relating to the use of cars equipped with automatic equipment and capable of operation by one man as to be able to give an expression of my views in regard thereto. At the same time, however, anything along the line indicated is undoubtedly in the right direction.

So far as I am aware, no experiments have been made in this country in respect to one-man cars. It will hardly be possible to do anything in this direction at the present time, for the supplying of new cars is quite out of the question. The structural alterations necessary to existing cars would be considerable, and the car-repair employees now retained are fully occupied in handling the ordinary repairs arising out of wear and accidents.

It has been possible, up to now, to replace the most essential men enlisting from the depot repair shops by applicants generally over military age, but a considerable amount of work that was being carried out before the war has been greatly curtailed by reason of the shortage of labor and the difficulty of securing new parts. Where possible, mechanical devices have been installed to take the place of man power. This could probably have been done to a still greater extent but for the difficulty of obtaining necessary new plant and material.

TABLE II—MEN AND WOMEN EMPLOYED AS DRIVERS AND CONDUCTORS ON TWENTY-TWO SCOTTISH UNDERTAKINGS REPORTING IN MARCH, 1918

Name	Drivers Men	Drivers Women	Conductors Men	Conductors Women
Aberdeen Corporation	100	6	10	111
Aberdeen Suburban	6	4	...	10
Ayr	5	16	1	20
Broughty Ferry	14	....	4	11
Coatbridge	4	9	...	20
Dumbarton	15	3	...	25
Dundee	95	....	...	105
Dunfermline	21	....	...	31
Edinburgh	254	....	73	244
Falkirk	7	11	...	18
Glasgow	1,276	230	253	1,435
Greenock	17	36	1	54
Kilmarnock	10	8	...	20
Kirkcaldy	23	....	3	24
Lanarkshire	17	104	...	105
Leith	32	21	10	52
Musselburgh	6	9	...	16
Paisley	59	....	...	77
Perth	15	....	15	.....
Rothesay	2	1	...	3
Stirling	4	....	...	4
Wemyss	16	....	...	18
Total	1,998	458	370	2,463
Per cent	81.4	18.6	13	87

The chief advantage has been derived from the institution of the arc-welding process for the repair of many parts of the car equipment. Here again, however, we have not yet received delivery of plant which has been on order for a considerable time. We are, therefore, compelled to carry out this sort of work by improvised methods.

I have no knowledge of blinded men being employed in winding armature coils, but women are doing this work quite satisfactorily on some systems. They are also employed in cleaning cars and such other work as they can suitably perform.

DIRECT AID FOR MEN IN SERVICE

With regard to the organization of funds for keeping in touch with the men at the front, a large majority of the Croydon employees contribute weekly to a fund to assist in cases of need arising out of war service. Valuable assistance has been rendered in several cases. In one case a conductor who unfortunately lost a leg early in the war was, on his discharge from the army, set up in the boot-repairing business. He is now doing very well.

Off to Rifle Practice—to Train Their Eyes for Huns

Early in the war it was the practice on most systems to allow soldiers and sailors and nurses in uniform to travel either free or at reduced rates. In view of the large number availing themselves of these privileges, the heavy financial burden imposed on the companies and the reduced services caused by the depleted car staffs, however, the concessions have in general either been withdrawn or considerably curtailed. As far as Croydon is concerned, at the present moment, the only concession in existence is that in respect to special constables being allowed to travel free to and from duty when in uniform.

I have no knowledge of hospital cars having been built in this country. It is possible that cars may have been used in the transport of wounded, in cases of emergency, but in general it may be taken for granted that the work is dealt with almost entirely by train and motor ambulances.

The question of fares is a very important one and has become acute on practically every system in the country. In Croydon during the last two or three years the continual rise in wages and material costs has rendered it absolutely necessary to increase the fares.

A revision, amounting to an advance of approximately 30 per cent, went into effect in August, 1916. As a result of the first year's working the revenue increased nearly 14 per cent and the passengers also showed a slight increase. The continued advance in operating costs, however, rendered a further review of the financial position necessary.

On May 1, 1918, a second revision of fares included the shortening of the existing stages and the withdrawal of the odd halfpenny fares (1½d, 2½d, and 3½d). The result, so far, has been the realization of the extra revenue required with no falling off in the number of passengers carried. This proves that the public has now become accustomed to the general all-round advance in the cost of living, and that it will pay the increased charges for traveling in much the same spirit as it does the general advances in commodity prices.

WAGES HAVE RISEN 70 PER CENT

The main cause for the increased expenses of tramway undertakings has been the increased cost of labor, which is now a very considerable portion of the total expenditures. Wages have increased by approximately 70 per cent, and in some cases even by 100 per cent. The quality of labor is not the same to-day as it was before the war, and, therefore, the real cost is considerably more than it would appear to be.

The demands for increases of wages have been met during the period of the war by means of bonuses. In the early part of this year, as the result of an award given by the committee on production, an increase of £1 per week over pre-war rates was given to employees. Since that date a further application for an advance of 12½ per cent on existing rates has been granted.

The increase in the cost of materials fluctuates considerably. In the case of steel tramway rails and tires, for instance, the increase is from 100 to 200 per cent. In the case of coal, too, prices have been advanced considerably, in some instances as much as 100 per cent. Naturally, however, such increases vary greatly in different parts of the country, the price of this commodity being governed by the cost of haulage.

During the period of the war little or no capital expenditure has been incurred. In many respects even maintenance work has had to be curtailed considerably. It is quite obvious that at some future date the leeway must be made up, and when this work is undertaken it will undoubtedly have to be done at a cost much in advance of pre-war figures. It is vital, therefore, for all undertakings to review carefully their financial position from time to time in order that adequate provisions may be made, through the reserve and renewal funds, for the carrying out of the work.

The tramway men of Hull, England, are strongly opposed to the introduction of women drivers. The secretary of the tramwaymen's union recently supported the application of certain men for exemption before the local tribunal. He stated that 300 men had joined the colors and desired that the remainder should be retained in order to avoid the necessity of employing women drivers. The application was refused.

More Than Half of Men With Colors

Enlistment of 3000 Men of Glasgow Corporation Tramways Partly Met by Employment of 1947 Women—Railway Has Suffered Financially, but War Traffic Has Helped

BY JAMES DALRYMPLE
General Manager Glasgow (Scotland) Corporation Tramways

WHEN Britain declared war on Germany on Aug. 4, 1914, many reservists, or ex-soldiers, were in the service of the Glasgow Corporation Tramways. Men who had resigned from the army with good characters had found tramway work attractive, and, as they had proved to be good and trustworthy servants, the railway had always been willing to give them employment. As a result, on Aug. 5 about 700 men employed as drivers and conductors were recalled to the colors. Moreover, many men enlisted voluntarily in Kitchener's army, and a battalion—the Fifteenth Highland Light Infantry—was recruited almost wholly from employees. Altogether, more than 3000 men enlisted from the Glasgow Corporation Tramways out of a staff of approximately 5400.

WOMEN FILLED THE GAP

Glasgow, I believe, was the first city to make the experiment of employing women on the car platforms. To test the capability of women for this work, two women employed in the head office were equipped with uniforms, and, with practically no training except the experience they had gained in long service in the department, they were put on cars. They acquitted themselves so well that it was deemed quite practicable to employ women in this capacity. The first women to be especially trained for the work started on April 12, 1915, and the number has been increased from time to time as men volunteered or were called up for active service.

The continuous enlistment of skilled motormen, and the difficulty of replacing them by men physically fit, suggested the question of trying women on the front platform. An appeal was addressed to the women conductors, inviting them to volunteer for training as drivers, and a ready response was made.

The course of training includes fourteen days spent in the motor school under tuition by a qualified electrical engineer, and on the road under the direction of specially selected experienced motormen. Thereafter each pupil has to work for thirty days on the regular service car without a teacher. During this time she is frequently visited by the motor inspectors, who report to the chief instructor regarding the progress being made. If this is satisfactory, and if the pupil passes successfully the oral examination on the rules for drivers, knowledge of car equipment and the practical tests on the road, she is passed as efficient and goes on regular duty as a motress.

The first women drivers started on Nov. 1, 1915. It has been found that many women are willing to undertake the work but find, after training, that it is too much for them. Indeed, it is often those least physically fit who are most anxious to try the work.

At the present time there are 3330 drivers and conductors employed on the cars, and of this number 1947 are women. More than 400 of these women are acting as motresses, and this total represents about two-thirds of the women employed in driving tramcars in this country. All these positions, prior to the war, were held by men. That women find the work congenial and healthy is proved by the fact that 170 are now wearing a badge indicating three-years' continuous service on the cars, and this number is being added to weekly.

In other branches of the service women have replaced men. The car-cleaning staff, for instance, is wholly composed of women. In the workshops, however, we have not been able to do much in the way of dilution, and the permanent-way work is still undertaken by male labor. In the power stations women have practically replaced men as switchboard attendants.

Making Use of Returned Soldiers

A number of our employees, who were wounded or became unfit to continue in the army on account of sickness, have returned to our service. Where fit they have been put back to their old duties. If a man is not fit for the work at which he was formerly employed, the railway finds some suitable work for him. We have had applications from a few wounded soldiers who had not been previously employed on tramways. Some have turned out very well, but I cannot say that the average discharged soldier has proved to be a good motorman. Lately we have taken youths from sixteen to eighteen years of age and, after giving them a short experience as conductors, trained them as motormen. They are turning out very well. Indeed, these lads are in general more satisfactory than the discharged wounded men. Of course, the difficulty is that, on reaching the age of eighteen, the boys are immediately taken away for military service.

"Ladies from Hell," Who Have Helped Put the Devil on the Run

In some aggravated cases, shell shock has interfered with the efficiency of motormen, but most men who suffer from shell shock have been able to take up their work as motormen and continue at it with satisfaction. Blinded men are not employed by us in winding armature coils, but training in work of this sort has been carried out at St. Dunstan's Hospital for Wounded Sailors and Soldiers. We have tried crippled soldiers in substations, but not to any appreciable extent.

We have no one-man cars in Glasgow, and with our system of graduated fares they would not be satisfactory. We have dense traffic, and a conductor is almost continuously engaged in collecting fares and attending the platform. I fear that on account of the work—our average number of passengers per mile the last year was 16.4—we lose a considerable amount through the sheer inability of conductors and conductresses to take all the fares.

In connection with the battalion already referred to, we established a Comfort Fund. An energetic committee of ladies, composed of the wives of officials and wives and relatives of officers in the battalion, has been indefatigable in providing comforts for the men, and periodically boxes of socks, shirts, tobacco, etc., are sent to the battalion.

The staff of the railway has also raised considerable money for prisoners of war, for other battalion funds and for general war purposes. The total sum raised for these funds is about £52,050.

All sailors and soldiers wearing His Majesty's uniform travel on the cars at half fares. We have not built any hospital cars in Glasgow. There are few, if any, in this country.

Traffic is Good, but Expenses are High

On the financial side, the railway has certainly suffered, as expenses have been much increased through advances in wages and costs of materials. So far, however, we have not done anything in the way of increasing the fares or reducing the length of the zones. Traffic in Glasgow has been abnormal since the war broke out. The city is one of the most important centers for shipbuilding, engineering and munition work, with the result that trade has been exceedingly good. Traffic, as a consequence, has been heavy. The traffic revenue for last year reached the record of £1,404,110. Wages of motormen and conductors have been substantially increased. In pre-war days men started at the rate of 4s. 6d. per day, or 27s. per week, and at the end of seven years they reached the maximum of 35s. weekly for a six-day week of fifty-one hours. The subject of wages was referred to arbitration, and in August, 1917, Sheriff Fyfe awarded the men an increase of 15s. weekly on pre-war rates. In December, 1917, a general advance was granted by the corporation to all employees, bringing the increase to 20s. per week. A further award of 5s. weekly has just been passed, making the increase 25s. weekly on pre-war rates. As a war measure, the hours were increased to fifty-four weekly, the three additional hours being paid at the rate of time and a half, so that the man who earned 35s. weekly—the top rate in pre-war days—is now earning 65s. 3d. weekly.

The wage for women employed on the cars is 29s. weekly, with a war bonus of 1s., making 30s. for a fifty-one-hour week, or 32s. 7d. for the present standard of fifty-four hours. After three months' service, this is increased to 42s. weekly for fifty-one hours, or 45s. 8d. for a fifty-four-hour week. All employees on the cars are paid full wages, according to scale, from the first day they enter the service.

The cost of materials has increased enormously. Iron and steel, in bars and castings, have fully doubled in price. Bolts, nuts and tires cost three times as much, while fuel has been advanced by approximately 120 per cent. Plate glass and sheet glass is trebled. Timber of suitable quality cannot be got, and spruce and fir of poor quality are as dear as good pine was before the war. The last good quality timber we were able to secure was at an advance of about 300 per cent over previous prices.

NEW CONSTRUCTION IS STOPPED

The war has, of course, stopped all new construction of either routes or rolling stock and has deferred maintenance. In Glasgow the track was in excellent condition when war broke out, but at the present time there are many portions of it which are far from satisfactory. We cannot get the materials for putting this right, and things are so bad that there are some portions of the system which are no more than safe.

In January, 1918, we experienced the worst snowstorm in our history. The city cleansing department was short of labor and unable to do much in the way of clearing the streets. On Saturday, Jan. 19, a thaw set in, which made the thoroughfare very slushy. The salt, which had been laid to melt the snow, was churned up into the motor bearings, so that fully one-half of the cars in service were disabled. We have never been able to catch up with rolling-stock repairs since that date, partly on account of scarcity of labor but principally because of the lack of electrical material. We are, however, making more extensive use of the cars at our disposal, so that we have been able to maintain practically the same service we had in pre-war days. On some of our routes the service for workmen is run on a very close headway, eighty cars per hour being necessary in order to convey the workers to some of the large yards and works of this section.

Advertising War Savings Stamps on Trolley Poles

PRACTICALLY every trolley pole in the business center of Portland, Me., is furnished with a white-and-blue tin sign, 10 in. x 16 in., advertising War Savings Stamps. These signs were placed with the consent of the Cumberland County Power & Light Company. Some of the more representative legends appearing on these signs are as follows: "Soldiers are Dying for You—What are You Doing? Buy War Stamps." "Quarters for Uncle Sam—None for the Kaiser." "Which? Sacrifice or Security? Buy War Stamps." "Four War Stamps Buy a Rifle — Help Buy One." "War Savings Stamps Will Save Soldiers—Buy Them." "A Quarter To-day Means a Dollar Soon." "Your Money—Uncle Sam Borrows It; Kaiser Bill Takes It! Buy War Stamps." "A War Stamp a Day Keeps the Kaiser Away." "Sixteen Thrift Stamps Buy a Soldier's Helmet." "W. S. S.—Buy if It Does Hurt—It Will Hurt More if You Don't." "Ten Thrift Stamps Keep a Soldier Fighting a Week." "Women of America, Save Your Country—Save for War Stamps." "Don't Talk War—Buy War Stamps and Win It."

A War Stamp
Fights On
EVEN AFTER
IT'S LICKED.
25
W. T. GR
DEPART

Typical W. S. S. Sign on Trolley Pole, Portland, Me.

Over the Top at Dawn on the Western Front

Dr. Wheeler Teaching Coil Taping to a Blind Boy

Blind Worker Taping Large Armature Coils

The Disabled Soldier in Electric Railway Service

Reclaiming the Disabled Soldier Is an Important Problem — Blind Men Wind Coils—One-Armed Men Do Oxyacetylene Welding and Shop Work

SALVAGING the disabled man-power of the country is another of the many important problems which the war has thrust upon us and which is demanding immediate attention. Facts are sometimes hard to face, but they must be faced, and much as we may dislike to think about the matter, a very large number of disabled men will be added by the war to the army of those disabled in industrial accidents who are already with us.

Now the reasons for rendering our disabled man-power useful are two-fold. In the first place, the terrific drain on our man-power necessitates the maximum industrial output from everyone not participating directly in the combat. In industry and elsewhere, others must to a greater or less extent replace the able-bodied men who have been called to the colors. The Germans boast that they have 20,000 oxyacetylene welders, all disabled men, now at work. The results obtained from the special training or re-education of the disabled soldiers of our allies likewise indicate that we as yet know little about what may be done in the way of developing the talents and services of those who, by reason of physical impairment, are not able to compete in all lines with the able-bodied worker.

Secondly, one of the greatest services that can be rendered a disabled man is to give him an opportunity to work on equal footing with other men at something which pays him well and saves his self-respect by rendering him independent of others. The general attitude toward the cripple, whether his disability be due to war or something else, is changing rapidly. The old idea was that the soldier had performed his duty to society in the service which wrought his disability, and that it was the duty of society to support him in idleness for the remainder of his years. The industrial cripple was an object of emotional pity rather than constructive sympathy.

He May Come Back Crippled

The new attitude is that disabled soldiers (and workers as well) shall receive just compensation to offset their handicap, but that in addition they shall for their own good, material and spiritual, and for the good of society at large, follow some productive occupation, that their jobs shall be with other workers, doing things that others do, producing things that have a value in the markets of the world and are not patently labeled as the work of the maimed, halt and blind — charity protegés — for which a market must be forged out of the sympathies of benevolently minded folk. Furthermore, it is felt that they shall be properly trained in a suitable occupation so as to remove their handicap as much as possible.

None of the countries at war, not even Germany with all her self-vaunted efficiency, had made any preparations for the proper training of disabled soldiers prior to the beginning of the war. In the different countries the problem is being attacked in different ways. In some, private institutions are initiating and carrying on the work. In others, it is strictly under government control, and in still others a combination of the two methods of control obtains. As a result, however, of careful studies made of the methods used elsewhere, our government, in a law enacted early this summer, has placed the responsibility for the training and re-education of disabled soldiers and sailors in the hands of the Federal Board of Vocational Education.

This board is making a careful study of the problem in all its aspects. It has already accumulated a vast fund of data and is busily engaged in providing means of instruction for those already on the disabled list. Not only must the men be thoroughly trained or re-educated, but also they must be properly placed if their employment is not to result in disappointment to both the employer and the employee. The various electrical industries, because of the stability of employment which they offer, seem a particularly attractive field for the handicapped worker.

WHAT THE RETURNED SOLDIER CAN DO IN RAILWAY SERVICE

A writer in an unsigned article in the *Electrical Review*, London, for June 7, 1918, comments that as long as the war lasts a returned soldier is a disabled soldier, and lists as in the accompanying table the occupations of interest to the electric railway industry, in which disabled men may be employed. The disqualifying disablements are also given. Presumably the list summarizes British experience in the matter.

There is some conflict among authorities as to what may constitute a disqualifying disablement. However, it is of interest to know that the skill gained in training for one occupation increases the ability to work in others that at first seem impossible. The bar of disqualification recedes as the process of re-education proceeds.

While this country has now made a national matter of the re-educational problem, much valuable pioneer work has been done in the last year by the Red Cross Institute for Crippled and Disabled Men, 311 Fourth Avenue, New York. This institute is now giving training in mechanical drafting, artificial limb making, printing, motion-picture operating, jewelry work, and oxyacetylene welding and cutting. Some photographs reproduced herewith, selected from the files of the institute, show the possibilities of the disabled man. The loss of a hand, or even an arm, does not necessarily disqualify a man from becoming a draftsman, oxyacetylene welder, machine tool operator or section hand. It does mean, however, that his remaining body members must be re-educated so that they may take over the work of the missing member, assisted, of course, in many cases by artificial helpers. In addition to giving actual training to crippled men, the institute is also training teachers for re-educational work, accumulating data and publishing general information on the subject for the use of those who may be interested.

Pioneer work along the line of rendering the sightless independent and productive units in the social community has been done within recent months by Dr. Schuyler S. Wheeler, president Crocker-Wheeler Company, Ampere, N. J. Here again the fundamental principle of getting the disabled person into actual industry has been followed. Dr. Wheeler organized what is known as "The Double-Duty Finger Guild," 22 Park Avenue, Ampere, N. J., in which sightless persons are trained for industrial service.

TRAINING THE BLIND

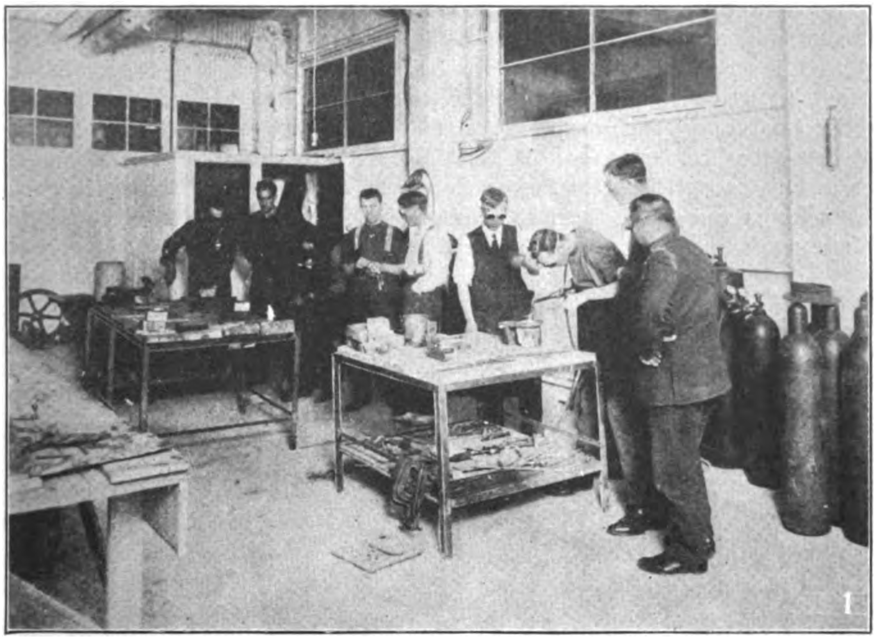
At first the training was limited to the taping of armature coils for motors and generators. Several photographs here reproduced show the method of training used and the type of work now being done. The sightless workers are started at a weekly wage of $8, and after attaining some proficiency are placed with other workers, who are not so disabled, on piecework or at an hourly rate. The rivalry of piecework competition with seeing workers is most stimulating to the blind. If after two months' instruction the blind student shows no possibilities along the line of work in which he is being instructed, he is dropped. Usually, however, after one month's training, the blind worker does as much work in eight hours as the average "sighted" worker does in five hours, and at the end of a year does 90 per cent as much as the sighted employee working under similar conditions.

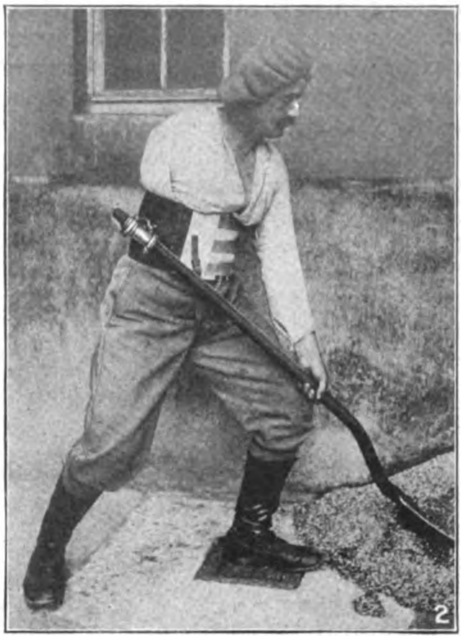
As to quality of the work done, a careful inspection of such work indicates a rather higher order of performance than that obtained from the other workers. The infinite patience and high finger sensitivity of the blind make this record possible. The experience at the Crocker-Wheeler works seems to be that those who have been sightless for the shortest time and have never been trained in the older forms of "blind" work make the best workmen, and those who have long been the recipients of charity, the worst.

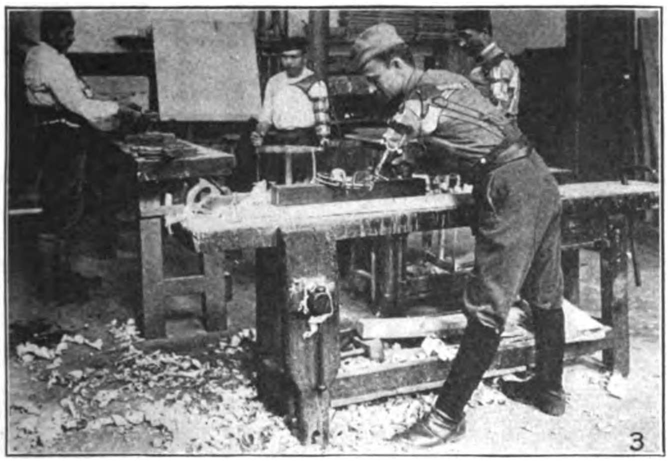
As with other disablements, training in one occupation seems greatly to increase the ability of the worker to do satisfactory work in other occupations and to

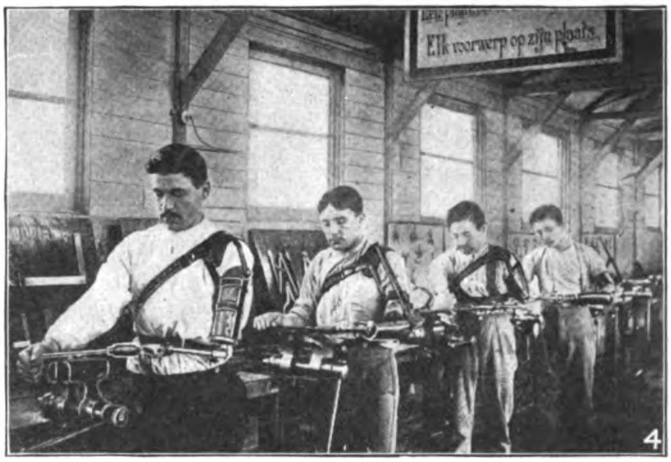
BRITISH LIST OF ELECTRIC RAILWAY OCCUPATIONS AND DISQUALIFYING DISABLEMENTS

Position	Disqualifying Disablement
1. Switchboard attendant 2. Substation attendant 3. Air-compressor or hydraulic-plant attendant 4. Battery attendant	Shell shock (steady nerves required) Heart bad (danger of electrical shock) Loss of arm (cannot work regulator handles) Loss of leg (cannot get about quickly when there is a breakdown) Loss of hearing (cannot detect things starting to go wrong by sound) Loss of smell (cannot smell machines or cables getting hot)
5. Engine driver 6. Greaser 7. Stoker	Heart bad (hard work required) Loss of arm (cannot work regulators, etc.) Loss of leg (cannot get about quick enough)
8. Meter or instrument repairer 9. Armature and coil winder	Loss of arm (full complement of fingers required) Loss of eye (good eyesight required, and must be able to judge distances accurately)
10. Telephone work 11. Bell work 12. Signaling devices	Loss of arm (both hands required) Loss of hearing
13. Meter inspector	Loss of leg, hearing, eye
14. Motor inspector	Loss of leg, hearing, smell
15. Motor repairer	Loss of leg or arm, hearing, smell, bad heart
16. Installation inspector	Loss of leg, hearing, arm
17. Installation complaints	Loss of leg, arm, hearing, smell, bad heart
18. Heater and cooker inspector	Loss of leg, arm, hearing, smell
19. Heater and cooker repairer	Loss of arm, hearing, smell
20. Mains fuse inspecting	Loss of leg, arm, smell, bad heart
21. Mains records	Loss of arm, eye
22. Meter tester	Loss of arm, eye, hearing, smell
23. Coal, water and oil tester	Loss of arm, hearing, smell
24. Gateman 25. Timekeeper 26. Clerical work	Loss of hearing, arm








Elk voorwerp op zijn plaats
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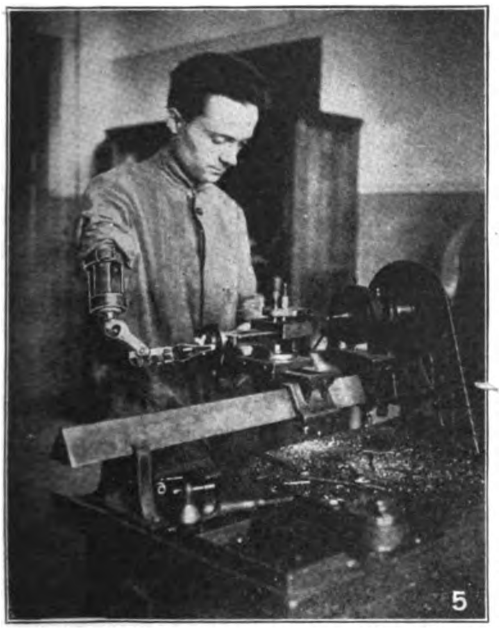


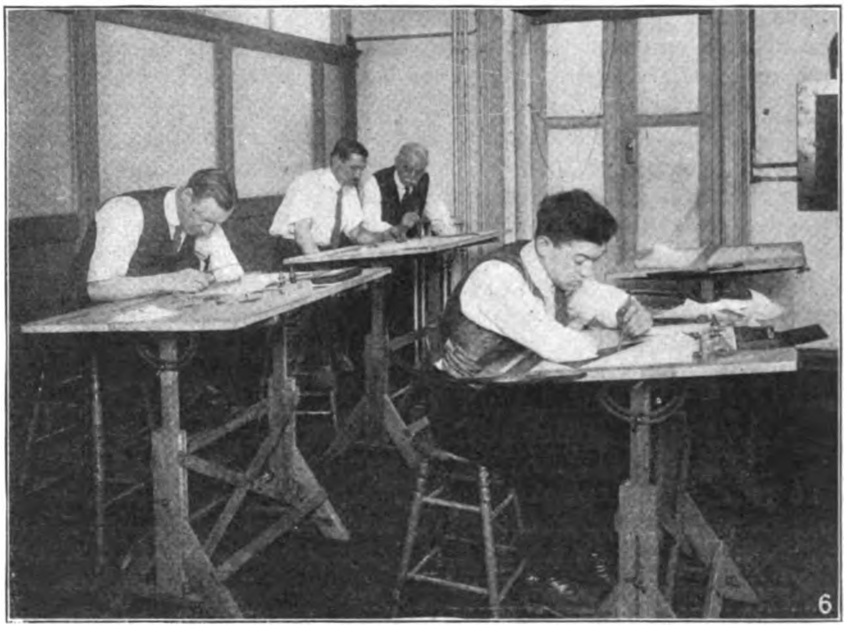


Fig. 1—Returned Canadians Learning of Oxy-acetylene.
Fig. 2—A French Peasant "Inutile" Using a Shovel.
Fig. 3—A Crippled Serbian Working in Wood.
Fig. 4—One-Armed Belgians Learning Bench Work.

Fig. 5—The Loss of One Arm Does Not Balk an Italian Machinist.

Fig. 6—Losing a Right Arm Not an Unsurmountable Obstacle in Mechanical Drafting.

How Our Allies Are Rehabilitating Their Disabled Soldiers

increase his self-reliance. Workers trained in the above-named guild are now doing such things as placing pins on cards in a safety-pin factory, twisting small wires for telephone construction, helping put strips on automobile tires, painting and polishing the arms and legs of dolls, etc. In the factory of the Crocker-Wheeler Company blind workers weigh and stack rotor cores, assemble and rivet pole shoes, sort rotor punchings and tape steel coils. The fact that most of their work has been going directly into machines for government service has been a great incentive to the blind workers in this factory. The rates of pay received in the above industries range from 15 cents per hour, with a piecework bonus, to 30 cents per hour.

Sightless Workers Taping Coils for the Crocker-Wheeler Company

Recently, Dr. Wheeler was called to Europe by the English and French governments for advice in connection with their re-educational work for disabled soldiers. As a result of the institutional work established there, more than 100 blind soldiers are now employed and more than 500 are receiving special instruction at the works of the French Thomson-Houston Company. In England several industrial training schools for the blind have been started, and a number of blind soldiers are now employed at Golder's Green, the chief railway shop of the "London Underground." In both countries other companies engaged in similar work are employing blind workers as fast as they can be trained. In England the British Electrical & Allied Manufacturers' Association, through Hugo Hirst, president General Electric Company, Ltd., has agreed to foster the movement and give employment to all the blind who may be fitted for the work of that industry.

In order to make it possible for the blind to proceed to and from their work with ease and safety, some minor changes in the factory buildings are usually necessary, so as to provide separate entrances for the blind workers. It also must be pointed out that only those who are physically able otherwise can be trained successfully for service in any special industrial occupation.

It is difficult to estimate the number of fighting men who will return to us disabled. Donald C. McMurtie, director of the Red Cross Institute referred to, as the result of a study of European statistics so far available, estimates that for a force of 1,000,000 men in the field for one year, 30,000 permanent disabilities may be expected. D. H. McDougall, assistant general manager Toronto Power Company, in discussing the matter before the last convention of the National Electric Light Association, stated that of the 400,000 men who have gone from Canada, 35,000 had returned disabled by April 1, 1918. Of these, 1230 were men with amputations, as follows: 520 above the knee, 320 below the knee, 259 above the elbow, 115 below the elbow. Also, fifty were blind. Considering the fierce nature of modern warfare, it is particularly fortunate that the blind are so few, numbering only one out of every 700 permanent disabilities.

Naturally, all of the disabled men are not what might be termed "industrially fit." In fact, a comparatively large number are suffering from such a complication of things as to render any occupation impossible. A great many others are able to go back to old occupations. The Canadian experience has been that about 10 per cent of the returned men have required special training. For these, 195 courses are being administered in twenty-five different schools maintained for the special purpose of giving this training.

Although we are hardly started in the war, the Federal Board of Vocational Education, according to press reports, is confronted with the problem of finding employment for about 1800 men whose claims of disability have been approved by the Federal War Risk Bureau. Only elaborate surveys of the industries will make it clear as to the possibilities in the various lines of work. Several electric railways are trying out men who have lost a leg or some fingers, and the experience seems to be that such handicaps are not disqualifying. Doubtless there are many other places in the electric railway industry than those mentioned, where disabled men may be employed with mutual advantage to both parties concerned.

Shipbuilding in the Bay Cities

The Key Route Facilities Are Heavily Taxed by War Traffic, Largely of Twice-a-Day Sort

SHIPBUILDING on the Oakland and Alameda side of San Francisco Bay is advancing with leaps and bounds. The original shipbuilding plant at Oakland, that of the Moore Shipbuilding Company, is now employing 6000 men. The Emergency Transportation Company, a subsidiary of the San Francisco-Oakland Terminal Railways, has arranged with the Emergency Fleet Corporation to build a 2000-ft. spur from the Eighth Street line along Chestnut Street to give convenient service. This will afford 6-cent travel as elsewhere on the Key Route lines. At this and other heavy traffic points, front-end fare collectors are used. The spur of the Emergency Transportation Company is to include provision for a prepayment area.

A much larger project is that of the Union Iron Works (Bethlehem Shipbuilding Corporation) at Alameda, with which a housing plan is to be combined. About 5000 to 6000 men are already employed, and plans are under way for 20,000. Most of the travel is handled by the Key Route with about twenty-five extra single cars. There is a certain amount of staggering, owing to different shifts and overtime by many men.

Another Alameda project recently begun is that of the San Francisco Shipbuilding Company. This plant, which will employ about 5000 men, will be located on Government Island in Oakland Estuary. The site, including the necessary bridge, is within a half mile of the nearest Key Route tracks. No negotiations have yet been begun with the Emergency Fleet Corporation for financial aid in carrying out this extension. The Southern Pacific interurban lines are a few hundred feet nearer, but they would be less used by the men through the lack of transfers and the 6-cent fare charge.

A smaller plant, employing 500 to 600 builders, is that of the Hanlon Shipbuilding Company. The Key Route's traction division cars are three blocks distant. Some workers also walk over to the company's Fourteenth Street line. At present, only a few extra trippers are required for this service. The Barnes-Tibbitts Shipbuilding & Drydock Company and the Union Construction Company are other plants requiring railway service. The latter is building four ways adjacent tc the Key Route Mole. It expects to use 6000 men.

Nor are developments in the bay cities confined exclusively to shipbuilders. The Hall-Scott aeroplane motor is helping to make Oakland famous, while the waterfront has seen the addition of factories for braking and electrical equipment, of foundries, of warehouses, etc. Thus the car facilities of the San Francisco-Oakland Terminal Railways are being sorely taxed, but largely for twice-a-day travel.

UNION IRON WORKS COMPANY

Leaving Time on the Key Route at Union Iron Works

Pensacola Is Alive to War Needs

Locomotive Train Service for Both Freight and Passengers Is the Feature of Service to Aero Station—Branch Being Built to Shipyard

EARLY in 1916 the United States government built an aëronautical station 6½ miles from Pensacola, Fla., but not until June, 1917, did the freight and the passenger requirements to the place begin to become impressive. The station is across from Pensacola, on the opposite side of an inlet known as Bayou Grande, and it is reached only by the Bay Shore-Fort Barrancos line of the Pensacola Electric Company.

The freight business to the aeronautical station amounts to from twenty to fifty loaded cars a day, all being interchanged with steam railroads. The freight cars are hauled by means of electric locomotives. A year ago the entire service called for only one electric locomotive (four GE-80 motors with K-28B control to be replaced by K-35), four GE-80 four-motor equipments and seven trailers. To this there have since been added four steel railroad coaches, which are hauled by locomotive; eight double-truck open cars, and a combination passenger-and-baggage locomotive car, which carries four Westinghouse 306 motors with K-35 control and can haul six big coaches. On a recent occasion the smaller locomotive, geared 15:71, actually hauled to Pensacola fifteen Pullman cars carrying 600 marines with no other aid than the use of a steam dinky as a pusher at the start.

Through the use of these locomotives the company regularly hauls four coaches carrying 350 passengers with a crew of but three men. There is only one conductor for every two cars, as fare collection is simplified by the sale of twelve tickets, just a week's supply, for 90 cents (7½ cents each). When a motor car is used, it hauls, say, two trailers, thus calling for four men for 240 riders.

Ordinarily the headway is forty-five minutes, but as many as eighteen cars are in use at once for the workmen's peaks in the morning and the evening. In the morning, from 800 to 1000 workmen come in on one train leaving Pensacola at 7:10 a.m. The laborers leave at 5.05 p.m., and at 5.30 from 200 to 1000 enlisted men probably want to go to Pensacola. In all about 1500 workmen go to and from the station. Single cars are run between 8.35 a.m. and 3.30 p.m.

SHIPYARD SERVICE REQUIRES 2000-FT. BRANCH

The same (Bay Shore) line is also carrying 200 men to the yards of the Pensacola Shipbuilding Company, which already has from 500 to 600 men preparing to build ten 8000-ton steel ships. The shipbuilding plant is on Chico Bayou in the extreme western part of Pensacola. To reach it the company is building a 2000-ft. branch with relay rail.

In fact, the Pensacola management is fully alive to war and peace-time needs. If funds were made available, it would add at least 1500 kw. to its power plant and purchase a dozen safety cars for operation on its North Hill and East Hill city lines.

$170,500 *to Aid Shipbuilders*

Government Assists Development of Lewiston, Augusta & Waterville Street Railway to Provide Additional Transportation to Shipyard Workers

TO IMPROVE the transportation facilities on the lines of the Lewiston, Augusta & Waterville Street Railway as needed by shipyard workers at Bath, Me., the Emergency Fleet Corporation recently executed a contract with the railway for work which is now taking place. Under the contract, dated July 15, 1918, the company receives a loan of $170,500 for the necessary development of its system in the Bath-Lewiston district. The principal shipyards to benefit will be the Texas Shipbuilding Company, the Kelly-Speer Company, and the Bath Iron Works, all of which are engaged in war work for the United States.

DEVELOPMENT WORK UNDER WAY

The program of betterment is as follows:

1. The railway is to raise the voltage from 10,000 to 22,000 volts on the transmission line from Lewiston to Brunswick, and is to install 1500-kva. step-up transformers near Lewiston, at the point where it receives its service from the lines of the Androscoggin Electric Company. The railway will install 300-kva. step-down transformers at its Lisbon Falls substation and 1200-kva. step-down transformers for the substation at Brunswick and for the 10,000-volt lines to Bath and Freefort. It will reinsulate the present 10,000-volt line from Lewiston to Brunswick for 22,000 volts and construct approximately 2½ miles of new pole transmission line around Lisbon, in order to free the line from trees in this village, and will purchase tree-trimming rights at certain other points. It will reinsulate the 10,000-volt line from Brunswick to Bath, rebuilding this line at certain localities. The company will utilize the No. 0 copper wire salvaged from the Lewiston-Brunswick line to increase the capacity of the transmission line from Brunswick to Bath, replacing or reinforcing the present No. 6 copper now on that line. It will increase the direct-current feeder copper and track bonding on the Bath local lines and the Bath-Brunswick interurban lines. The total estimated cost of the work north of Brunswick is $42,500, of which the railway will repay 100 per cent, and for the work east of Brunswick $21,000, of which it will repay 75 per cent.

2. The railway adds six new interurban cars seating fifty-two passengers each and a snowplow of the latest type used by the road. These purchases have been made in the name of the Emergency Fleet Corporation under priority rights, the cars being supplied by the J. G. Brill Company, and the cost is about $14,000 each, equipped. Westinghouse motors are to be used. The transformers are to be supplied by the General Electric Company and the snowplow is of the Wason type. Deliveries of four months on the cars and forty-five days on the transformers and electrical equipment have been promised. It is expected that the betterment work on the road will be complete by Nov. 9. Of the total estimated cost of $99,000 the railway is to repay to the Emergency Fleet Corporation the appraised value with a minimum of 75 per cent.

3. The company is to construct better facilities for car inspection and repairs at its Bath carhouse, and it is to safeguard the carhouse, pits and tracks. The total estimated cost is $5,000, and the company is to repay 100 per cent.

4. The railway is to build a new turnout midway between Brunswick and Bath at an estimated cost of $3,000. Of this it is to repay 75 per cent.

CONDITIONS OF GRANT TO COMPANY

The Emergency Fleet Corporation advances the money necessary to do the work above outlined, but not exceeding $170,500 in the aggregate or the estimate for each part of the work. According to the contract, all money advanced shall be for the cost of only materials and work, and the word "cost" shall be construed to be the actual net cost (after deducting all discounts, rebates and refunds) of materials used and the sums paid to labor. It is expressly agreed that no general overhead expenses or legal fees shall be included.

Payment of all sums due from the railway to the Emergency Fleet Corporation shall be made in five equal annual installments, the first payment to be made six months after the termination of the war, as proclaimed by the President. The railway, however, must at once take steps to create a depreciation fund in the following manner: From all fares collected from passengers within Bath and on the lines between Brunswick and Bath, the railway shall deduct one-half of 1 cent for each fare, and at least once a month pay over the same to the corporation to be credited as partial payment of such amounts as are to be repaid. The semi-annual interest rate on the amount to be repaid is 5 per cent. The company is required to issue its first mortgage and refunding 5 per cent bonds to the amount of $60,000 as collateral security for the repayment of all sums due to the Emergency Fleet Corporation.

The railway must at all times until six months after the war give complete and adequate transportation service to the shipyard employees. In the event of any controversy as to the adequacy of service the matter shall be submitted to the Director of Passenger Transportation, and his decision shall be final.

News of the Electric Railways

TRAFFIC AND TRANSPORTATION

FINANCIAL AND CORPORATE · PERSONAL MENTION · CONSTRUCTION NEWS

Unified Terminals Proposed

Plan Suggested by Railroad Commission Would Provide for Both Steam and Electric Lines

Unification of railroad passenger terminals in Los Angeles, Cal., by the concentration of all traffic in the Santa Fe station and the abandonment of the Salt Lake and Southern Pacific stations is urged by the State Railroad Commission in its report to Director-General McAdoo upon this subject. The plan proposed by the commission is contained in a volume by Richard Sachse, chief engineer of that body.

The report is the first result of the investigation that had its origin in July, 1916, when several civic organizations and the city of Los Angeles brought complaints as to grade crossings, particularly as to Alameda Street, the main route of access to and from the Southern Pacific Depot, and for the unification of terminals in a new union station.

To aid in the investigation the city of Los Angeles appropriated $2,000 to the use of the commission. Litigation between the parties and the railroads resulted in the Supreme Court determining jurisdiction in the commission and put the commission under mandate to pursue its investigation, now under way nine months, under the commission's chief engineer, Richard Sachse, and a special staff.

The terminal plans affect both the steam roads and the electric lines.

As the Pacific Electric does not now reach the Santa Fe station, the report recommends a new two-track line to cost $142,000. The recommended use of the Santa Fe site does not involve the abandonment of any industrial trackage, but only means its service by a different method.

The railroad engineers estimate that this plan will cost $664,000 and the commission's engineer estimates the cost at $381,000. The engineers are agreed to all items except the Mission Junction curve track changes at the Santa Fe terminal and Union depot construction. The engineers estimate $250,000 for depot cost, and the commission estimates $128,925; engineers cost of $154,153 for yard track changes is reduced by the commission estimate to $73,041 and Mission Junction curve is reduced from $80,623 to $34,579 by the commission.

While the separation of grades and union station demands were under investigation by the commission the federal administration took over all steam roads and put them under a different jurisdiction, but Director-General McAdoo, on July 22, 1918, asked the commission to complete its investigation and gave assurance to the Los Angeles civic interests that no action would be taken by him until a full report had been sent to him by the commission.

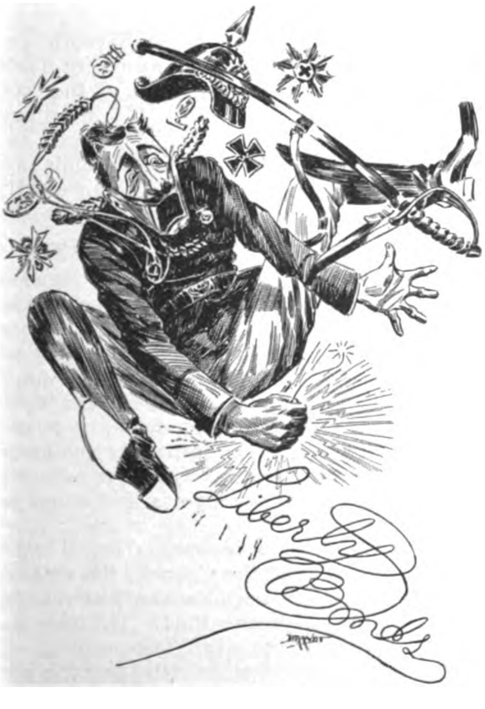
M. O. Amendment Submitted

San Francisco Starts Machinery in Motion for Taking Over the United Railroads

The proposed charter amendment that will make possible the purchase of the United Railroads by the city of San Francisco, Cal., was introduced in the Board of Supervisors on Sept. 16. After some discussion the matter was referred to the judiciary committee of that body.

Under what is known as the McNab proposal, the United Railroads has agreed to sell its system to the city at a price to be agreed upon on an installment plan. This would obviate the necessity of issuing bonds or adding to the debt of the city. But before this can be done the charter must be amended to give the Board of Supervisors the right to enter into such an arrangement.

The charter amendment simply proposes giving the supervisors the authority to undertake the necessary negotiations. For after the Supervisors and the company have come to an agreement regarding terms the matter must again be submitted to a vote of the people and be ratified by at least a majority. If the purchase of the railway should incur any indebtedness in excess of the annual revenues it would require a two-thirds vote to ratify the agreement.



He Must Be Strafed

The present plans of the German government in regard to Belgium show something more than the enormous insolence which has characterized every war utterance of the Hun. They reveal the dense stupidity of the German mind. They show how almost extremely difficult it will be to make Germany realize that the civilized world demands complete victory.

Little Belgium will fight on. She has not forgotten the "scrap of paper" and wants no more from an unconquered and still insolent Germany.

Little by little Germany may learn something, making her a little more amenable to reason. The complete success of the Fourth Liberty Loan would be a good lesson. It is a most necessary achievement, in any event, for the support of our military forces fighting the Hun.

The Fourth Loan Must Succeed

The armies must drive on

The Hun must be strafed until he ceases to be a Hun

Women Must Go

Cleveland Investigators So Decide and Urge More Determined Effort to Obtain Men

Henry B. Deilman and Miss Margaret Russanowska, special investigators of the Federal Department of Labor, rendered a decision, received in Cleveland on Sept. 23, to the effect that women conductors must be removed from the cars of the Cleveland Railway by Nov. 1. The company had employed about 250 women, 160 of whom have been handling regular runs.

OPINION IN FULL

The decision of the investigators was as follows:

"In drawing their conclusions from the data obtained from both parties to the controversy and from their own observations, the undersigned federal investigators, in compliance with the agreement entered into on Sept. 4 between the representatives of the Cleveland Railway, division number 268, A. A. of S. and E. R. E. of America and A. L. Faulkner, acting as special representative of W. B. Wilson, Secretary of Labor, have found that the situation obtaining in Cleveland does not demand the employment of women on the cars of the Cleveland Railway, and therefore decide that no women shall be employed on the cars of the company on or after Nov. 1, 1918.

"It is true that the company will have to lower its labor standard somewhat, owing to the extraction of the best men from civil life into the military service of the country. However, every industry in the country has been forced to do likewise. But the excellent railway service of Cleveland will suffer no great detriment by the lowering of the strict standard adhered to by the company in the past.

"No special inducements of any kind have been offered to men; on the contrary, special consideration shown women applicants has deterred men from applying to some extent and induced others to quit the service of the company.

"If male applicants will be allowed a remuneration for the ten-day training period, and schools of instruction, which have proved a success with women applicants will be introduced for men, and the company's employment agent will make a more determined effort to recruit men from the fair labor market in Cleveland, there is no reason why the shortage should not be filled with men."

RULING A HARDSHIP TO COMPANY

In an interview with a local paper J. J. Stanley, president of the railway, said the decision will work untold hardship on the riding public and may seriously affect the city's industries. Fielder Sanders, Street Railway Commissioner, said the decision will mean the worst service in the history of transportation in the city.

It may be said that the women made excellent conductors with very brief training. No complaints were heard in regard to them and their care of women and children elicited favorable comment on many occasions. They took the late evening runs, the same as the men, and assumed the responsibility of their position in a way that insured success had they been allowed to remain.

The question went to investigators following a near-strike recently of union employees as a protest against the employment of women conductors. The union men denied the company's claim that a shortage of man power made the employment of women necessary.

Chicago Ordinance on Ballot

Two petitions asking injunctions to prevent the printing of the traction ordinance question on the ballots for the Nov. 5 election were dismissed on Sept. 24 by Judge Frederick A. Smith in the Circuit Court. Both petitions assailed the right of the City Council to order the traction ordinance to be submitted to the voters, charging the ordinance as illegal. The court ruled that the ordinance was valid; that all legal steps necessary to submit it to the voters for their approval had been taken by the City Council, and that he saw no reason why the election commissioners should not place it on the ballot.

Upon the action of Judge Smith the position of all securities of the surface lines and the elevated railroads of the city has been much improved. Investment interests believe that chances favor an affirmative referendum vote, and with the City Council and the majority of the people of Chicago supporting the measure it is considered the Legislature will grant the necessary authority required by the ordinance.

Winnipeg Arbitration Plans

Representatives from both the Winnipeg (Man.) Electric Railway and their employees have been chosen to form a conciliation board to hear the requests of the men and also to hear the reasons of the company for refusing to make the increases in salaries asked for.

Isaac Pitblado will represent the company, while R. S. Ward has been chosen to represent the motormen and conductors. No chairman had been nominated up to Sept. 12, but little difficulty is anticipated in coming to an agreement in this connection.

The men claim that owing to the constant increase in the cost of living their present wages are inadequate, while the company says the possibilities of increasing the wages as demanded are out of the question.

On Sept. 11 a board of conciliation in the dispute between the shopmen and the company concluded its report and the findings of the board are being forwarded immediately to the Minister of Labor at Ottawa. The chairman of this commission stated on Sept. 12 that owing to the board having been appointed by Ottawa, no announcement could be made as to the decision arrived at except from there.

Seattle Transfer Oct. 1

Negotiations for Municipal Ownership Proceeding on Basis of Concluding Deal as of That Date

Oct. 1 is the date set by the Seattle city officials for taking over the local railway system of the Puget Sound Traction, Light & Power Company, by purchase, under the negotiations now under way. A. W. Leonard, president of the company, has submitted to the Council a statement of the conditions under which the city's offer to purchase the Seattle system for the sum of $15,000,000, will be accepted. Following is the property included in the bill of sale submitted by Mr. Leonard:

All franchises, rights and obligations conferred on the company by ordinance or permit and in effect Sept. 1, 1918.

All of the rights-of-way owned by the company for the operation of the railway system.

Tracks, including trestles, ballast, ties and rail supports and all interest in spur tracks on premises of the company's freight customers.

All rolling stock, freight, passenger and miscellaneous cars, used by the company, including ten cars loaned to the Tacoma Railway & Power Company, and excluding thirty cars owned by other companies and operated by the Seattle company under lease.

Five automobiles, four trucks, one motorcycle, track grinder, track welder and tar wagon.

All trolley and span wires used in the operation of cars, and all feeder wires up to the point of entry into the company's substations.

The company's interest in pole lines used for railway purposes.

Signal and interlocking apparatus used in connection with the operation of cars.

All roadway and railroad tools and equipment used in railway operation.

Fremont carhouses.

Green Lake freight sheds.

East Jefferson Street carhouses.

Madrona freight terminals.

Madison, James and Yesler cable stations, power houses and carhouses.

West Seattle carhouse and yard.

Georgetown land and carhouse.

Ballard freight terminals.

Five hundred and sixteen cars.

The contract for the operation of the Tacoma and Everett trains provides for the payment to the city of 10 to 20 cents a car-mile, based on the character of the traffic.

The brick building at Seventh and Olive Street, located on an entire block, which now serves as offices of the company, is not included in the inventory. This property belongs to the light and power department. City officials are said to have expected that this property would be included in the deal.

CITY COMMITTEE WORKING OUT DETAILS

The city has named Mayor Hanson, Councilman T. H. Bolton, president of the Council, and O. T. Erickson, chairman of the utilities committee, to work out the details of taking over the property. This committee has asked Peter Witt, Cleveland, Ohio, to make a survey of the traction properties and assist in the transfer. Expert accountants will check the company's books and inventories.

Unless there is some special action on the part of the Council, the railway property will pass automatically under the control of the Public Utilities Department of the city. The problem will then present itself of selecting the personnel to be responsible for the operation of the road.

Increase in Chicago Traffic

War Exhibition Brings Big Increase and Permits Only Approximation of Effect of Gasless Sundays

Traffic statistics for the Chicago Elevated Railroads show that the increase in the number of persons traveling on the system for the four Sundays of July, 1918, as compared with the corresponding Sundays in 1917 varied from — 13 per cent to + 4.8 per cent. The same figures for August vary between the limits of — 4.1 per cent and + 4.5 per cent. The total increase for the month of July and the month of August, 1918, as compared with the same months in 1917 is 7.1 and 8.1 per cent respectively.

18.4 PER CENT INCREASE FIRST SUNDAY

On Sept. 1 the gasless Sunday order of the Fuel Administration went into effect, and the increase in traffic over the corresponding Sunday in 1917 was 18.4 per cent and over the last preceeding Sunday 9.1 per cent. Then the gigantic Government War Exhibition opened in Chicago on Sept. 2, and for two Sundays, Sept. 8 and 15, traffic was increased 58.6 per cent and 27.5 per cent respectively. This is not surprising, as the total attendance at the exhibition for the fourteen days was 1,955,602 persons, and in one single day, 224,871 people attended. The average week-day increase in traffic from Sept. 2 to 7 was 15.3 per cent, and from Sept. 9 to 14 was 12 per cent.

The War Exhibition ended on Sunday, Sept. 15, so that Sept. 22 was again a gasless Sunday without added attraction. For the week of Sept. 16 to 21 the average daily increase in traffic over the corresponding week in 1917 was 2 per cent. The traffic figures for Sunday, Sept. 22, show a decrease of 4.4 per cent over the corresponding Sunday of 1917. As the last Sunday was fair and conducive to travel, it seems that the only reason for this is the approach of winter and the usual gradual decrease in pleasure traffic.

From the above figures it is difficult if not impossible to arrive at any conclusive decision as to the benefit the Chicago Elevated Railroads will derive from the gasless Sunday order.

HALF INCREASE DUE TO EXHIBITION

If all figures are taken into consideration, however, it would seem that perhaps 12 to 15 per cent of the increase for Sept. 1 might be attributed to gasless Sunday. The problem for Sept. 8 and 15 is more difficult. No doubt from 40 to 50 per cent of the increase for Sept. 8 was due to the Exhibition, but on the other hand it was also partly due to gasless Sunday, as many of the people would otherwise have gone to the exhibition in autos. Thus it might be assumed that 20 per cent of the increase on Sept. 8 was due to gasless Sunday and 12 to 15 per cent on Sept. 15. The decrease in traffic for Sept. 22 is unexplainable.

The Chicago Surface Lines report an increase in gross revenue of 10 per cent over 1917 for the first gasless Sunday, 18 per cent for the second and about an even break in this respect on Sunday, Sept. 22.

Wage Increase in London

The Board of Conciliation appointed by the Canadian Minister of Labor to adjust the wage difficulties between the London (Ont.) Street Railway and its employees has reported an award based upon a settlement agreed to and incorporated in a signed contract between the parties.

Under the agreement which expired on May 1 the men received 23 cents an hour while on the spare list, 25 cents an hour for the balance of the first year, 26 cents in the second year, 27 in the third and 28 in the fourth year and thereafter.

Their original demand was for a scale providing 32 cents for the first six months' service, 34 cents for the second six months, 36 cents for the third six months, and 38 cents thereafter, and in addition conditions and other considerations which the management announced would add $80,000 a year to operating costs.

When called upon for evidence in the court of conciliation the men changed their demands, asking a minimum of 44 cents an hour, and a maximum not stated.

After several sessions the representatives of the company and of the men agreed to the following scale: First year, 30 cents an hour; second year, 33 cents an hour; third year and subsequent years, 35 cents an hour. The company also agreed to pay for a ten-minute "show-up" at carhouses, and to pay 10 cents an hour extra to motormen and conductors who continue at work after they have completed their scheduled hours of employment. Carhouse and other employees will receive advances of 3½ cents an hour and trackmen 2 cents an hour.

Food-Saving Car in Massachusetts

A car formerly used by the president of the Bay State Street Railway, Boston, Mass., has recently been loaned by the company for service under the auspices of the United States Food Administration for educational work along food-saving and baby-saving lines, on the electric railways of Massachusetts. The car is being operated under the direction of the woman's committee of the Council of National Defense, with the co-operation of the child conservation committee of the division of hygiene, State Board of Health. The actual work of the car in the field is being managed by Miss S. Agnes Donham of the Garland School of Home Making, Boston. The object of the work which the car and its staff are to carry on is to illustrate the making of wheatless foods; the care of and food for babies, and the need for saving wheat for the Allied armies and people abroad.

Additional San Francisco Ferry Loop

The construction of a third loop to relieve congestion of cars at the foot of Market Street, San Francisco, Cal., was tentatively agreed upon on Aug. 8 by officials of the United Railroads, the city and the State Harbor Commission. The cost of the additional loop, which will be about $12,000, is to be divided between the Municipal Railway and the United Railroads.

Of the 289 cars an hour that now operate over the two loops during rush hours, 107 run on the inner and 182 on the outer loop. With a third loop the cars would be distributed equally. It has been suggested to the police department that vehicular traffic be diverted so as not to cross the Market Street approaches to the loops during the rush hours. The Belt Line Railroad is also to be asked to stop service across the ferry plaza at these hours.

The construction of a subway from north to south for vehicular traffic was favored as a permanent solution. However, the cost and the difficulty of agreeing on its apportionment are such that that plan was not considered for the immediate relief that was deemed necessary.

Hearings on Power Station Bill

Hearings on the $200,000,000 emergency power act were continued in Washington during the week ended Sept. 14 before the committee on interstate and foreign commerce of the House of Representatives. Among those who testified was Dr. H. A. Garfield, United States Fuel Administrator, who emphasized the saving in fuel which is accomplished by central station power distribution. The bill, he said, would also allow the government more easily to make extensions as well as control the purposes for which power is used and thus insure adequate power for war industries. Another witness was Howard R. Gans, counsel for the Treasury Department. In reply to a question, Mr. Gans explained that under the bill the government was empowered to take over the power plants operated by electric railways.

Skip Stops Extended in San Francisco

Skip stops on all lines of the United Railroads and the San Francisco (Cal.) Municipal Railway west of Van Ness Avenue became effective on Sept. 15. The first skip-stop plan in San Francisco went into effect on Aug. 20, as announced in the ELECTRIC RAILWAY JOURNAL of Aug. 24, 1918, and affected only the Sunset and Park-Presidio residence districts. The recent order also eliminates the stops previously required in front of fire houses and which entailed many hundreds of non-productive stops daily. Since the advent of the motor fire truck, firehouse stops are deemed no longer necessary.

News Notes

Winnipeg Arbitration Board Complete.—Chief Justice Mathers has been appointed chairman of the conciliation board which will investigate the wage dispute between the Winnipeg (Man.) Electric Railway and its men, referred to elsewhere in this issue. Isaac Pitblado is the company's appointee to the board, and R. S. Ward is the member for the men.

War-Time Operating Measure.—As a war-time measure the Peoria Railway Terminal Company's electric line between Peoria and Pekin, on the east side of the Illinois River, has been united with the management of the Peoria & Pekin Union Railroad, a steam road. It is said that the motive power of the Peoria Railway Terminal, under the new arrangement, will be changed from electricity to steam, provided certain problems can be worked out.

Doubt About Settlement Election.—The Assistant Attorney General of Missouri has rendered an opinion to the chairman of the election board at St. Louis, Mo., to the effect that a question having only a municipal bearing cannot properly be voted on at a general election, but can be submitted only at a city election. If this ruling is sustained, it is said that it will prevent a referendum vote on the franchise settlement ordinance of the United Railways at the November election.

"H" Operation Again in October.—The Public Service Commission for the First District of New York has authorized the Interborough Rapid Transit Company to resume operation of shuttle trains over the cross bar of the H between the Grand Central Station and Times Square on or before Oct. 5. This service was started when the new subways were opened but was stopped on Aug. 3 because of the confusion that followed, due largely to the uncompleted condition of the stations. These have since been greatly improved.

Detroit Railway Men in Archangel.—An Associated Press dispatch from Archangel, Russia, reports former employees of the Detroit (Mich.) United Railway, now in Russia with the American forces as filling in there at their old jobs. The statement follows: "Recently, owing to a political dispute, the street railway system in Archangel was brought to a standstill. A squad of Detroit motormen immediately took charge of the situation and now the dinky little cars are running through the streets in true American style."

Appeal to War Labor Board.—Differences between the United Railways, St. Louis, Mo., and its motormen and conductors, members of the Amalgamated Association of Street & Electric Railway Employees, who are asking for increased pay and shorter hours, has culminated in the men appealing to the National War Labor Board. An official of the company is quoted as follows: "I do not believe there is any real dissatisfaction among the rank and file of our employees. The union officials are simply trying to obtain all they can while the 'obtaining is good,' so to speak."

Pittsburgh Men Reject Offer.—The executive board of the local division of the Amalgamated Association at Pittsburgh, Pa., has voted to refuse the latest offer of the receivers of the Pittsburgh Railways. The receivers offered to grant the desired increase in wages of 3 cents an hour on the condition that the 50-cent premium on each extra tripper run be abolished and a premium of 3 cents an hour for every hour having been worked during any day when a tripper run be made be paid instead. The receivers wished also to be allowed to hire negroes and women on the cars if the need calls for them.

Strike Threatened in Des Moines.—The employees of the company have notice of a strike on the Des Moines (Ia.) City Railway unless their wage increase demands are met. The strike notice did not give the date on which it would become effective as the men are anxious to give the company time to try to meet their demands. Notice of the strike vote was sent to the War Labor Board and the board has fixed Oct. 3 as the date of hearing the Des Moines case. The formal demand of the men is for a maximum of 65 cents an hour, but it is believed they would be satisfied with an increase to 50 cents.

New Albany Wage Question Unsettled.—The Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company, New Albany, Ind., which refused to sign a contract giving the men 40 cents to 45 cents an hour for city service and 45 cents to 50 cents an hour for interurban service, with provision for an eight-hour day, have agreed to an increase of 1 cent an hour, making an increase of 13 cents since April 1. The wages would thus be 33 to 39 cents an hour for interurban service and 31 to 36 cents an hour for city service. The men say they will carry the case to the War Labor Board.

Twelve Wage Cases Before Board.—Controversies between employees and the electric railway companies in nearly a dozen cities will be reviewed at once by the War Labor Board, it became known on Sept. 24 when the board reassembled after a brief recess. A number of electric railway wage disputes were heard and decisions handed down in August, in the cases of Chicago, Cleveland, Detroit and other cases. These decisions were reviewed in the ELECTRIC RAILWAY JOURNAL for Aug. 3, page 207, but disputes in the following cities remain to be adjusted: Portland, Ore., Jacksonville, Fla., Dayton, Ohio, Atlanta, Ga., East St. Louis, Ill., Boston (elevated); Birmingham, Memphis, Cincinnati, Lynn, Mass., and Springfield, Ill.

Lexington Wages Still Unsettled.—The controversy between the Kentucky Traction & Terminal Company, Lexington, Ky., and its employees is complicated by the announcement made recently that the federal government had refused to send a conciliator to aid in settling the differences over wages. After the refusal of the union to accept Clarence U. McElroy as umpire, R. M. McWade, who had been in Louisville on a similar mission, was ordered there, but his instructions were countermanded. The union men sent a letter to the Secretary of Labor at Washington, giving their reasons for not accepting the appointment of Mr. McElroy. Since this letter was sent a statement has appeared in the Lexington papers to the effect that Hywel Davies, former business agent of the University of Kentucky, now a federal conciliator, would act as arbitrator of the troubles between the company and its employees. Mr. Davies was reported to be in Arizona, but it was said that he would take up the Lexington matter as soon as he has disposed of his present task.

United Railroads Sue San Francisco.—Damages in the sum of $288,500 have been asked in a suit recently filed by the United Railroads against the city and county of San Francisco. Of this sum $38,500 is asked to compensate the company for decreased earnings and increased cost of operation where municipal cars cross the private company's tracks, based on $275 a month for the remaining tenure of the company's franchises, and $250,000 to compensate for the operation of Municipal Railway cars on Market Street from Church Street to Seventeenth. The complaint also states that the tracks of the municipal line on Market Street are so close to those of the United Railroads that the lives of patrons are endangered. As noted in the ELECTRIC RAILWAY JOURNAL for June 15, page 1160, suit for damages amounting to $856,250 has already been filed against the city, because of operation of cars on Market Street from Van Ness Avenue to Church Street. Further suits will be filed, it is stated, for damages alleged to have been sustained through the operation of municipal cars on Market Street from Seventeenth Street to the ferry.

Program of Meeting

National Lumber Manufacturers' Association

The meeting of the board of directors of the National Lumber Manufacturers' Association, originally scheduled for Oct. 8, will be held on Oct. 4 and 5 at the association headquarters in Chicago. The change in the date was made at the request of the West Coast Association.

Financial and Corporate

Chicago Net Drops, Too

Revenues of Unified Surface Lines Gain 0.93 Per Cent, But Expenses Run Ahead 6.25 Per Cent

The gross receipts of the Chicago (Ill.) Surface Lines for the twelve months ended Jan. 31, 1918, showed an increase of $324,997 or 0.93 per cent over those for the preceding year. This was less than anticipated early in the year. The receipts at the end of August, 1917, indicated a gain of 3.3 per cent, but subsequent unfavorable weather conditions caused a falling off. In January alone the receipts decreased approximately $380,000 because of heavy snowstorms and the interruption to business activities occasioned by the fuel conservation orders of the government.

TABLE I—REVENUES AND EXPENSES OF CHICAGO SURFACE LINES FOR YEARS ENDED JAN. 31, 1917 AND 1918

	1918		1917	
Earnings	Amount	Per Cent	Amount	Per Cent
Passenger cars	$34,566,601	98 44	$34,229,419	98 42
Chartered cars	6,582	0.02	4,671	0.01
Funeral cars	3,056	0 01	3,510	0.01
Newspaper cars	8,811	0 02	8,361	0 02
Freight earnings	1,111	0.00	1,772	0.00
Garbage car service	....	0 00	10,497	0 03
Advertising	221,371	0.63	221,425	0.63
Rents of buildings, etc	86,305	0.25	83,456	0.24
Rents of equipment	13,682	0.04	12,769	0.03
Sale of power	85,710	0 24	83,803	0 24
Interest on deposits	121,136	0 35	129,063	0.37
Miscellaneous	265	0 00	884	0.00
Gross earnings	$35,114,633	100.00	$34,789,636	100.00
Expenses:				
Maintenance	$3,214,948	9.16	$2,695,561	7.75
Renewals	2,835,636	8.08	2,783,170	8.00
Power operation	2,558,192	7.28	2,728,261	7.85
Conducting transportation	10,802,009	30.76	10,079,620	28.95
General expenses, including damages and Board of Supervising Engineers	2,197,908	6.26	2,047,451	5.90
Taxes	1,493,000	4.25	1,409,456	4.05
Total expenses	$23,101,695	65.79	$21,743,522	62.50
Residue receipts	$12,012,937	34.21	$13,046,114	37.50
Divided:				
Chicago Railways, 60 per cent	$7,207,762	20.52	$7,827,668	22.50
South Side Lines, 40 per cent	4,805,175	13 69	5,218,445	15.00

More than offsetting the gain in revenues was the rise of $1,358,173 or 6.25 per cent in operating expenses. This increase was almost wholly due to the increased cost of material and supplies and to the new scale of wages which became effective on June 1, 1917. Moreover, the unprecedented weather conditions of last January alone cost the surface lines $514,000.

As shown by Table I, the gross earnings of the Chicago surface lines amounted to $35,114,633. The expenses totaled $23,101,695, or 65.79 per cent of the gross, leaving residue receipts of $12,012,937. This sum was divisible 60 per cent, or $7,207,762, to the Chicago Railways, and 40 per cent, or $4,805,175, to the South Side lines, namely: The Chicago City Railway, the Southern Street Railway and the Calumet & South Chicago Railway. The disposition of the allotted portions in the case of the Chicago Railways and the Chicago City Railway is shown in Table II.

TABLE II—DISPOSITION OF RESIDUE RECEIPTS OF COMPANIES FORMING CHICAGO SURFACE LINES FOR YEARS ENDED JAN. 31, 1917 AND 1918

Chicago Railways

	1918	1917
Proportion of residue receipts of Chicago Surface Lines (60 per cent)	$7,207,762	$7,827,668
Expenses and adjustments applicable to previous years	368,205	290,684
	$6,839,556	$7,536,983
Less 5 per cent on capital valuation	4,418,135	4,319,783
Divisible income	$2,421,421	$3,217,200
City of Chicago, 55 per cent	1,331,782	1,769,460
Chicago Railways, 45 per cent	$1,089,639	$1,447,740
Interest allowance on valuation	4,418,135	4,319,783
Interest on bank balances	66,992	66,960
Income from treasury securities	79,592	123,886
Gross income	$5,654,359	$5,958,369
Deductions	5,244,383	5,180,354
Net income	$409,976	$778,015

Chicago City Railway

	1918	1917
Proportion of residue receipts of Chicago Surface Lines (40 per cent)	$4,805,175	$5,218,445
Deduct joint account expenses, interest on capital investment of the Chicago City Railway and the Calumet & South Chicago Railway, and net earnings of the Southern Street Railway	3,661,805	3,616,023
Divisible income	$1,143,369	$1,602,422
City's proportion, 55 per cent	628,853	881,332
Company's proportion, 45 per cent	$514,516	$721,090
Add interest on capital investment	2,623,510	2,558,167
Income from operation	$3,138,026	$3,279,257
Other income, net	58,358	88,244
	$3,196,384	$3,367,501
Interest on bonds outstanding	1,695,000	1,617,791
Net income	$1,501,384	$1,749,710

The net income of the Chicago Railways for the year was $409,976, as compared with $778,015 for the previous year. The total of net income for the year added to the surplus carried over was $863,743. After a deduction of the adjustment income bond interest of $100,000 on May 1, 1917, and the dividend of $252,600 applicable to participation certificates, Series 1, paid on Aug. 1, 1917, the surplus balance at Jan. 31, 1918, was $511,143, as compared with $453,767 for the previous year.

The Chicago City Railway in the last year produced a net income of $1,501,384, after payment of all operating expenses and bond interest, as compared to $1,749,710 the year before. Four quarterly dividends were paid, aggregating 8 per cent, and an extra dividend of three-quarters of 1 per cent was paid in December, 1917, making a total of 8¾ per cent. The surplus of the company at the end of the year was $104,613.

Owing to war conditions it was impossible to sell bonds on a reasonable basis to meet new capital expenditures, and the Chicago City Railway therefore borrowed $1,200,000 from the banks. This amount appears on the balance sheet under the designation "notes payable."

Service Suspended on Stub

Philip J. Kealy, president of the Kansas City (Mo.) Railways, on Sept. 15 served notice in writing on Mayor Mendenhall of Kansas City, Kan., of the suspension of the Argentine-Minnesota line. Two reasons, one being financial and the other that the line virtually parallels other lines, were given. Mr. Kealy said:

"Our system located in Kansas for the last three months has been a losing proposition and our receipts there have failed to meet operating expenses by $6,000 a month. This does not include interest, and it has become necessary to curtail our expenses. The Kansas City, Kan., officials have been aware of these conditions. Last July I wrote to the Mayor asking that steps be taken to protect the company from its losses. I assured the Mayor that I was ready to enter into any fair and reasonable agreement. By cutting out the Argentine-Minnesota line the company will save $3,500 a month, besides contributing largely to the demands of the government for the conservation of fuel and man-power. The suspension of this line will not to any visible extent discommode traffic."

Pittsburgh Work Approved

Court Approves Setting Aside of $374,668 for Improvement Considered Essential at This Time

Judge Charles P. Orr in the United States District Court at Pittsburgh, Pa., on Sept. 13 handed down another order on another phase of the Pittsburgh Railways receivership, approving immediate compliance with joint demands for better service made by officers of the Army and Navy and the State Public Service Commission and ordering that the receivers defer the payment of certain of the fixed charges.

PAYMENTS DEFERRED TOTAL $72,495

Of the ten separate items of fixed charges presented by the receivers Judge Orr ordered five, totaling $38,760, paid, and directed that payments be deferred in five items, totaling $72,495, as follows:

ORDERED PAID

Interest on mortgage, $1,800, of the Duquesne Traction Company, held by Fidelity Title & Trust Company	$540
Car trust account, Pittsburgh Railways with Fidelity Title & Trust Company, $270,000 at 5 per cent for fifty double-truck closed cars	2,700
Car trust account, Pittsburgh Railways with Fidelity Title & Trust Company, $450,000 at 6 per cent, for fifty double-truck closed cars	8,520
Car trust bonds, principal due on Sept. 19, at $1,000 each	19,000
Rentals or tolls due city of Pittsburgh for use of Smithfield Street Bridge	8,000
Total	$38,760

ORDERED DEFERRED

Interest first mortgage bonds, $500,000 at 6 per cent, Birmingham, Knoxville & Allentown Traction Company	$15,000
Interest first mortgage bonds, $135,000 at 5 per cent, Charleroi & Westside Street Railway	1,375
Interest first mortgage bonds, $50,000 at 6 per cent, Coraopolis & Neville Island Bridge Company	120
Interest first mortgage bonds, $200,000 at 6 per cent, Suburban Rapid Transit Street Railway	6,000
Interest first mortgage bonds, $2,000,000 at 5 per cent, Wilkinsburg & East Pittsburgh Street Railway	50,000
Total deferred	$72,495

Frankly admitting they did so on demand of the Army and Navy of the United States, and the Public Service Commission, the receivers, through Attorneys John C. Bane and George C. Bradshaw, appeared before Judge Orr and asked authority to set aside $374,668. Of this amount $201,400 will be used as follows: For bridge repairs, $159,400; to finish a terminal loop upon which $20,000 has been expended, near Hazelwood and Murray Avenues, $10,000; to construct a new line of single track in Wheatland Street, $30,000, and to construct a connection between California Avenue and Wyndhurst Street, Northside, to improve operation of cars to and from the Woods Run section, $2,000. In addition to this work there is an item of $173,268 for "improvement, betterments and new equipment," which the court was informed had already been contracted for or were under way.

Judge Orr indicated a willingness promptly to authorize the expenditures, but pointed out that injunctions had previously been obtained against two of the improvements. Attorneys for the receivers set out immediately to have these injunctions waived and secured the withdrawal of one action the same day. The court then approved the expenditure.

The general principles governing the making of payments of fixed charges of underlying companies were referred to in the decision of Judge Orr abstracted in the ELECTRIC RAILWAY JOURNAL for Sept. 21, page 524

Railway Income Slumps

Nearly Three Hundred Lines Report Loss of 74 Per Cent in Net Income for First Half of 1918

Reports received by the War Board of the American Electric Railway Association show that electric railways are in a critical financial condition. The accompanying income statement of 293 companies for the first six months of the current year, made public by the board, discloses a decrease in net income of $8,926,929 or 74.4 per cent, compared with the same period in 1917.

The operating revenues of the reporting companies increased $5,866,396 or 3.5 per cent during the period, but the operating expenses rose $12,285,838 or 11.1 per cent. As a result the net operating revenue declined $6,419,442 or 11.4 per cent. This loss was accentuated by a rise of $1,235,853 or 10.6 per cent in taxes, so that the gross income fell off $7,208,060 or 13.8 per cent. The deductions from income added to the decline by increasing $1,718,869 or 4.3 per cent.

The decline in net income took place before the new scales of pay for employees, approved by the National War Labor Board, went into effect. By the end of the present year, it is estimated, the increase in pay of employees will add $50,000,000 to the operating expenses of the railways.

COMPARATIVE INCOME STATEMENT OF 293 ELECTRIC RAILWAYS FOR THE SIX MONTHS ENDED JUNE 30, 1917 AND 1918

	1918	1917	Per Cent	Amount
Operating revenues	$173,077,841	$167,311,445	+3.5	+$5,866,396
Operating expenses	123,037,864	118,752,026	+11.1	+12,285,838
Net operating revenue	$50,039,977	$56,459,419	—11.4	—$6,419,442
Net revenue from auxiliary operations	5,732,679	5,601,684	+2.3	+121,995
Taxes	12,911,593	11,675,740	+10.6	+1,235,853
Non-operating income	2,365,383	2,040,143	+15.9	+325,240
Gross income	$45,217,446	$52,425,506	—13.8	—$7,208,069
Deductions from gross income	42,150,028	40,431,159	+4.3	+1,718,869
Net income	$3,067,418	$11,994,347	—74.4	—$8,926,929

New Financing Medium

Bankers Announce Plan to Organize "Essential Industries Financing Corporation" to Aid Utilities

The Essential Industries Finance Corporation is to be organized to aid in financing utilities, according to an announcement just made in New York. The plan is the outgrowth of recommendations made some time ago by the bankers' advisory committee appointed by Governor Harding of the Federal Reserve Board. These recommendations provided for a $100,000,000 corporation, but the proposals were abandoned because the United States Attorney-General held that the war finance corporation act would not allow that corporation to lend more than about $50,000,000 to any one concern. The recommended $100,000,000 corporation, it had been thought, would be able to borrow about $300,000,000 from the War Finance Corporation.

INITIAL CAPITAL $3,000,000

Organized under New York law, the Essential Industries Finance Corporation will begin business with $3,000,000 of capital, divided between $1,000,000 of stock, $1,800,000 of ten-year debentures and $200,000 surplus. Of the stock $200,000 Class A shares will be limited as to dividend and will be sold at par. Class B stock, aggregating $800,000 and having no restrictions, will be sold at 125, providing the $200,000 surplus. As the business expands, it is planned to increase the capital, which will probably reach $20,000,000 ultimately. On that basis the corporation will be able to borrow about $50,000,000 from the War Finance Corporation.

Pending the flotation of the Fourth Liberty Loan the Essential Industries Finance Corporation will not do any financing. After the sale of the government bonds the corporation will be ready to consider propositions from utilities for financing extensions. It is purposed to make the resources of the corporation available to existing utility corporations which need aid in enlargement of plant for essential purposes, but not to undertake construction for new enterprises.

PERSONNEL OF COMPANY

Eugene V. R. Thayer, president Chase National Bank, will be president of the new corporation, and Frederick Strauss, of J. & W. Seligman & Company, and Gerhard M. Dahl, vice-president Chase National Bank, will be vice-presidents. The following will be represented on the board of directors: Chase Securities Company, Guaranty Trust Company, Central Union Trust Company, First National Bank, J. P. Morgan & Company, J. & W. Seligman & Company, E. W. Clark & Company, General Electric Company, Westinghouse Electric & Manufacturing Company and United Gas Improvement Company.

Financial News Notes

Another Road May Suspend.—It is stated that steps will be taken soon to dispose of the physical property of the Bloomington, Pontiac & Joliet Railway, operating 20 miles of line between Pontiac and Dwight, Ill. The property is bonded for $300,000. It is reported not to be meeting its fixed charges.

Suspension and Abandonment.—Abandonment of several miles of railway lines has been asked by the Los Angeles (Cal.) Railway of the City Council in the campaign to reduce the expense of operation of the system. The appeal to the city names eight lines. On three of these there would be permanent abandonment of tracks and operation. On the other five lines there would be temporary abandonment of operation only during the war.

Virginia Railway & Power Common Dividend.—The directors of the Virginia Railway & Power Company, Richmond, Va., have declared a dividend of $2.51⅝ on the common capital of the company, payable on Oct. 21 to holders of record of Sept. 30. The dividend is payable only in stock of the Old Dominion Iron & Steel Corporation, at the rate of one share of stock of the Old Dominion Corporation of par value of $3 for each share of common stock of the Virginia Railway & Power Company.

Injunction Against Dismantling.—A temporary injunction has been granted by Judge F. M. Spann of the Twenty-Seventh District Court at Temple, Tex., restraining the owners of the Tal-Coe Addition to the city of Temple from tearing up and removing the street railway and interurban tracks through this addition. The Southwestern Traction Company had discontinued service on this line and had begun to dismantle it and tear up the tracks when the residents of that addition sought relief in the courts.

Government Takes Road.—It is reported from Richmond, Va., that operation of the electric railway from that city to Seven Pines did not suffer any interruption because of the expiration of the Richmond & Rappahannock Railway's franchise, as advices from Washington stated that the government would, through the United States Shipping Board, Emergency Fleet Corporation, exercise its option to purchase and operate the line as an auxiliary to the munitions plant at Seven Pines. It is said that the Virginia Railway & Power Company will operate the line for the government until the war ends.

Republic Passes Common Dividend.—The directors of the Republic Railway & Light Company, Youngstown, Ohio, which controls the Mahoning & Shenango Railway & Light Company, operating lighting plants and traction lines in Youngstown, Ohio, and vicinity, have announced the suspension of the common stock dividend. Heretofore the common stock payment has been at the rate of 1 per cent quarterly. The regular 1½ per cent on the preferred will be paid. The common stock payment was inaugurated in January, 1917, and paid continuously since then until now. The directors, in their explanation for the action taken, state that the feeling had developed that conditions now facing the public utilities require conservation of cash resources.

Sale of Bonds Postponed.—Because of the present unsatisfactory condition of the bond market and consequent inability to sell its bonds at 85 per cent of their face value, the San Diego (Cal.) Electric Railway has made application to the State Railroad Commission to extend the time in which the unsold portion of the bonded indebtedness should be sold from Oct. 1, 1918, to the same date 1919. The company under the order of the commission made in October, 1914, has issued $3,920,000 face value, and has redeemed $76,000 face value in accordance with sinking fund provisions. The maximum issue secured by mortgage to the Union Trust Company, San Francisco, is $10,000,000 and the amount authorized to be issued was $4,497,000. The time for selling the unissued balance has been extended from time to time heretofore by the commission.

Common Dividend Passed at Louisville.—The Louisville (Ky.) Railway has deferred action on the usual semi-annual dividend on its common stock. T. J. Minary, president and general manager, stated that no dividends could be paid on the common stock until the higher fare asked of the city was granted. The preferred semi-annual dividend of 2½ per cent was declared, payable on Oct. 1. The company has outstanding $3,500,000 of 5 per cent preferred stock on which dividends have been paid regularly. It also has outstanding $8,323,600 of common stock. In December, 1917, the Louisville Traction Company, the holding company for the Louisville Railway, was dissolved in order to effect a saving in taxes. Preferred stockholders exchanged on a share for share basis; holders of the traction common stock received seven-tenths of a share of railway common for each share of traction common. The common stock was reduced in this way from about $12,000,000 to about $8,000,000.

Chicago City Reduces Dividend.—The Chicago City Railway on Sept. 23 declared a quarterly dividend of 1 per cent, payable on Sept. 30 to holders of record of Sept. 26. The Chicago City Railway, Chicago Railways and other local surface lines in Chicago are operated as a unified system by a joint agency known as the Board of Operation of the Chicago Surface Lines. The City Railway has $18,000,000 of stock outstanding, of which $16,971,900 is owned by the Chicago City & Connecting Railways and is deposited under that company's collateral bond issue. The Chicago City Railway has been an unusually successful property of its kind, with a financial history and continuous dividend record of twenty-four years that have resulted in it being very highly regarded. For the period mentioned dividends have averaged slightly more than 10 per cent. In 1917 the company paid 8¾ per cent.

Arranging to Extend Bonds.—The directors of the Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio, who have for some time been giving consideration to the maturity on Oct. 1 of the $500,000 of first mortgage bonds and the $1,131,000 of first consolidated mortgage 5 per cent gold bonds, find that it is practically impossible to refund such indebtedness at the present time and that the only course possible is to provide for an extension to Oct. 1, 1923. The board is having prepared for deposit with the Citizens' Savings & Trust Company, Cleveland, trustee, an agreement providing the terms, etc., of such extension and is preparing to apply to the Public Utilities Commission of Ohio for its consent. It is proposed that the company will pay 7 per cent interest upon the bonds from Oct. 1, payable semi-annually. Such extension has been tentatively agreed to by holders of all of the first mortgage bonds and a large number of first consolidated mortgage bonds, all upon condition that all holders of the first consolidated mortgage bonds likewise consent to the extension.

Wants Receiver for Connecticut Line.—Application for the appointment of a receiver for the Hartford & Springfield Street Railway, Warehouse Point, Conn., has been made to Judge W. S. Case in the Superior Court by counsel acting for W. C. Mason & Company, Hartford, who represent that they have a claim of $2,500 against the railway for coal delivered to it. The hearing has been set for Sept. 30. The company operates about 48 miles of track. The road is bonded for only $20,000 a mile, and its capitalization includes $285,000 of preferred stock and $500,000 of common. In 1917 an inventory by Sloan, Huddle, Feustel & Freeman, Boston, showed a total value of $1,290,125, based on the prices of normal times. Last spring the company increased fares in each of its zones from 6 cents to 7 cents. At that time George S. West, treasurer of the company, said that the company was not then earning its interest charges and that no dividends had been paid on the common stock since the first year of operation. Unless earnings could be materially increased Mr. West said a receivership was likely. From 1901 to 1908 only about 6 per cent was paid on the preferred stock; from 1908 to 1912 less than 3 per cent, and since 1912 nothing.

Traffic and Transportation

Columbus Case Dismissed

New and Difficult Conditions Do Not Give Railway Right to Terminate Contract With City

In a written decision which reached the clerk of the United States District Court at Columbus, Ohio, on Sept. 21, Judge D. C. Westenhaver of the United States District Court at Cleveland announced that he had no jurisdiction to entertain the petition of the Columbus Railway, Power & Light Company, asking that the city be restrained from interfering with the company's practice of charging a 5-cent fare and 1 cent for transfer, instead of selling eight tickets for a quarter, as provided in the franchise. Judge Westenhaver heard the case recently at Columbus, and this decision operates as a dismissal.

CONTRACT MUST BE UPHELD

The court in commenting on the case held that the new and difficult conditions which have arisen as the result of the war do not give the company the right to terminate its contract with the city. He said that contracts must be upheld and some other way must be found temporarily to aid companies affected by conditions which could not be foreseen at the time the contracts were made and over which the companies concerned have no control at the present time. Costs of materials and labor have increased greatly as a result of the war and insolvency may threaten. but such a condition was not sufficient to give the court jurisdiction, in view of the binding contract which existed. According to the court, prolonged operation under present conditions was manifestly impossible. If something was not done within a reasonable time, the President, by the power vested in him as commander-in-chief of the Army, must take over and operate the property at a fare yet to be fixed. The court added that such a proceeding would not be creditable to an independent, democratic city or a well-managed company.

TO CONTINUE FIVE-CENT FARE

Samuel G. McMeen, president of the company, has announced that the 5-cent fare will be continued. Where passengers insist upon buying tickets at the rate of eight for a quarter, they will be allowed to ride free. However, application has again been made to the Council for an increase in fare.

City Attorney Scarlett is preparing to ask the United States District Court to dismiss the suit of the Eastern bondholders, who have asked for an injunction to prevent the city from forcing the company to accept the old rate of fare of eight tickets for a quarter. He is said to hold the opinion that the decision already rendered covers this case also, but attorneys for the company say that this later petition contains several points that were not covered in the suit just decided.

The company served notice on Aug. 20 to the effect that it would increase fares to 5 cents with 1 cent for each transfer the next day, after having tried in vain for months to induce the City Council to grant an increase that would cover the additional operating expenses brought about by war conditions. At the same time the company declared its intention to surrender its franchises and a little later filed suits in the Federal Court to enjoin interference with the operation of its cars.

Hearing on Chicago Fare Petition

The first hearing on the petition for a 7-cent fare filed by the Chicago Elevated Railroads on Aug. 30 was held before the Illinois Public Utilities Commission on Sept. 23 at Chicago. The chief witness for the elevated lines was Britton I. Budd, president. The city of Chicago and the Cook County Real Estate Board presented witnesses in opposition.

The company presented exhaustive exhibitions showing the increased costs of materials, labor, etc., together with a list of fare increases in other cities. Mr. Budd stated that in his opinion the 7-cent fare would result in an increase in gross revenue not exceeding 20 per cent or $2,000,000, while the petition of the company as abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 7, page 436, showed that $2,447,000 would be required. Testimony also brought out that, based upon the valuation of the property as made by the city, the company had earned 5 per cent during the past year, and that with increased costs, if no fare increase should be granted, the return on the investment for the present year would be only 0.9 per cent.

A feature of the hearing was the presentation of a resolution by a delegation of ten employees of the company stating that 5000 employees joined with the company individually and collectively in urging the commission to grant the increase asked. The employees are also actively using their influence with the public with whom they come in contact on the trains and in the stations to create a favorable attitude as regards the proposed 7-cent fare.

The cross-examination of the case will be held on Sept. 30, at which time the case will probably be closed. Argument for a motion on an emergency order will be held at Springfield the latter part of the week ending Oct. 5.

Court Upholds Higher Fare

Sees the Urgent Need for Increased Rates for the Rochester-Charlotte Line

The New York State Railways, Rochester Lines, has won its fight for a higher fare between Rochester and Charlotte. Supreme Court Justice George A. Benton in Rochester has handed down a decision in the case of the municipality against the company, in which he holds that a 5-cent fare is confiscatory because the company cannot operate on that basis without a loss. The Public Service Commission, Second District, can determine what is a just and reasonable fare. An appeal from the decision will be taken by the city.

The city's attempt to force the Rochester Lines of the New York State Railways to carry passengers between Rochester and Charlotte for a 5-cent fare began in 1915 when the bill annexing Charlotte to the city was passed by the State Legislature. The bill became effective on Jan. 1, 1916, and provided that the fare should not be more than 5 cents. An injunction was granted later by Justice Sawyer in the Supreme Court of Monroe County which prevented the enforcement of a 5-cent fare. Since that time the company has been collecting a 10-cent fare and giving each passenger a 5-cent rebate coupon which would be cashed by the company providing the 5-cent fare was upheld by the courts.

In his opinion, Justice Benton holds that the claims made by the city in the rate proceeding are on their face fallacious and says "that the concrete question to be answered is: will the statute reducing the fare to 5 cents lessen the revenue below a fair and reasonable return? If the evidence shows that the result will be no revenue and an annual deficit unquestionably the statute is void. It takes property without compensation and denies to the New York State Railways the equal protection of the laws.

"The figures and calculations are pre-war experiences. Equity requires a court to make its decrees under conditions as they are at the time of trial. It is common knowledge and so a matter of judicial notice that while there is now congestion of traffic, there is also an increasing struggle for existence by railway corporations. Trolley stockholders lose their investments. Bondholders surrender to the company percentage of their holdings—bonds are harder to float even at higher rates or reduced quotations. There are receiverships, foreclosures of trust mortgages, actual or imminent, a constantly increasing cost of labor and material, and an increasing rate for both freight and passengers. At such a time a statute cutting rates in two can have but one effect. Manifestly, there should be a fair adjustment equalizing the rights of the corporation and the public."

President McCulloch Another Zone Advocate

Routs Hobgoblins of Precedent, Effect on Real Estate and Collection Methods, Causing Concern to System's Opponents

In a recent communication to the State Public Service Commission of Missouri the United Railways, St. Louis, Mo., made a report as to the financial results of the operation of the road for two months under the increased rate of wages and the 6-cent fare. It showed that, assuming the same riding conditions, rate of wages and rate of fare continued during the balance of the year, the company was piling up a deficit which would probably be considerably more than $1,000,000 for the year of 1918.

The company dwelt on the need for increased revenues and suggested that these increased revenues might be deprived from a flat increase in fare or from the adoption of a zone system. A suggestion as to a zone system for the city of St. Louis, together with the advantages of the zone system, both from the standpoint of the company and the passengers, was set forth. The suggestion of the zone system resulted in considerable discussion of the matter, and some criticism. The principal points in the criticism are two: First, that the adoption of the zone system would upset present realty conditions; and, second, that such a system was not in common use in American cities, and would be difficult to put in operation. In this connection Richard McCulloch, president of the company, has made the following statement:

"As to the first criticism—it is a well-known fact that much of the growth in American cities has been spasmodic—one portion of the city growing at the expense of the other. It is a frequent complaint by real estate owners that there is no investment stability in residence property on account of the disposition of the people, aided largely by eloquent real estate agents, to abandon one part of the city for another. It may be desirable for those who wish to live with ground around them, to move far out where such property may be obtained. There are many, however, and this number is increasing, who desire to live in flats and apartments, and for these there is not a better or more convenient location than the territory just east of Grand Avenue, and similar locations in the north and south of the proposed first zone. Those who wish to live in flats gain nothing by going farther out, and any zone system which makes riding cheaper in the heart of the city will have the immediate effect of rehabilitating this portion of the city as a residence section. The dilapidated and abandoned condition of the heart of the city is properly a cause of humiliation to everyone interested in the city's appearance.

"The criticism that the zone system is not in common use in American cities has no weight. Every day we are doing things differently from the way they were done last year, and many much more radical changes in our habits and customs will have to be made before the war is over. Many of these changes are distinctly advantageous and the advantage had been previously recognized, but it needed the pressure of war times to break down old customs and cause us to act. The world is moving rapidly at the present time, and he who gets in the way of progress is apt to suffer. Amazing changes have been made in much more important matters during the past few years, and if the zone system possesses merit, a mere question of the collection and accounting of fares should not be an insuperable obstacle.

"In order to put this system into effect a radical change in the method of collecting and accounting for fares would be necessary. The pay-as-you-enter fare system would probably be changed to a pay-as-you-leave system; in order to minimize congestion it might be desirable to use the pay-as-you-enter system in one direction of travel and the pay-as-you-leave system in the other. Many details would have to be developed, but we can state positively that the system is workable and has advantages, and we can further state that the United Railways organization has plenty of talent to put it into operation.

"The zone system has two self-evident advantages from the standpoint of the passengers and property owners. First, each passenger would pay for his ride in proportion to its length; and, second, it would tend to stabilize realty values, as one part of the city would not be built up at the expense of another."

Seven Cents in Ogdensburg

The Ogdensburg (N. Y.) Street Railway has been charging a 7-cent fare between any two points on its lines and selling six tickets for 35 cents or four for 25 cents since last May under an order of the Public Service Commission for the Second District. The order also provided that special tickets presented between 6.30 and 7 a.m., or 5.45 and 6.30 p.m., be sold in lots of 1000 for $50. It was still further provided that the latter tickets were good for use only by the purchaser, members of his family or employees. Children under five years, accompanied by parents or guardian, are carried free, children over five years at full fare, and only hand baggage is carried.

This determination and order, the commission said, might be reopened at any time after Nov. 1, 1918, if it be made to appear to the commission that the controlling reasons for allowing an increase in fares, in excess of those which otherwise would legally obtain, no longer exist.

Ogdensburg imposed no restriction by franchise or otherwise. The commission's memorandum, accompanying the order, reviewed the operating revenues, and operating expenses from 1913 to 1917.

The City Council passed a resolution recommending that the company be permitted to charge the rates of fare which the commission determined to authorize, for a period of six months from May 1.

The company's tariff met with the provisions of the managers of the St. Lawrence State Hospital relative to reduced fares for hospital employees.

Twenty-four Fare Increases

Supplementary List Issued by American Association Shows This Number Since July

Revised figures of rate advances granted electric railways throughout the United States and Canada up to Sept. 15, compiled by American Electric Railway Association, show that twenty-four cities have granted the local railways higher rates since July 1, 1918. Figures do not include interurban lines. According to the association 246 increases had been granted up to July 1, and with the additions since that time, the total number of cities now paying higher rates for railway service is 270.

The majority of increases are to a 6-cent fare. Denver, Col., with a population of 260,800, is the largest city to go on a 6-cent basis since July. Oakland, Cal., Scranton, Pa., and Salt Lake City, Utah, only recently granted the local railways permission to charge 6 cents. With the addition of Troy, Cohoes and Watervliet, practically all the up-State cities centering about the capital city of New York are now paying 6 cents, including Albany and Rensselaer. Increases granted since July 1 follow:

City	Population	Rate (cents)
Norristown, Pa.	31,401	8
*Tacoma, (privately owned lines)	112,770	7
Edmondton, Alta. (municipally owned)	75,000	7
Alton, Ill.	22,874	7
Hattiesburg, Miss.	16,482	7
Grand Forks, N. D.	15,837	7
Denver, Col.	260,000	6
Oakland, Cal.	198,604	6
Scranton, Pa.	146,811	6
Salt Lake City, Utah	117,399	6
Troy, N. Y.	77,916	6
East St. Louis, Ill.	74,758	6
Berkeley, Cal.	57,653	6
Lancaster, Pa.	50,583	6
Macon, Ga.	45,254	6
San José, Cal.	38,902	6
Fresno, Cal.	34,858	6
Alameda, Cal.	27,732	6
Cohoes, N. Y.	25,211	6
Watervliet, N. Y.	16,546	6
Palo Alto, Cal.	......	6
Richmond, Cal.	......	6
Wildwood, N. J.	......	6
Springfield, Mass.	51,550	†

*Municipally owned lines in Tacoma now charge a straight 10-cent fare.

†Reduced rate tickets abolished. On Sept. 16 zone system begum with 6-cent minimum fare.

This compilation of the association supplements the list previously compiled and published in the ELECTRIC RAILWAY JOURNAL for Aug. 17, page 309.

Two Points of View

Accountants Who Inquired Into Rochester Situation Reach Very Different Conclusions from Same Facts

Unless the New York State Railways, Rochester Lines, is allowed to increase the rate of fare in Rochester from 5 cents, the company will be forced into the bankruptcy court, according to a report made to the business interests of Rochester by Price, Waterhouse & Company, accountants, who have been making an investigation into the financial conditions of the company. The investigation was made at the instance of many of the largest and most influential retail merchants and manufacturers of the city, who believed that the investigation by the municipal authorities was unfair to the company and the business interests of the city. The report of the municipal authorities maintained that the present 5-cent fare provided a sufficient return on the company's investment.

The report of Price, Waterhouse & Company shows that there will be an estimated deficit this year in the operation of the New York State Railways of $1,716,510 of which $524,472 will be the deficit on the Rochester lines, which include the Rochester & Eastern, the Rochester & Sodus Bay and lines to lake resorts.

Copies of the report have been filed with the Mayor and the city law committee. In the communication to the Mayor, the city's businessmen say that the report is made in the spirit of fair play only and to arrive at the justice of the company's request for an increased fare.

WAGE INCREASE $693,000 FOR YEAR

In arriving at the conclusion with respect to the deficit, the new report has considered the cost of replacements, higher cost of labor through wage increases and other items not included in the Scudder report, made for the municipal authorities. The wage increase of the Rochester Lines alone, based on the payroll of April 30, 1918, amounts to $693,000 yearly. J. F. Hamilton, general manager of the company in a statement says that $500,000 should be spent immediately in replacements for the good of the service. He contends that the company is unable to meet the wage increase, let alone make needed replacements.

The law committee of the Rochester Common Council gave a hearing on Sept. 19 on the report of M. & L. W. Scudder, accountants engaged to examine the financial condition of the traction company. The Scudder report was denounced as unfair to the company by many of those who attended the hearing. Another hearing will be held at which the Price-Waterhouse report will probably be considered so as to determine the reason why such a big difference should be shown in the company's financial condition as revealed by the two reports.

The concluding paragraph of the report of the city's businessmen says:

"The only interest of the undersigned in any action to be taken by the city is their interest in the city as a whole, but that interest leads us to urge that the responsibility placed upon the city government by this situation demands a decision which shall prevent the collapse of railway service."

Government Credit Urged

Massachusetts Commision Sees in Such Action by Government Aid in Handling Freight

Development of electric railway freight and express service through government credit was advocated by the Public Service Commission of Massachusetts in a report Sept. 19 to the United States Railroad Administration on "Railroad Conditions in Massachusetts Under Federal Control."

The commission's investigation led to the conclusion that through freight is being handled with better dispatch than formerly, although it has increased in volume. The railroad embargoes have caused severe financial loss to New England industries, and have also caused diversion of much business to express companies, producing incidentally an unfavorable effect upon passenger service. There is still much complaint that freight service is slow and unreliable, especially less-than-carload freight, the outstanding cause being the shortage of labor at freight houses and transfer points.

Considerable local freight is now moved by motor truck or street railway. Much more would undoubtedly be moved by electric railways, the commission states, if such companies were in position to supply the necessary equipment. On this point the report says:

"We believe that the authorities at Washington might well give consideration to the lending of government credit to these companies for the purchase of additional freight equipment upon a priority basis. Eastern Massachusetts is covered by a network of electric railways which often provide direct routes between important centers, where the steam railroad routes are circuitous and transfers are necessary. Days are frequently consumed on such routes in moving freight a comparatively short distance. Clearly the employment of freight cars in such service is wasteful and opposed to all standards of war-time conservation. If the electric railways were able to provide the needed service by the direct routes, much steam equipment could be released for service where it could be used more economically and efficiently.

"The report also touches upon the desirability of the electrification reconstruction and improvement of the passenger and terminal facilities in Boston, though it does not discuss this as a war measure."

Co-operation in Grand Rapids

Grand Rapids Paper Helps Local Railway to Make Its Fare Case Plain

The City Commission of Grand Rapids, Mich., has passed an ordinance submitting the question of a 7-cent fare for the Grand Rapids Railway to the people at the November election.

A feature of the appeal of the company has been the unusual publicity given by the company itself to its own affairs and the spirit in which the appeal has been received by the newspapers. Among the statements was one containing three tables covering earnings, securities issued and taxes.

The statement of earnings showed gross receipts, operating expenses, taxes, amortization and sundries, depreciation charges, bond interest, total charges, net earnings and dividends paid from 1891 to 1897.

The statement of capital liabilities covered the same period. In every year since 1891 has the plant investment been in excess of the total of stocks and bonds. For instance, in 1917 the plant investment stood at $8,114,925 while the total of stocks and bonds was $7,700,000.

In commenting on this statement the Grand Rapids *News* said:

"The *News* presents herewith, in full, the Grand Rapids Railway's report to the City Commissioners, upon which it bases its claim for a 7-cent fare. We believe it fair to the city and fair to the company that every opportunity be given the citizen to understand the situation, to know how the railway was organized financially, what it has done under its franchise, what it costs to operate, what profits have been earned, and how the company stands to-day.

"This report contains facts from the past and estimates for the future. Compare them at your leisure, study them, as you would study your own trial balance or your house account.

"There is little difference between this report and a similar report or any other business in our city. There is a certain income and a certain outgo. As furniture is set aside and discarded, clothes worn out, depreciation is figured as a legitimate cost.

"Study these figures with an open mind. It takes a given amount to run this business, and it receives a fairly well-established income. It is entitled to a fair return on the investment.

"You may have to vote on this question, and the more you know about it, the more intelligent will be your vote. Keep these figures for comparison with statements for and against this increase.

"Within a few days the *News* will print two editorials based upon this report. One will be for the city and one for the company. They will contain arguments set forth by the most competent minds, who have had anything to do with the problem. You will need these figures for reference."

Six Cents for Springfield, Mass.

Following conferences between representatives of the Springfield (Mass.) Street Railway, the Massachusetts Public Service Commission and representatives of municipalities served by the company, a new schedule of rates was placed in effect on Sept. 16 in which passengers on the city lines in the central zone will pay a 6-cent fare in place of the former 5-cent unit. In the second zone established by a recent decision of the commission the 6⅔-cent rate gives way to a 7½-cent rate (six tickets for 45 cents), and in the outer territory the former 8⅓-cent rate gives way to a new 9 2/7-cent rate (seven tickets for 65 cents). On sections of the road where a rate of 2 cents a mile has been in vogue, a new rate of 2½ cents a mile has been adopted.

These rates were agreed upon as a modification of the schedule proposed by the company in its tariff filed with the commission a few weeks ago, and in view of the compromise reached the commission has found it necessary to issue no formal approval of the rates now established by mutual agreement.

Mr. Richey Will Study Boston Fare Problems

Albert S. Richey has been retained by the trustees of the Boston (Mass.) Elevated Railway to make a study of the various fare plans which might be applied to the business of that company. It is quite probable that a change must be made from the 7-cent flat fare, established by the trustees shortly after the road passed under State control. The feasibility of various modifications of the flat fare and zone systems will be determined, as affected by the applicability of various fare collection schemes and the characteristics of the several routes and systems of underground, elevated and surface transit. Definite recommendations will be made as to a system of fares which shall be properly applicable to Boston conditions, due consideration being given to the requirements, both of the company and the public.

May Renew Transfer Charge Plea

Frank Hedley, vice-president and general manager of the New York (N. Y.) Railways, was the chief witness on Sept. 24 in the first session of the hearing before the Public Service Commission of the First District of the reasons why service on the lines of the company has been curtailed recently. Commissioner Ordway, referring to the suggestion that cars be kept in the carhouses in the early morning hours, asked whether the service would not be made more comfortable if fewer cars were run after midnight and more in the daytime. Mr. Hedley said he did not favor entire discontinuance after midnight, but that by diminishing the night service and putting more crews on in the day rush hours the company could serve the public better and at the same time improve its finances.

James L. Quackenbush, the company's counsel, recalled that the company applied last year for permission to charge 2 cents for transfers and abolish certain transfer points. He believed that if this permission was granted now it would relieve the financial condition and postpone bankruptcy.

Commissioner Hubbell said:

"If the company thinks it advisable to revive that proposition it would be hospitably entertained by the Public Service Commission."

John Chandler Cobb, representing the income bondholders, said he had been trying to have the transfer project revived. Mr. Cobb was the originator of the idea that owl service be suspended entirely.

Seven Cents for Public Service

The Board of Public Utility Commissioners of New Jersey on Sept. 27 issued an order permitting the Public Service Railway, Newark, to increase fares from 5 cents to 7 cents, with 1 cent additional for a transfer, from Oct. 15 to March 31 next, and then to charge a flat cash fare of 6 cents, with 1 cent for a transfer.

The company originally asked for a 7-cent fare, with 2 cents for a transfer and 1 cent for a transfer on a transfer. As a result of this application the company received permission to charge 1 cent for a transfer. It soon renewed its appeal to the commission and it is as a result of this renewed application that the decision of Sept. 27 was handed down. Under directions from the commission the company is now engaged in zone fare studies.

Transportation News Notes

Six Cents for Kankakee.—The Kankakee (Ill.) Electric Railway has received permission to charge a 6-cent fare. Books carrying twenty rides will still be sold for $1.

Increase in Anderson, S. C.—The Southern Public Utilities Company increased its fare in Anderson, S. C., from 5 cents to 7 cents on Sept. 16 with the approval of the City Council.

Wants Sleeping Car Advance.—The Illinois Traction System, Peoria, Ill., has filed a petition with the Interstate Commerce Commission asking for an increase in sleeping car fares between Springfield, Ill., and St. Louis, Mo., of 25 cents to 50 cents.

Duluth Wants Relief.—A petition from the Duluth Street Railway, controlled by the Duluth-Superior Traction Company, Duluth, Minn., for an increase in fare was presented at the meeting of the City Council on Sept. 16. No rate was named.

Fare Request Withdrawn.—The Easton Transit Company, operating between Easton, Nazareth, Bethlehem and South Bethlehem, Pa., and several cities in Warren County, N. J., has withdrawn from the Board of Public Utility Commissioners of New Jersey its request for an increase in fares from 5 cents to 6 cents in each zone.

Commission Suspends Increase.—The Public Service Commission of Illinois, has suspended until Feb. 8, 1919, the proposed increases in interurban fares proposed by the Keokuk (Ia.) Electric Company from Keokuk to Hamilton and Warsaw on the Illinois side of the Mississippi River.

Fare Increase Suspended.—The proposed advances in fares from 5 cents to 7 cents, filed by the Tri-City Railway of Illinois and the Moline, Rock Island & Eastern Traction Company, affecting Rock Island, Moline, East Moline, Milan and Silvis, have been suspended until Jan. 29, 1919.

Oakland Likes Tickets.—On request of a large number of patrons the San Francisco-Oakland Terminal Railways, Oakland, Cal., will put 6-cent tickets on sale, as soon as arrangements can be made for doing so. The tickets will be sold in blocks of five for 30 cents, ten for 60 cents, etc., up to fifty for $3.

Six Cents Asked in Anniston.—The Alabama Power Company on Sept. 16 filed with the Public Service Commission a petition for an increase in fare on the lines operating in Anniston and vicinity, from 5 cents to 6 cents. The commission decided to hear the petition on Sept. 30.

Joliet & Eastern Fare Increase.—The Public Utilities Commission of Illinois, has authorized the Joliet & Eastern Traction Company, Joliet, Ill., to increase passenger and freight rates to conform with rates charged by other carriers engaged in like service in the territory of the company. The order was effective Sept. 16. It will be continued in force until six months after the termination of the war.

Increase for Vermont Company.—At a conference between officials of the Barre & Montpelier Traction & Power Company, Montpelier, Vt., and the Selectmen of Berlin and City Councils of Barre and Montpelier held on Sept. 14, the Berlin Selectmen and the Montpelier Council voted to grant a raise in fares to the company from 5 cents to 6 cents in the cities and from 25 cents to 30 cents on interurban traffic. It is expected that the Council of Barre will take similar action.

Skip Stops Extended in Philadelphia.—The skip-stop system is now effective on the lines of the Philadelphia (Pa.) Rapid Transit Company in the central district of Philadelphia, in all of West Philadelphia and in the district between the rivers and from Spring Garden Street to Columbia Avenue. The extension into the latest district, between Front Street and the Schuylkill River and from Columbia Avenue to Lehigh Avenue, put into effect on Sept. 20, includes about one-half of the city under the skip-stop system.

Six Cents for Trenton.—An order was entered on Sept. 25 by the Board of Public Utility Commissioners of New Jersey, permitting the Trenton & Mercer County Traction Corporation to withdraw the sale of six tickets for a quarter and fixing an emergency rate of 6 cents to be charged on all its lines operating in Trenton and county. The hearings before the commission in this case were concluded early in July. The presentation of the last of the testimony was reviewed in the ELECTRIC RAILWAY JOURNAL for July 20, page 131.

Mr. Witt in Youngstown.—Peter Witt, formerly street railway commissioner of Cleveland, Ohio, is in Youngstown to assume the duties of the position to which he was recently appointed in connection with the inquiry by the city into the local railway situation on the lines of the Mahoning & Shenango Railway & Light Company. The ordinance under which the appointment was made is to become effective on Oct. 3, but Mr. Witt is engaged on the preliminaries in order that any recommendations made by him, if adopted for use, may be put into effect just that much earlier.

Denver Interurban Increase.—In addition to the authorization of a 6-cent fare for adults and a 3-cent fare for children on the city lines of the Denver (Col.) Tramway, in lieu of the former charges of 5 cents and 2½ cents respectively, the State Utilities Commission has also authorized the adoption on all tramway interurban lines of the rates contained in General Order No. 28 of the Director General of Railroads of the United States Railroad Administration. Under the latter order, the Denver Tramway is permitted to establish a flat rate of 3 cents per mile on its interurbans with a 10 per cent increase in commutation rates.

I. T. S. Rate Advance Sustained.—Judge English in the United States District Court at Danville, Ill., on Sept. 17, granted a permanent injunction restraining the State of Illinois from interfering with the Illinois Traction System in the proposed increased passenger rates above 2 cents per mile, with 3 cents as the maximum that can be charged. The evidence placed before Judge English in the passenger fare case was the same as that heard by the State Utilities Commission recently, when the electric lines were granted the same freight rates as those charged by steam roads.

Increased Fare Ordinance Being Drawn.—The Board of City Commissioners of Galveston, Tex., by unanimous vote has instructed the City Attorney to draft an ordinance to be passed at a later date which shall permit the Galveston Electric Company, effective on Oct. 1, to charge fares at the rate of 6 cents instead of 5 cents, and 3 cents for half fares instead of 2½ cents, as now charged. The ordinance will also require the Galveston Electric Company to pay the city of Galveston a tax of 1 per cent on its gross income. The request for increased fares was presented before the commission by Alba H. Warren, general manager of the company.

Schenectady Fare Hearing Postponed.—The hearing before the Public Service Commission for the Second District of New York, scheduled for Sept. 24, upon the tariff schedule of the Schenectady Railway in which increased rates for passenger traffic are proposed on the various divisions of the road, has been adjourned to a date to be fixed later. The adjournment was at the request of the railway, which informed the commission that it would be impossible for the company to have its case ready for presentation on Sept. 24. The railroad suggested that in about two weeks it will be ready to present its proof. The tariff of the company has been suspended until Nov. 1.

Solving New York's Street Traffic Problem.—The street separation plan of Police Commissioner Enright, by which commercial and pleasure traffic are restricted to specified highways, has recently been applied in New York City. Henceforth passenger automobiles and carriages will not be permitted on streets given over to commercial traffic, nor will commercial automobiles or horse-drawn trucks be allowed on streets devoted to passenger traffic. Vehicles having business on streets from which they are barred under the new plan, must enter and leave at the nearest intersecting street. The rule does not apply to the following: Fire and police department vehicles, postal, hospital and military services, and newspaper trucks.

Louisville Suburban Case Continued.—After passing on several preliminary motions in the complaint of the Suburban Protective Association against the Louisville & Interurban Railroad, protesting against the increased passenger rates, the Kentucky State Railroad Commission, in session at Louisville on Sept. 18, adjourned to meet on Sept. 25 for further hearing. Chairman Laurence B. Finn held that practically the only question at issue was whether the increase was extortionate. The complainants are seeking to have restored the rate that was in effect before July 1, 1918. The company contends that there is no law to imply a contract between the company and the persons who have built homes on the various lines to require the road to maintain the original rate for all time to come.

Sept. 30 Date of Houston Increase.—At a special meeting of the City Council on Sept. 19 the ordinance providing for a 6-cent fare on the cars of the Houston (Tex.) Electric Company was finally passed. The ordinance becomes effective on Sept. 30. As noted in the ELECTRIC RAILWAY JOURNAL for Sept. 21, page 527, under the ordinance children's fare is raised from 2½ cents to 3 cents. At the same time Mayor Amerman issued a formal statement signed by all members of the Council, setting forth the reasons for granting the increase. Reference was also made to Lamar Lyndon's report on the condition of the company, showing that in placing the earnings at $306,618 over expenses, no account had been taken of replacements, which it is estimated would bring the earnings of the company down to a return of only 3.6 per cent per annum.

Missouri Fare Argument Nov. 7.—By agreement of all parties concerned the court case affecting 6-cent fares in St. Louis and Kansas City, Mo., will be set for hearing in the Supreme Court of Missouri in banc on Nov. 7. The Kansas City Railways, the United Railways, St. Louis, and the Public Service Commission all filed motions asking the consolidation of the three appeals into one case. This will be granted by the court and one ruling will cover the entire controversy. In a verbal decision on Aug. 31 Judge Slate of the Cole County Circuit Court held that the Public Service Commission of Missouri exceeded its authority in permitting the United Railways to charge a 6-cent fare. His order would have restored 5-cent fares in both St. Louis and Kansas City, but Chief Justice Bond of the State Supreme Court on Sept. 17 authorized the companies to continue to charge 6 cents and to give rebate slips until the Supreme Court passes upon the case.

Capital Traction Plea Presented.—The application of the Capital Traction Company, Washington, D. C., to the Public Utilities Commission of the District for financial assistance was presented to the board under date of Sept. 23. The appeal says: "It is requested that the existing tariff for the transportation of passengers be amended, and the rate of fare increased in amount sufficient to give to the company an ability to operate to the benefit of the public, to maintain its credit and at the same time reasonably to preserve the rights of its stockholders. It is believed that on thorough investigation and fair consideration the commission will conclude that a uniform cash rate of 5 cents per passenger per trip, with existing transfer privileges, will be certainly required to meet present needs and conditions, and to place the company in position to respond fully to the growing demands of the public and of the government, under the stress of war conditions." As noted in the issue of the ELECTRIC RAILWAY JOURNAL of Sept. 21, page 526, an application for a flat 5-cent fare has been made by the Washington Railway & Electric Company.

Personal Mention

F. C. Chambers, electrical engineer and engineer of overhead construction of the Des Moines (Iowa) City Railway, has also been appointed master mechanic to succeed M. M. Lloyd.

G. H. Garrison, treasurer, general manager and purchasing agent of the Cortland County Traction Company, Cortland, N. Y., has also been appointed secretary of the company to succeed H. A. Dickinson.

S. G. Strickland, federal manager of the Chicago & Northwestern Railroad, has had his jurisdiction extended to the Fort Dodge, Des Moines & Southern Railroad, Boone, Ia., and the Waterloo, Cedar Falls & Northern Railroad, Waterloo, Ia. F. W. Johnston, treasurer and auditor, has been appointed federal treasurer.

E. C. Sherwood has been appointed master mechanic of the Easton (Pa.) Transit Company to succeed W. C. Kline, whose appointment to the Lehigh Valley Transit Company is referred to elsewhere in this department. Mr. Sherwood has lately been superintendent of equipment for the Manhattan & Queens Traction Corporation, Long Island City. Before that he held the title of general foreman of equipment of the company. He was previously general foreman of the shops of the Coney Island & Brooklyn Railroad, Brooklyn, N. Y., now included in the system of the Brooklyn Rapid Transit Company. Previous to that time he was with the New York (N. Y.) Railways as general foreman in the mechanical department.

W. C. Kline, who has been master mechanic of the Easton (Pa.) Transit Company since July, 1917, has been appointed superintendent of equipment of the Lehigh Valley Transit Company, Allentown, Pa., which controls the system at Easton, to succeed the late R. C. Green. Mr. Kline entered electric railway work in the shops of the Metropolitan Street Railway, New York, under Thomas Mellen in 1901. In 1903 he resigned from that company to become general inspector with the Albany & Hudson Railroad, Rensselaer, N. Y. He continued with that company for several years and then engaged in shop work with the General Electric Company for two years. In 1908 he returned to New York with the New York Railways, the successor of the Metropolitan Street Railway, and served for four years as shop foreman and draftsman under William McIver, H. H. Adams and J. S. Doyle. In 1912 and 1913 Mr. Kline was connected with the Federal Storage Battery Company. From 1913 to 1916 he was with the Brooklyn Rapid Transit System as draftsman and general inspector.

New Pacific Electric Vice-President

Herbert B. Titcomb, Long With Southern Pacific, Succeeds to Duties of Paul Shoup at Los Angeles

Herbert B. Titcomb, superintendent of the Stockton division of the Southern Pacific Company, has been elected vice-president of the Pacific Electric Railway, Los Angeles, Cal. Mr. Titcomb will be the executive in charge of the electric railway, as President Paul Shoup now has his office in San Francisco as operating executive of the Pacific system of the Southern Pacific. Mr. Titcomb has been an employee and officer of the Southern Pacific Company for the past twenty-nine years, working up from the position of agent and operator, through the engineering department, to that of superintendent of the Stockton division of the Southern Pacific, the position he has resigned to go to Los Angeles. As district engineer of the Southern Pacific Company in Los Angeles, Mr. Titcomb was in charge of construction of the Southern Pacific Railroad station. In announcing Mr. Titcomb's appointment, Mr. Shoup said that it would be impossible for him to deal personally with many of the problems that have heretofore come to him. Mr. Titcomb has announced that there will be no changes in the executive staff. He will make a survey of the entire system, partly to get better acquainted with it and partly to learn if any improvements are needed. He said that he hoped the new rates of the company, referred to at length in the ELECTRIC RAILWAY JOURNAL for Sept. 21, besides making up the deficit that has existed in past years, would yield sufficient revenue to provide for any improvements needed.

H. B. TITCOMB

Mr. Brush Leaves Boston

His Resignation from Boston Elevated Accepted—Made Vice-President of American International Corporation

Matthew C. Brush, formerly president of the Boston (Mass.) Elevated Railway, was elected vice-president of the American International Corporation at a meeting of the directors on Sept. 26. Announcement to this effect was made by Charles A. Stone, president of the American International Corporation. Mr. Stone said in part:

"Mr. Brush's association with the American International Corporation will be welcomed by the business men of both Boston and New York and it will bring him in touch with the New York business community and in turn tends to bring the American International Corporation, which has activities throughout the world, in closer touch with business men of Boston, with many of whom Mr. Brush is intimately associated.

"The public authorities of Massachusetts and the owners of the securities of the Boston Elevated Railway were all desirous that Mr. Brush remain in charge of the property after it had passed to public management and made him a most flattering offer to continue in charge of the property."

The resignation of Mr. Brush as president of the Boston Elevated Railway, which has been in the hands of the trustees since July 1, was accepted by them, at his request, at their meeting on Sept. 25, to take effect on Oct. 15, but he was granted a leave of absence until that date.

In the absence of a president, J. Henry Neal, vice-president, who has been more closely associated with Mr. Brush than any other officer of the company, has been designated as chief executive officer with the duties ordinarily devolving upon the president, until further action by the trustees.

Obituary

Thomas J. Marlow, for thirty years superintendent of track construction for the Des Moines (Iowa) City Railway, died on July 20 from cancer of the stomach. Mr. Marlow was fifty-seven years of age. He lived in Des Moines for forty-five years.

Capt. William W. Baldwin, general passenger and freight agent of the New York, Westchester & Boston Railway, New York, N. Y., before he entered the army, was killed in action on Aug. 1. Captain Baldwin attended the Plattsburg Officers' Training Camp in the summer of 1917, and was commissioned a first lieutenant and assigned to a regiment in the Rainbow Division. He was born in Burlington, Ia., in 1883, and was graduated from Cornell University in 1905.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Railway Lamp Market Favorable

Requirements Can Be Filled Without Serious Trouble If Advance Orders Are Well Placed

The incandescent lamp market is in an unusually satisfactory position at present to meet the requirements of electric railways planning to modernize their lighting installations. Last spring there was a serious shortage of lamps which was reflected in long deliveries on many sizes and types ordinarily carried liberally in factory and distributers' stocks. The central station companies were sharply restricted as to their orders, and for many months were supplied on little better than a hand-to-mouth basis. There has been an enormous demand for lamps from the Army, Navy and war plants, but this is being met by extraordinary efforts on the part of the manufacturers, and the whole electrical industry is benefiting from the increased productive and storage facilities lately placed in service.

Compared with the central station, the electric railway is only a modest consumer of lamps. This means that the requirements of the electric road as a necessary public utility can be filled without serious trouble if advance orders are well placed. The campaign against fuel waste is being waged on traction systems as well as elsewhere, and in their zeal to cut down energy consumption, some managers are overlooking their future lamp requirements. It is true that the provision of more switches for the subdivision and curtailment of shop and carhouse lighting service means that fewer lamps will be used, given the same standard of illumination, but there is to-day a need for improved lighting as well as for reduced fuel consumption in nearly all departments of the transportation business. In the shop the shortage of labor and high cost and scarcity of material dictate the utmost conservation of time and supplies, with minimum spoilage and maximum efficiency of repairs.

In the carhouse a greater degree of sectionalization than has formerly prevailed appears desirable in the face of present fuel demands, but with this sectionalization should go improved lighting from the standpoint of safety in carhouse movements, quicker inspection and cleaning. The cost of lamps is higher than has hitherto seemed normal, but it would be hard to point out any branch of railway service where a greater return is given for the expenditure than here. The attraction of traffic at the higher rates of fare now generally prevailing is so important that it can scarcely be exaggerated as a merchandising measure, both for short-haul and long-haul service. With the coming of longer evenings, the pressure for better illumination is becoming more insistent.

The feeder market is in no condition to stand the purchasing demand of the electric railway as compared with the present lamp market; the time required for betterments to be analyzed and put into effect is nominal, and it is safe to say that not for many months has the opportunity been so favorable for the lamp buyer who confines his requisitions to standard sizes and who is willing to outline his needs reasonably in advance of their fulfillment.

Coal Production Steady

Average Daily Tonnage Required for Remainder of Year but 2 Per Cent in Excess of Average for Coal Year to Date

Production of bituminous coal during the week ended Sept. 14 while considerably in excess of the week ended Sept. 7, due to the loss of time during that week on acount of Labor Day, equaled the production during the week ended Aug. 31, according to the regular weekly report of the Geological Survey. Preliminary estimates place production during this week at 12,692,000 net tons, an increase over the week preceding of 13.2 per cent and over the corresponding week of last year of 15.7 per cent. The average daily production during the week ended Sept. 14 is estimated at 2,115,000 net tons, approximately the same as the daily average during the preceding week and considerably in excess of the daily average of 1,827,000 net tons during the week ended Sept. 14, 1917. The shortage for the coal year to date now amounts to 13,624,000 net tons and makes necessary an average daily production during the balance of the coal year of 2,379,000 net tons, or 2 per cent above the average daily production for the coal year to date.

Production of anthracite during the week of Sept. 14 is estimated at 2,088,000 net tons, 29.1 per cent above the production of the preceding week, and 4 per cent above the corresponding week of 1917. The daily average for the week of the fourteenth is estimated at 348,000 net tons against a daily average of 338,531 net tons for the coal year to date, and 334,290 net tons, the daily average for the corresponding period of 1917. Total production for the coal year to date is estimated at 47,733,000 net tons, an increase of 2.5 per cent over the same period of 1917.

Competition vs. Co-operation

Washington Authorities Admit Soundness of Co-operation—Urge Pooling Among Industries

By Wingrove Bathon
Washington Representative Electric Railway Journal

War throws into high relief many fundamentals. Our policy on big business has been to enforce competition. We could not dissociate co-operation from the probability of exploitation of the public. We admitted the economic soundness of co-operation, but our legislators were not equal to the task of establishing mechanism for securing the advantages and at the same time checking the predatory tendencies. The Sherman law and its successors were the best they could do. The shortcomings of these laws are now thrown into relief. Pooling—a crime hitherto under the law—is suggested by the government itself, while all manner of agreement between erstwhile competitors is urged by the authorities. The saving grace is price-fixing or the threat thereof if the co-operating producers are disposed to use their advantage against the public.

In other words, we have full co-operation, with just enough government control to protect the public. Germany learned how to do this years ago. It has taken a bitter war to force us to see the way.

So far, the clearest indorsement of pooling comes in an order from the Fuel Administration to the cement manufacturers. This is of particular interest to traction companies, due to the large increase in the use of this material. It is next to impossible to obtain steel now, and reinforced concrete is proving a valuable substitute.

The order provides, among other things, that if two or more manufacturers find that they can save fuel by using jointly their allotments, they may use, upon permission from the Fuel Administration, "at one or more of such plants to be operated by them jointly, sufficient fuel to manufacture 75 per cent of the aggregate of the average annual production of all such plants when operated separately, the manufactured product of such jointly operated plants being distributed to the individual manufacturers as may be agreed between them."

Attention is called to the last clause, regarding distribution of the product. Under this regulation, a company owning one of four mills in a given location could shut it down, disband its distribution organization and yet share in the returns on cement to the manufacture and marketing of which it contributed only its coal allotment. It is just this sort of shutting down and pooling that the lime manufacturers have proposed to the War Industries Board, though their proposal includes also the restriction of distribution, to prevent cross hauling (such as is now enforced in the distribution of coal.)

These recognitions of the economic advantages of pooling and co-operation by a government which heretofore has frowned on these practices are material gains to be put on the rather bare credit side of the war ledger. But if we hold the principles sound only for war-time, the gain will be slight. These practices should enter the structure of the remade laws that should follow the war. War has merely been the incident to show that we can secure the advantages of pooling and co-operation without also risking the assumption of the disadvantages that are incidental thereto.

Efficient Scrap Marketing

Present Conditions Warrant the Paying of More Attention to Discarded Material

The present high value of metal scrap and also of discarded equipment parts justifies vigorous efforts on the part of electric railway purchasing agents to see to it that the handling of such material is done efficiently. The problem of utilizing discarded material to the utmost is one for the superintendent of shops to solve, but better results can be attained where real co-operation exists between the maintenance and the purchasing departments than where the purchasing agent is interested only in the sale of scrap at the maximum price. Experience shows that there is more than one way in which to reclaim scrap and in the present state of equipment deliveries it is important to make sure that the company's own departments, and sometimes the manufacturer as well, cannot profitably use a given assortment of scrap in production or operation before letting it go to the junk dealers.

Well-operated roads are today keeping the flow of material to their scrap piles low, notwithstanding the temptation to yield to high prices. On such properties the purchasing department is keeping in close touch with the shops in order that wasteful sales may be avoided and material available for the scrap market disposed of at the most advantageous time. Observation of the handling of scrap on many roads shows that too little system is often employed in separating scrap material from that which can be salvaged and again in subdividing the contents of the scrap piles themselves. Assorted and segregated scrap almost always brings a much higher price than loose discarded material.

Better records of the kind and amount of scrap on hand, of what was done with scrap of different sorts in the past, the prices received and the parallel work of the purchasing department in procuring new materials to take the place of the old, are much needed. Duplicate records for the purchasing departments are quite as important in this connection as are the original data filed in the office of the shop superintendent.

As scrap material accumulates irregularly, arrangements should be made for its inspection occasionally at local carhouses rather than to have routine examinations on a time basis. This can be done if the inspecting authority's route is scheduled on the basis of telephone reports or other information. By local examinations by a trained man, also, unnecessary transportation by scrap cars is cut out since a division can be made between those materials capable of being reworked at a central shop and those materials which should be sold. On a large system the proper accounting for scrap and the interchange of the necessary data between purchasing and maintenance departments justifies the attention of a skilled analyst of scrap conditions a good many hours a month.

IMPORTANCE OF KEEPING RECORDS OF SCRAP MATERIALS

Experience shows that unless a scrap record is arranged to secure a fairly extended degree of classification of material the data tend to become lost from sight in a mere mass of memoranda which is of little comparative value for subsequent use. A scrap record of the first order will show over a considerable period the classes of material running high and low in accumulation and sales value, and along with this goes the provision for a more extended bin classification than has hitherto been accepted as satisfactory. Progressive purchasing agents and shop superintendents no longer are content to dump scrap into heterogeneous assortments with little or no provision for the withdrawal of material which at the time being it pays to dispose of to the junk dealer.

In this connection there is a broad market for the use of electromagnets, for the manual handling of metal scrap is a relatively expensive job at the present high cost of labor. The interest on the investment in an electromagnet suited for electric railway yard and shop service is a small sum compared with the wages required to turn over scrap materials. As the season of severe tax upon equipment approaches it will pay to make a careful study of scrap conditions along the lines above indicated.

Purchase of Rail Bonds a Little Below Normal

Demand From the Mining Field Exceeds That From the Railway Industry

Bonding of track in preparation for the winter has evidently not yet begun in earnest as the manufacturers of bonds report normal or less than normal buying from the electric railways. One manufacturer reports very little railway demand for bonds, a second says that the demand is a trifle better than normal, a third gives 75 to 80 per cent as the proportion of normal buying, and so forth, but none reports any considerable increased activity. This is, however, very much in accordance with expectations, for it is an established fact that practically speaking there is no new track being built with the exception of extensions to shipbuilding works, munition plants and other war industries, together with a very few miles of other essential construction. This work is just enough to keep the sale of bonds up to a little less than normal.

All manufacturers of bonds, however, agree on the point that the demand from the mining field exceeds that of the railway industry. In other words the mine operators, especially in the coal districts, are going into the business of electric transportation of minerals on a large scale. The program of the Fuel Administration calls for an output of coal which had never been reached in peace times and, of course, the complete electrification of mines, has played its part in fullfilling this program. There has developed as a result a steady and comparatively large demand for rail bonds and, so far as the manufacturers are concerned, it has more than compensated for the decrease in railway buying.

In the matter of supplies, conditions also differ. Stocks being carried vary all the way from none at all to a larger supply than customary and consequently the time required for shipment ranges from immediate to three weeks. A period of four weeks is needed in which to fill orders for special rail bonds.

The supply of raw materials for the manufacture of bonds is of course limited but is said to be sufficient for all contemplated needs. As noted in previous issues of the Electric Railway Journal, the railways have been placed on the preferential list of industries, and materials therefore are quickly obtainable for the manufacture of bonds for essential construction and maintenance work.

The advance in the price of copper early in July advanced the price of rail bonds 7½ per cent. No authentic information is available as to how long the price of copper will remain as at present, but no further advance in the price of bonds is contemplated without another advance in the government price of copper.

Franchises

Mobile, Ala.—The Mobile Light & Railroad Company has received a franchise from the City Commission to construct tracks on Conception, Texas, St. Emanuel, Delaware, Lawrence and Georgia Streets to the large shipbuilding plants which are being built in the southeastern part of the city. The necessary improvements in lines and cars with which to serve the plants will cost approximately $110,000, of which 60 per cent will be loaned to the company by the Emergency Fleet Corporation.

Waco, Tex.—The Texas Electric Railway has asked the City Council for three new franchises on Austin Street, South Fifth Street and Washington Street.

Track and Roadway

Gary (Ind.) Street Railway.—A loan of $203,000 has been granted by the Government to the Gary Street Railway and the Gary-Valparasio Railway for additional improvements.

Louisville (Ky.) Railway.—The Louisville Railway contemplates extending its Market Street line as soon as war conditions will permit.

New Orleans Railway & Light Company, New Orleans, La.—It is reported that arrangements will be made by the New Orleans Railway & Light Company with the New Orleans Belt Railway Company to operate street cars on the Belt line tracks. It is stated that extensions and improvements estimated to cost $200,000 will be necessary.

Butte (Mont.) Electric Railway.—The Butte Electric Railway will lay a double-track system in Butte at once, to be ready for operation the latter part of this month. The new line will represent an investment of $86,000, according to J. R. Wharten, manager. It is believed the double track system will eliminate all traffic congestion and expedite transportation during rush hours.

Cincinnati (Ohio) Traction Company.—Anticipating the operation of the revised street railway franchise ordinance recently enacted by the City Council, W. C. Culkins director of street railroads, has taken preliminary steps to speed up the building of extensions provided for in the ordinance. In a communication recently addressed to the Cincinnati Traction Company Mr. Culkins requested detailed information as to the status of proposed extensions to the McMicken-Main, Sixth Street, and Warsaw Avenue lines, and to the surburbs of Pleasant Ridge, Kennedy Heights and Mount Washington. Legislation authorizing the first three named extensions has been enacted by the City Council and has been accepted by the traction company. The extension of the North Norwood line to Pleasant Ridge and Kennedy Heights was provided for in the former loop lease and revision ordinance held illegal by the Supreme Court of Ohio, and Mr. Culkins requests that it be considered immediately.

Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.—The construction of an extension is being considered by the Hocking-Sunday Creek Traction Company from its present terminus to the Courthouse. It is estimated that the cost will be about $35,000.

Oklahoma Union Railway, Tulsa, Okla.—The extension of the Oklahoma Union Railway from Tulsa to Keifer has been completed and operation will be begun at once. The line has been under construction for over a year. It will touch the Glenn oil field and the new Mounds oil district and will be essentially an oil field line.

Lehigh Valley Transit Company, Allentown, Pa.—The United States Housing Corporation has started the construction of 2100 houses just outside of Bethlehem, Pa., near the lines of the Lehigh Valley Transit Company operating to Easton. As soon as these are ready for occupancy additional service requiring about 2 miles of track will be necessary. The major portion of this will have to be double track.

Pittsburgh (Pa.) Railways.—Judge Orr of the United States District Court of Pittsburgh has ordered the receivers of the Pittsburgh Railways to defer payment on certain of the fixed charges of the company and to divert the money to work of improvements and betterments. The sum of $374,668 has thus been set aside. Of this amount $201,400 will be used as follows: For bridge repairs, $159,400; to finish a terminal loop near Hazelwood, $10,000; to construct a new single track in Wheatland Street, $30,000, and to construct a connection between California Avenue and Windhurst Street, $2,000. In addition to this work there is an item of $173,268 for improvements, betterments and new equipment already contracted for or under way.

West Penn Railways, Pittsburgh, Pa.—Plans are being made by the West Penn Railways for the construction of an extension from the west end of the track in the Sixth Ward, along West Otterman Street to the western end of the borough line.

Tacoma (Wash.) Municipal Railway.—The City of Tacoma has received a loan of $237,000 from the United States Shipping Board, Emergency Fleet Corporation, for double-tracking its car lines to the shipyards, the purchase of new street cars and the construction of a new loop line within the city.

Power Houses, Shops and Buildings

Southern Pacific Company, Los Angeles, Cal.—The Southern Pacific Company will erect a 60-ft. addition to its express warehouse at Beaumont, Tex., to cost about $15,000.

Pacific Gas & Electric Company, Sacramento, Cal.—Plans are being considered by the Pacific Gas & Electric Company for increasing the capacity of its hydro-electric plant at Oroville.

Danbury & Bethel Street Railway, Danbury, Conn.—The Danbury & Bethel Gas & Electric Light Company is negotiating for the lease of the power plant and transmission lines of the Danbury & Bethel Street Railway, which it proposes to operate. In the event that the lease is effected, the railway company will purchase power from the lighting company.

Connecticut Company, Hartford, Conn.—A contract has been awarded by the Connecticut Company to C. A. Sibley, New Haven, for the erection of a two-story addition to its boiler plant, to provide for increased operations.

Southern Railway & Light Company, Natchez, Miss.—The installation of 500-hp. in boilers and other power equipment is reported to be under consideration by the Southern Railway & Light Company.

Tidewater Power Company, Wilmington, N. C.—Extensive additions and improvements, it is reported, are contemplated by the Tidewater Power Company including doubling the output of its power plants, installation of new equipment, etc.

Northern Ohio Traction & Light Company, Akron, Ohio.—The Public Utilities Commission of Ohio has authorized the Northern Ohio Traction & Light Company to borrow $750,000 from the B. F. Goodrich Company of Akron for the construction of a high-tension transmission line from Canton to Akron, over which energy will be supplied to the Goodrich company from the plant of the Central Power Company at Windsor, W. Va.

Philadelphia (Pa.) Rapid Transit Company.—Approval has been granted by the Public Service Commission of Pennsylvania of a contract entered into between the Philadelphia Rapid Transit Company and the United States Housing Commission, whereby the Government will finance a loan of $1,740,000 to the company. The fund will be used for extensive additions and improvements to the various substations of the company, etc., and the purchase of additional rolling stock.

Texas Electric Railway, Dallas, Tex.—A contract has been awarded by the Texas Electric Railway to R. C. Cos, Dallas, for the construction of an addition to its station at a cost of $3000.

Wheeling (W. Va.) Traction Company.—Plans are being made by the Wheeling Traction Company for the construction of a new carhouse 39 ft. 6 in. x 254 ft. and shops 125 ft. x 130 ft. The cost is estimated at about $75,000.

Rolling Stock

Hull (Que.) Electric Company, as noted in the ELECTRIC RAILWAY JOURNAL for May 18, has on order with the Ottawa Car Manufacturing Company a double-truck snow sweeper which is convertible into a locomotive by removing a specially constructed frame on ends of underframe. The underframe is all steel with wood cab. The dimensions are as follows:

	Feet.	Inches.
Length over all, when used as a sweeper	39	
Length over all, when used as a locomotive	24	
Width over all................	8	8
Width of cab outside..........	8	1
Length of cab outside..........	12	4½
Distance between bolster centers	12	6

Trucks, air brakes and motor equipment are supplied and installed by the railway company excepting air brakes, which will be installed by Ottawa Car Manufacturing Company.

Mobile Light & Railroad Company, Mobile, Ala., has purchased seven double truck cars. These with the nine cars now being built in the company's shops and three under contract with the St. Louis Car Company make nineteen large cars that will be added to the company's rolling stock. Delivery is to be from one to six months. Improvements in lines and cars to serve the plants of the Mobile Shipbuilding Company will cost approximately $110,000.

San Francisco-Oakland Terminal Railways, Oakland, Cal.—The ten trail cars mentioned in the Aug. 24 issue of the Electric Railway Journal, are now being manufactured in the company's own shops. Specifications for the one-man cars and the large street cars, mentioned in the same item, have been prepared and it is expected orders will be placed very shortly. The one man cars will be of the standard Birney safety-car type.

Trade Notes

Roller-Smith Company, 233 Broadway, New York, N. Y., has appointed as its agent W. G. Merowit, located at 716 Ellicott Square, Buffalo, N. Y. Mr. Merowit will handle the Roller-Smith Company's lines of instruments, meters and circuit breakers in the western part of the State of New York.

Railway Improvement Company, New York, N. Y., advises that it has received an order for Rico lightweight anti-climbers for forty-five additional new cars of the Philadelphia Rapid Transit Company's Hog Island service. All cars perviously constructed for this service are equipped with Rico anti-climbers.

National Machinery & Wrecking Company, 1914-1918 Scranton Road, Cleveland, Ohio, which has been in business for the past fifteen years, has incorporated under the name of the National Power Machinery Company. The company will continue to handle new and used power machinery. A contract has just been let for a new warehouse in addition to the three now

New Advertising Literature

John F. Godfrey, Elkhart, Ind.: Circular descriptive of his coal conveyor. Standard installations of this conveyor are illustrated in a diagram.

Worthington Pump & Machinery Corporation, New York, N. Y.: Booklet D-702 describes vertical triplex power pumps, single and double acting.

Indianapolis Switch & Frog Company, Springfield, Ohio: Booklet on the subject of electric welding and shop repairs and conservation of track and roadway. Contains data and instructions for welding, and is well illustrated.

Delta-Star Electric Company, Chicago, Ill.: Four-page circular showing several types of construction of steel-tower outdoor substations. General specifications and material furnished with these tower stations are also given.

British Aluminum Company, Ltd., 109 Queen Victoria Street, London, England: Treatise on electric power transmission authorized "From the Falls to the Factory." This publication has been designed with special reference to American practice in transmission line engineering.

Items under "Recent Incorporations," "Franchises," "Track and Roadway" and "Power Houses, Shops and Buildings" are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, October 5, 1918 *Number 14*

Another Competitor for Electric Railway Labor

CONSTANT vigilance, plus full information, will be necessary if the scourge of Spanish influenza is to be stamped out promptly. The disease has made unwonted progress in some sections and it is a deadly, insidious menace wherever large or small groups of workers congregate. The federal government has placed $1,000,000 at the disposal of the United States Public Health Service, and employers will have every assistance in their efforts to combat the evil. After full instructions have been secured from the local health authorities, strict discipline should be enforced, for the spread of the influenza is quick and deadly once it gets a foothold. Aside from humanitarian considerations, electric railway labor is scarce enough now, and there should be no opportunity, through ignorance or neglect, for further depletion of the ranks.

Central Argentine Electrification Worthy of Special Study

THE electrified zone of the Central Argentine Railway in the suburbs of Buenos Aires, described elsewhere in this issue, presents a number of interesting contrasts and parallels with analogous installations in this country. The car design will possibly attract most attention. The wide gage of the track, 5 ft. 6 in., and the freedom from tunnel limitations, permits a very unusual width of coach—10 ft. 6 in. over corner posts. The seating capacity is therefore very roomy, and there is ample space underneath the car for motive power and control equipment. A car width as great as this has occasionally been reached in steam road practice, but it is almost a foot greater than the usual coach in this country and exceeds by a still greater margin the cars built here for subway use. The arrangement of vestibules is also noteworthy, as the center one separates the body into two distinct sections. The entrance and exit ways are narrow for quick passenger transfer, but evidently speedy loading and unloading qualities are not necessary requirements for the service.

The Buenos Aires electrification naturally suggests comparison with the New York and Philadelphia terminals now under electric operation and with others which contemplate such operation. It is an 800-volt, third-rail installation. As it employs multiple-unit trains, it is comparable with the Philadelphia-Paoli-Chestnut Hill lines, the New York, Westchester & Boston Railway, the suburban equipment of the New York Central, Pennsylvania and New Haven Railroads at New York, the Hudson & Manhattan Railroad and the West Jersey & Seashore Railroad. Included in such comparison also should be such roads as the Aurora, Elgin & Chicago Railroad and other lines which do the same character of business, although not associated with any steam road. In these we see a great variety in power supply, method of current collection, car design, station layout, etc. It is merely necessary to suggest the names of the roads and the items to be compared to indicate the wideness in range of ideas exemplified.

Company Sections Should Push the Loan Campaign

THE American Electric Railway Association has a dozen company sections, fairly well distributed over the country and reaching away out into the Pacific. These sections are just getting waked up for the winter. The Fourth Liberty Loan drive, coming as it does just as the winter's work is getting up speed, offers them an unprecedented opportunity for doing three things, at least. First, there is the chance to show qualities of real patriotic local leadership for which the section should stand. Second, the example of vitality at this time will help the country-wide section movement. Third, the reaction on the section itself will "set it up" for the season and insure a good year's work. As was demonstrated in a review of company section work printed in the issue of this paper for Oct. 27, 1917, page 767, the sections have an honorable record already. The record of these three Fourth Liberty Loan weeks should make the past record look insignificant.

Public Service Railway Gets 7-Cent Fare to Cover Higher Wages

THE action of the Board of Public Utility Commissioners of New Jersey last week in granting a 7-cent fare with a charge of 1 cent for a transfer to the Public Service Railway is evidence of the growing tendency of public utility commissions to recognize that electric railways must be kept in operation, that additional expenses brought about by the abnormal condition of the labor and material market must be taken care of by additional receipts and that a prompt increase in fare is less of a public evil than reduced electric railway service. The additional expense and expense liability assumed by the Public Service Railway since the last award by the board in July when a charge of 1 cent for a transfer was granted were, of course, the increase in wages ordered by the War Labor Board. Under the decision handed down last week, the railway company is not only entitled to recoup itself for this additional expenditure, so far as future operation is concerned, but also for the amount of back pay at the higher rate of wages to which the War Labor Board held that the employees were entitled. The 7-cent fare granted, it is estimated, will bring the company's surplus back on March 31, 1919, to its original condition, after which a 6-cent fare with a 1-cent charge for transfers will be adequate to pay the present wages and enable the company to meet its other operating expenses and charges.

We regret that the commission in this decision still declined to make any allowance to the company for earnings on its capital stock. The board seems to consider its duty done, at least for the present, when the company is able, to quote from the decision, "to meet its operating expenses, pay bond interest and rentals on leased properties, and provide an annual appropriation of $800,000 for depreciation." A more liberal attitude must be taken later if the company is fully to discharge its duties to the public in the way of building extensions and making other improvements when necessary, but the present allowance at least is assurance that the company will not be permitted by the commission to go into the hands of a receiver.

Deferred Classification for Necessary Electric Railway Employees

WE ARE LIVING in a period of high pressure. Everyone feels as if he must work faster and for more hours each day than he has been accustomed to in the past so that all the energy which he possesses may be put into the work of beating the enemy. To use a transportation analogy, the present time is the "rush hour" of the nation. It will not continue long, we hope, but while it lasts we must put forth our maximum effort. But, to continue the analogy, "breakdowns" or "blocks" have a habit of occurring during the rush-hour period, so that it behooves us to take all possible steps to minimize their tendency to occur and to shorten their duration when they do happen.

The action of the New York District Draft Board in placing the local transportation systems among the industries essential to the national interests and deciding that the classification of the men essential to their operation and maintenance should be deferred in the present draft is in accord with this position. It would be most inopportune if our transportation systems should break down during this rush-hour period of the nation. Yet they will if the responsible heads of departments in the different companies neglect to see that those employees who are legitimately essential to the conduct of these systems make proper claims for deferred classification on account of their employment in an essential industry. The very wording of the new questionnaires places this duty on employers, so there should be no hesitancy on the score of fear of embarrassing the work of the draft boards.

If this should not be done there is danger that the electric railway companies of the country will find some morning that perhaps one-half of their employees have "failed to report," having gone to war. Then indeed would there be a real rush-hour calamity, for with the reduced forces now available, there cannot be much more of a reduction of personnel before the roads will have either to cease operation or curtail the service to a degree which will almost cripple many communities. This fact should be fully explained not only to the draft boards but to the employees as well, so that there may be no misunderstanding of the situation.

Chicago Politicians Loath to Abandon Traction Issue

THE "traction debates" now going on in Chicago give an excellent illustration of the value which the politician places on the transportation question as a campaign issue. This is all the more curious in the Chicago situation because the approaching election campaign is not one in which the traction question should figure. The subject of the bitter discussion is the consolidation and subway franchise which has already been approved by the City Council to the extent of ordering it submitted to the judgment of the public at a referendum on Nov. 5. The ordinance in question proposes to have the local surface and elevated companies turn their property over to a board of public trustees for operation on a service-at-cost basis. All that the companies will get out of the deal, if it is approved, is an assured return at a reasonable rate on a valuation fixed by disinterested experts.

The pending measure lacks many of the provisions which the management of the two companies sought to have incorporated in it. It originated with the special attorney for the Council committee—Walter L. Fisher—who has looked after the interests of the city for many years in matters of this kind. The ordinance was approved by the committee which had previously rejected an ordinance indorsed by the traction interests. It has been recommended strongly by the leading newspapers of the city. In order to avoid conflict with political issues the date of Nov. 5 was purposely selected for the public referendum, because at that election there is to be no vote for Mayor or aldermen of the City Council.

Notwithstanding these favorable conditions for a disinterested discussion of the measure it was first "indicted" by a grand jury before whom the State's attorney had made charges of corruption connected with its passage. This official did not "make good" on his charges. Next, the measure was vetoed by Mayor Thompson who, failing in this way to have it rejected by the aldermen, announced that he would take the platform against it in the coming campaign.

The crux of the situation seems to have been pointed out by the father of the measure, Attorney Fisher, who has shown very clearly in several addresses that the critics of the franchise do not know what they are talking about. He insists that correct information is the last thing these individuals want. They do not desire a better ordinance but no ordinance. They are determined to prevent a settlement of the traction question at the coming election because they need it for further political use. It may be just a coincidence that persons who are now most active in assailing the ordinance have been mentioned as candidates for political office at an election which takes place early next year.

If this trustee plan becomes effective, it will be removed from politics for an indefinite term because the grant is for an indeterminate period. The people of Chicago have been clamoring for improved service. It would appear that the proposed ordinance will give them ample facilities at actual cost. It will indeed be unfortunate if a clique of voluble and impassioned critics succeed in clouding the issue so that the voters are led astray in judging a measure which has been worked out by compromise after years of discussion as to the city's needs in the way of transportation betterment.

Why One-Man Cars Have Less Trouble from Defunct Transfers

THAT the fears we conjure up vanish when we put new ideas to the test is certainly proving true in connection with one-man car operation. One of these fears was that the operator, because of his variety of duties, would be more readily imposed upon through bad transfers than a conductor. In practice, the reverse is the case, largely because the argument must be conducted at the front end in sight of all the riders and in the hearing of most of them. Thus the principle of pitiless publicity gets in its fine work. Furthermore, the holder of the transfer will soon forfeit any sympathy which the other passengers might otherwise have for him for the reason that the operator will not start the car until fare has been paid—something quite different from arguing on the back platform with a conductor while the car bowls along as usual. In fact, railways operating one-man cars in connection with improved service say that the passengers show much more sympathetic understanding of the platform man's duties than they did in the days of two-man operation.

Are the Women Conductors in Cleveland to Be Discharged?

THE decision against the further employment of women conductors in Cleveland as a result of the recent investigation there by Federal Inspectors Dielmann and Russanowska (we hope they are Americans) is meeting with widespread dissatisfaction and criticism in the Forest City. The basis given for this conclusion by the agents with foreign names is that "there is no reason why the shortage should not be filled with men," and the Federal Labor Department, when appealed to, declared that since last January its employment office in Cleveland has had 13,500 more applications for jobs than requests by employers.

If by this we understand that there are 13,500 able-bodied men in Cleveland with the moral and intellectual standards required of conductors who are walking the streets looking for jobs unsuccessfully, we suggest that the situation is one which could well be called to the attention of the War Industries Board and the Fuel Administration, as well as to that of the Provost Marshal General. If these men are not needed in the Army, could not they be used on the farms, or in some of the steel mills near Cleveland or in mining more coal with which we have all been put on short rations? It would seem that the interests of the nation would be far better served by the use of these men in any one of the ways described than on an electric car, watching a fare box and making change.

It is interesting to record that the Cleveland Chamber of Commerce is not accepting the present decision complacently but has urged the Labor Department to reopen the case "on the broad question of policy and of national interest." It says that the ruling has given widespread dissatisfaction to the working people of Cleveland, that it tends to discourage women from entering industry on patriotic or economic grounds and that it has produced a condition of uneasiness and uncertainty on the part of women in industry. The present women conductors, some 200 in number, are also protesting against discharge from work which they feel entirely qualified to perform and for which many left other positions.

Undoubtedly the Cleveland *News* represents the general feeling in Cleveland and elsewhere, when it says in a recent issue that the ruling "is hard to reconcile with the statement of high government officials that the country is confronted with a shortage in man-power aggregating 1,000,000 men in unskilled labor alone."

How Railway Men Can Help Beat the Kaiser

SHOP foreman, master mechanics, and superintendents of equipment are as much engaged in war work as if they were in the front-line trenches somewhere in France. Their trenches are the pits for inspection and overhauling, their soldiers the workmen with greasy overalls instead of khaki and with shop tools instead of guns. The fight is in the car shops, and ammunition is mighty scarce just now. The equipment, too, is showing the effect of the war, but millions of industrial workers must be carried to business and home again with safety, comfort and "on time." The work of the shopmen is most patriotic, and it is essential to the most necessary of our war industries. Men are steadily realizing their responsibilities, and attention is being focused on lagging workers and employers alike.

What is needed is a speeding up of this transition period which is affecting all railway properties. Each must insist on the rigorous execution of its principles and turn to account every last ounce of individual effort. The use of labor-saving devices should be extended, and any new ideas that will help relieve the difficult situation should be adopted. "Necessity is the mother of invention," and necessity certainly exists for a more energetic following up of car maintenance and repair. Let all become efficiency experts and assist in fighting the battles at home. The equipment will not continue to operate on its stored-up resources, so that new ones must be treated.

What are the factors of the problem? First, material for renewals and repairs must be obtained. Is the department with which you are connected doing all it can in the way of reclaiming old parts? Study the scrap heap and determine what is necessary to put old or apparently obsolete parts back in service again. What changes in material can be made so as to substitute those that can be obtained readily for those that are next to impossible to obtain. What materials are available in your locality? The nation's transportation facilities are taxed to the utmost just now. Buy your material as near home as possible.

Next in regard to labor. Foremen report that it takes twice as long now to complete a job as formerly, due to the inexperienced help that must be used. Are you using women employees for the less essential operations so as to release men who have been brought up in the shop atmosphere and who can be trained rapidly? Many operations in overhauling can be done by piecework. Give your laborers a chance to earn more money and get the work out quicker.

These and scores of other similar questions arise, and the right answers must be found immediately. To waste time, labor or material in these times is to fight on the side of the Kaiser.

Heavy Electric Traction on the Central Argentine

VICTORIA
EMPALME PARA
TIGRE ROSARIO via PERGAMINO
VENADO TUERTO y RIO CUARTO

Central Argentine Railway Has in Operation an Up-to-Date Electrified Section Serving the Northwestern Suburbs of Buenos Aires

On Aug. 24, 1916, electric operation was inaugurated on one of the lines of the Central Argentine Railway from Retiro terminus in Buenos Aires to Tigre on the Las Conchas River by way of Victoria. While the Central Argentine has a total mileage of 3300, of the 23,000,000 passengers carried during the year ended June, 1914, 16,000,000 were carried on the three sections which serve the northwestern suburbs of Buenos Aires. From the beginning the new service has been remarkably successful from both the engineering and the traffic standpoints.

The complete electrification includes a 15,000-kw. power station, 57 miles of high-tension transmission cables, three traction and two other substations, and the electrical equipment of 100 miles of single track. Power is produced in three-phase form at 20,000 volts, 25 cycles. It is supplied to the trains at 800 volts through a third-rail. The important features of the electrification are shown in the accompanying map.

Buenos Aires Is a Remarkable City

The reason for the great suburban traffic near the nation's capital is that the city has a population of more than 1,500,000, or more than one-fifth of the population of Argentina. The city handles more than half (in value) of the total imports and exports of the country, and this business will soon increase greatly. All of the great railways converge toward it; it is the center of government, and its climate is good. For twenty years past its growth has been at the average rate of 7½ per cent per annum.

The power house for the electrification is located on swampy ground between the Tigre line and the Rio Lujan, some 3000 reinforced concrete piles having been driven down 33 ft. to support its weight. A concrete cap 2½ ft. thick, reinforced with old rails was cast on top of the piles, with conduits imbedded in it to carry the station power cables.

The plant contains six B. & W. marine-type boilers of 4170 sq.ft. heating surface each; four Parsons horizontal reaction turbines, with high and low-pressure cylinders, connected to three-phase, 25-cycle 2500-volt generators; and the modern steam, electrical and mechanical auxiliaries. The essential details of the equipment will be taken up in a later issue.

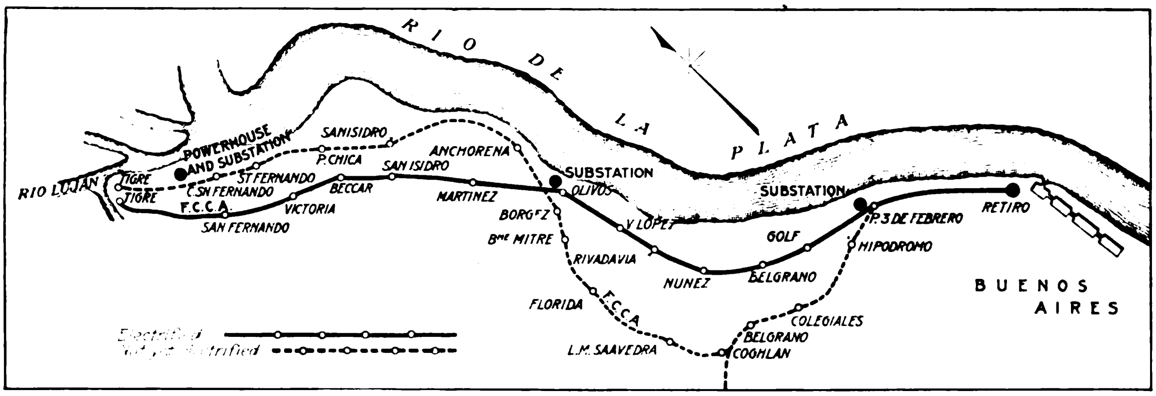
The turbine and boiler rooms are arranged parallel to each other with coal and ash-handling sidings behind the latter. In front of the turbine room are a rotary converter substation, a laboratory and the offices. A fittings shop and workmen's accommodation are provided at the permanent end of the turbine room, the other being arranged for later expansion.

The buildings are steel frame structures paneled with reinforced concrete and finished with a white cement. The substations and offices are roofed with concrete, the boiler room with corrugated iron, and the engine room with a wood ceiling covered with waterproof felt with corrugated iron on top.

The boilers are arranged four on a side, grouped in pairs, each boiler having its own superheater and economizer. One steel chimney with induced-draft fans serves each pair of boilers, and forced draft is supplied to the furnaces by four fans in the basement.

The rolling stock equipment was laid out on the multiple-unit system to provide the best service for the local conditions, the required passenger service being of a suburban character. The rolling stock ordered was as follows: Fifty-five motor coaches each equipped with two motors; twelve motor coaches each equipped with four motors, and fifty trail coaches. All are of the saloon type with cross-seats.

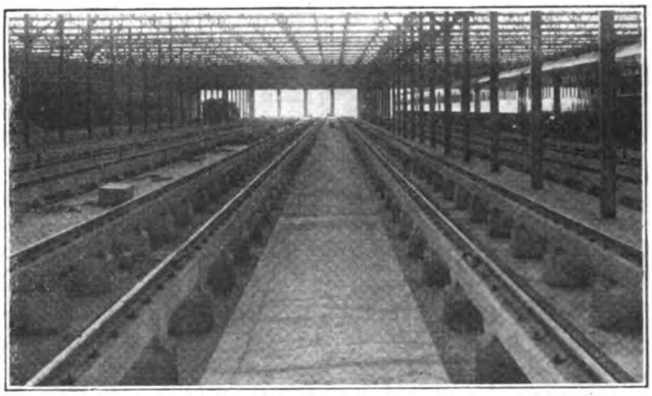
In Buenos Aires two classes of seating accommodation are provided, first and second, the ratio of higher to lower-class tickets sold being about 1.4 to 1. For this reason the first-class equipment provided was fifty-two motor cars and thirty-seven trail coaches, while the second-class comprised fifteen motor coaches and thirteen trailers.



MAP OF ELECTRIFIED LINE OF CENTRAL ARGENTINE RAILWAY BETWEEN RETIRO TERMINAL AND TIGRE

All four-motor coaches are first-class and will be used to haul trains made up of a motor coach at each end with six first-class trail coaches between. These trail coaches were taken from the old steam rolling stock and equipped only with control wiring. These trains will be used on days of specially heavy traffic.

The limiting features in designing the coaches were: (1) The high standard of comfort to which suburban passengers in Buenos Aires are accustomed; (2) the provision of vestibule connection between coaches; (3) the existence of low platforms necessitating steps up into the coaches; (4) the provision of a driving compartment at each end of every coach; (5) the use of vacuum brakes. As required by the climate the coaches are large and airy, the extra wide gage of the track permitting considerable lattitude in design. The height from floor to center line of the semi-elliptical ceilings of the saloons is 8 ft. 7¼ in. and the width between side posts is 9 ft. 7½ in. Eight 6-in. ventilators are fitted in the roof and in addition four 38-in. fans are installed in the first-class coaches.



INTERIOR OF TEN-TRACK CARHOUSE AT VICTORIA

The lower side sashes slide upward and all windows are provided with upper and lower louvred shutters to keep out sunlight. The shutters are covered with fine mesh copper-wire gauze to keep out mosquitoes.

Seating arrangements are largely dictated by government regulations, which require a minimum distance of 15¾-in. between seats set *vis-a-vis*, and further that the length of seats be not less than 18⅛ in. and 15¾ in. per passenger in first and second-class coaches respectively. In addition, the gangway between seats must be at least 21⅝ in.

The height of the motor-coach floor above the rail level is 4 ft. 2 in., requiring by government regulation three intermediate steps. There is a door at each end of the coach and also one in the middle, the latter being double and 5 ft. wide. As the doors have to be set back from the side line of the coach to provide room for the three steps, it was not possible to arrange the sills beneath the body side from end sill to end sill, or even between bolsters. In the case of the motor coaches, therefore, the main longitudinals were spaced 7 ft. apart. They consist of built-up fish-bellied steel girders, 2 ft. 6 in. deep in the center, with holes cut out of the web for lightness and to facilitate access to the electrical equipment. These main longitudinals run from end sill to end sill and support the angle-bar side sills, which are interrupted to clear the footsteps by means of pressed steel brackets. The main members of the trailer underframes are two 12-in. channels spaced 3 ft. apart and running from end sill to end sill, stiffened with king and queen trusses to support the body sills by means of transverse cantilevers. The motor coach floors are 7/64-in. steel plates, roughened with indentations. The plates are covered with "Induroleum," a non-inflammable composition. The trail-coach floors are of pitch pine, and they are laid in two layers each ¾ in. thick.

The end vestibules are 4 ft. wide, and contain the driver's brake valve, master controller and the hand-brake wheel. As the English rule of the road is observed in Buenos Aires, and as the wayside platforms are not of the "island" type on the Central Argentine suburban lines, the driving position had to be on the left-hand side of the train in order that the motorman might see the guard's signals without leaving his position.

Duplicate doors are provided so that when the vestibule is used for passengers the electrical gear is all closed off. When it is used as a driving compartment the step well is covered by a 3/16-in. checkered fall plate hinged to the door. A removable circular stool of the "music-stool" type is carried by the fall plate, the end of the leg being placed in a hole in the plate.

The concealed framing of the coaches is of pitch pine, and all exposed framing and the finish of the outside and of the vestibules are of teak. The interior finish of the first-class coaches is light wainscot oak, and of the second-class coaches pitch pine. The ceiling sheets are white millboard on red deal matched boarding.

The vestibule seats in the first-class coaches are upholstered in rattan, the fixed seats in the second-class coaches being framed with pitch-pine slats.

The coaches are lighted by three two-light fittings with Holophane glass globes, down the center of the ceiling, and eight pendants down the sides of the saloon. A single-light pendant is fixed above each entrance and a headlight, two signal lights and an illuminated destination indicator are provided on each end of each coach.

VACUUM BRAKE IS USED ON THESE CARS

As the vacuum type of brake is used by the Central Argentine a rather unusual arrangement of equipment was necessary. The service duty required the provision of a pump for each two-motor equipment capable of exhausting 50 cu.ft. of free air per minute. Under working conditions of joint and valve leakage this equipment produces a 20-in. vacuum in the train system within twenty-two seconds after complete destruction.

The two brake cylinders on each motor coach are 24 in. in diameter and the capacity of each is augmented by the vacuum reservoir. In the four-motor coaches space could not be reserved for the reservoirs beneath the underframe, so they were slung between the roof and the ceiling in the center vestibule.

The operating gear consists of a partial rapid-acting valve, an emergency valve and the driver's brake valve and controller. A Simplex gage shows the pressure in the train pipe, and a vacuum horn is connected up to the system to take the place of the whistle or bell used for signaling purposes on steam lines.

THREE TYPES OF SLACK ADJUSTER ON TRIAL

In order to provide automatic compensation for wear of the brakeshoes three sets of six coaches each were fitted with slack adjusters of three distinct types: the Monarch, the Hills and the nut-and-ratchet types.

The last-named consists of a tubular nut in the main pull rod and rotated by a pawl and ratchet. The box which carries the pawl is formed with a segment of a two-miter wheel which gears with a similar portion carried on a vertical stud attached to the crosshead at the end of the pull rod. The periphery of the second miter wheel is anchored to the underframe by means of pitch chains which thus cause it to rotate in response to the travel of the pull rod.

The range of the gear is sufficient to allow the brake piston to make a full stroke when operating through a badly adjusted brake rigging, and thus to gather the slack till a normal condition is reached. When the brake is released the pawl will cause a partial rotation of the nut whenever the working stroke is sufficient to turn the miter gear through an angle of 60 deg.

A CHANNEL-SHAPED CONDUCTOR RAIL

The collector gear consists of an underrunning shoe which makes contact with the under surface of a channel-shaped conductor rail. The shoe casting is carried on an oak beam fixed to lugs on the axle boxes.

The collecting "shoe" has two motions: (1) An up and down movement to follow the level of the conductor rail. This is controlled by helical springs on a horizontal axle passing through the block to which the shoe is bolted. (2) A sidewise movement to allow for the end play of the axle boxes and for want of alignment of the rail. This is controlled by leaf springs bearing on the suspension links of the shoe.

The difference in height of the top of the shoe in its extreme position is 2½ in. Its horizontal movement is 3 in. The average upward pressure is 28 lb. The shoe body and extension links are of cast steel, machined to gage. The shoe is of cast iron and is designed to break when it strikes an obstacle. If desired the shoe can be locked down in such a position that it clears the conductor rail altogether, thus enabling the equipment of a coach to be isolated. Shoes run about 130,000 miles before they are worn out.

The average distance between stations on the Tigre route is 1½ miles. The local trains make a schedule speed of 22½ m.p.h., which can be increased to 25 m.p.h. if desired without overloading the equipment. For this service a two-motor equipment was adopted, each motor having to deal with a load of about 45 tons. The GE-235 motor was selected, this motor having a one-hour rating of 250 hp. The gear ratio used is 70:22.

The trains are also required to make express or semi-express runs at a schedule speed of 37½ m.p.h. This condition is provided for by reducing the excitation of the main field by 50 per cent in one step.

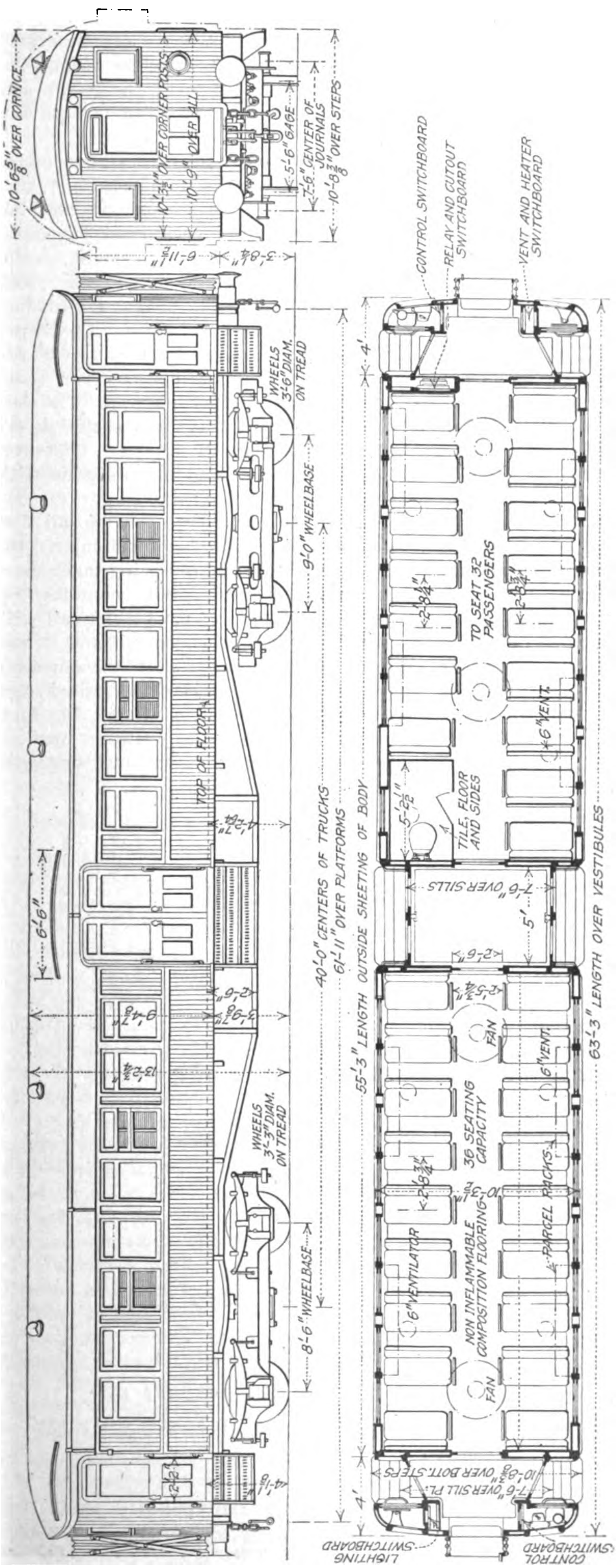
TABLE I—DETAILS OF ROLLING STOCK—GAGE OF RAILS 5 FT., 6 IN.

Coaches:	Motor Coach	Trailer Coach
Length over buffers	65 ft. 3 in.	65 ft. 3 in.
Length over headstocks	61 ft. 11 in.	61 ft. 11 in.
Length over body	63 ft. 3 in.	63 ft. 3 in.
External width of body	10 ft. 3¼ in.	10 ft. 4¼ in.
Height from rail to center of buffer	3 ft. 5 in.	3 ft. 5 in.
Height from rail to top of roof	13 ft. 2¾ in.	13 ft. 2¼ in.
Height from rail to floor	4 ft. 1½ in.	4 ft. 1½ in.
Height from floor to ceiling	8 ft. 7½ in.	8 ft. 7½ in.
Distance between centers of trucks	40 ft., 0 in.	40 ft., 9 in.
Number of first-class passengers seated	72	68
Number of second-class passengers seated	66	63

	Motor Coach		Trailer Coach
Trucks	Motor Truck	Trailing Truck	
Wheelbase of truck	9 ft. 6 in.	8 ft. 6 in.	8 ft. 6 in.
Diameter of wheels	3 ft. 6 in.	3 ft. 3 in.	3 ft. 3 in.
Diameter of axle at center	7 in.	5½ in.	5½ in.
Size of journal	10 ft. 3½ in.	9½ ft. 4½ in.	8 ft. 4½ in.
Distance between centers of journals	7 ft. 6 in.	7 ft. 3 in.	7 ft. 3 in.
Width over side frames	6 ft. 10½ in.	6 ft. 9 in.	6 ft. 9 in.
Length over headstocks	14 ft. 8 in.	13 ft. 9 in.	13 ft. 9 in.

Weight of Rolling Stock (Empty)

	Two-Motor Coaches, Tons	Four-Motor Coaches, Tons	Trailer, Tons
Coach body, underframe and trucks	39.0	40.5	33.2
Electrical equipment	11.5	20.5	1.3
Total weight	50.5	61.0	34.5
Weight per passenger seat	0.74	0.84	0.4


10'-6 5/8" OVER CORNICE
10'-3 1/2" OVER CORNER POSTS
10'-9" OVER ALL
5'-6" GAGE
7'-6" CENTER OF JOURNALS
10'-8 3/8" OVER STEPS
CONTROL SWITCHBOARD
RELAY AND CUTOUT SWITCHBOARD
VENT AND HEATER SWITCHBOARD
WHEELS 3'-6" DIAM. ON TREAD
9'-0" WHEELBASE
TO SEAT 32 PASSENGERS
6" VENT.
TOP OF FLOOR
TILE, FLOOR AND SIDES
7'-6" OVER SILLS
40'-0" CENTERS OF TRUCKS
61'-11" OVER PLATFORMS
55'-3" LENGTH OUTSIDE SHEETING OF BODY
63'-3" LENGTH OVER VESTIBULES
6'-6"
FAN
36 SEATING CAPACITY
WHEELS 3'-3" DIAM. ON TREAD
NON INFLAMMABLE COMPOSITION FLOORING
6" VENTILATOR
PARCEL RACKS
8'-6" WHEELBASE
7'-6" OVER SILL PL.
10'-8 3/8" OVER BOTT. STEPS
LIGHTING SWITCHBOARD
CONTROL SWITCHBOARD

STANDARD MOTOR COACH OF THE RETIRO-TIGRE ELECTRIFICATION, CENTRAL ARGENTINE RAILWAY

Provision for ventilation is made in the form of a rectangular opening of 160 sq.in. at the pinion end with arrangements to take a flexible duct communicating with the interior of the coach. Air can be drawn through this duct if it is found that there is too much dust in the air taken direct from beneath the coach. The air entering this opening passes to the commutator end between the fields and over the surface of the armature, returning through ducts in the core. It is expelled through openings in the upper part of the end shields by a fan fixed on the armature shaft.

DETAILS OF POWER AND BRAKE CONTROL

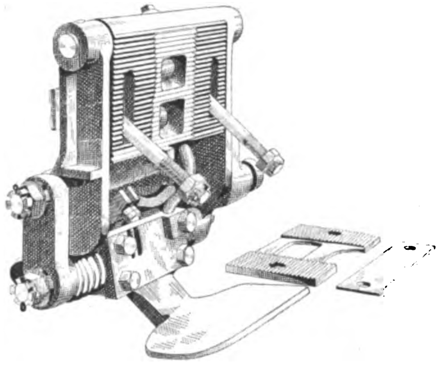
Automatic control is used in starting, the multiple-unit control equipment comprising fifteen main contactors. A "notching" relay is used to regulate the rate of acceleration. The interlocks are mounted on spindles at the back of the contactor arms and are operated by them. The vacuum pump and motor are mounted in a framework slung to the underframe. The pump is a single-acting two-cylinder machine coupled to the motor through a helical spring coupling. It is geared down 4 to 1 by a chain inside the pump casing.

The pump motor is of 3-hp. capacity. The motor is series wound and a series resistance, which can be short-circuited, permits it to be run at two speeds, one approximately double the other. Normally the motor is run at half speed to maintain a vacuum against leaks and to permit the use of the vacuum horn. When the driver's brake handle is put into the "release" position the brake controller cuts out the resistance and the motor runs at full speed until the required vacuum is obtained.. When the brake handle is put into the "running" position the resistance is again inserted in the motor circuit.

There are four positions of the driver's brake handle, as follows: (1) Neutral position, in which the motor is stopped, and the train and pump pipes are not connected together. (2) Release position, in which the motor is running at full speed, and the train and pump pipes are connected through the full gate in the driver's valve. (3) Running position, in which the motor is running at half speed, and the train and pump pipes are connected through half gate in the driver's valve. (4) Application position, in which the motor is running at half speed, the train pipe is open full to atmosphere, and the pump pipe is blanked off.

The "deadman" device on the controller consists of a pilot valve operated by a knob on the main handle. When the knob is released this valve admits air to the emergency valve which is thus actuated and opens the train pipe to atmosphere, blanking off the pump pipe.

For the care of the electric rolling stock a new carhouse was built at Victoria. It is about 700 ft. long and contains ten tracks. The rails are raised from the floor on longitudinal concrete supports. Power for moving the coaches in the carhouse is supplied from overhead trolley wires carrying small carriages from which hang cables which can be plugged into the train-line sockets on the coaches. An existing shed was adapted as a repair shop by raising the roof and installing 20-ton traveling cranes.


FLEXIBLE COLLECTING SHOE

The routine maintenance of the rolling stock consists of a nightly inspection and a "shed day" once in two weeks. It is intended to give a heavy overhaul when cars come in for wheel turning, which will be for the motor coaches after running 60,000 to 80,000 miles, and for the trail coaches after 100,000 miles.

The carhouse and repair-shop staffs comprise two shifts of thirty-one men each, with seven other men employed in the shops during the day only and three rolling stock examiners who are stationed at Retiro. The electrical equipment of the tracks comprised the bonding of track rails, the erection, bonding and protection of the conductor rails, the laying of interconnecting cables across gaps in the conductor rail and the provision of switch gear for dividing up the track into short electrical sections.

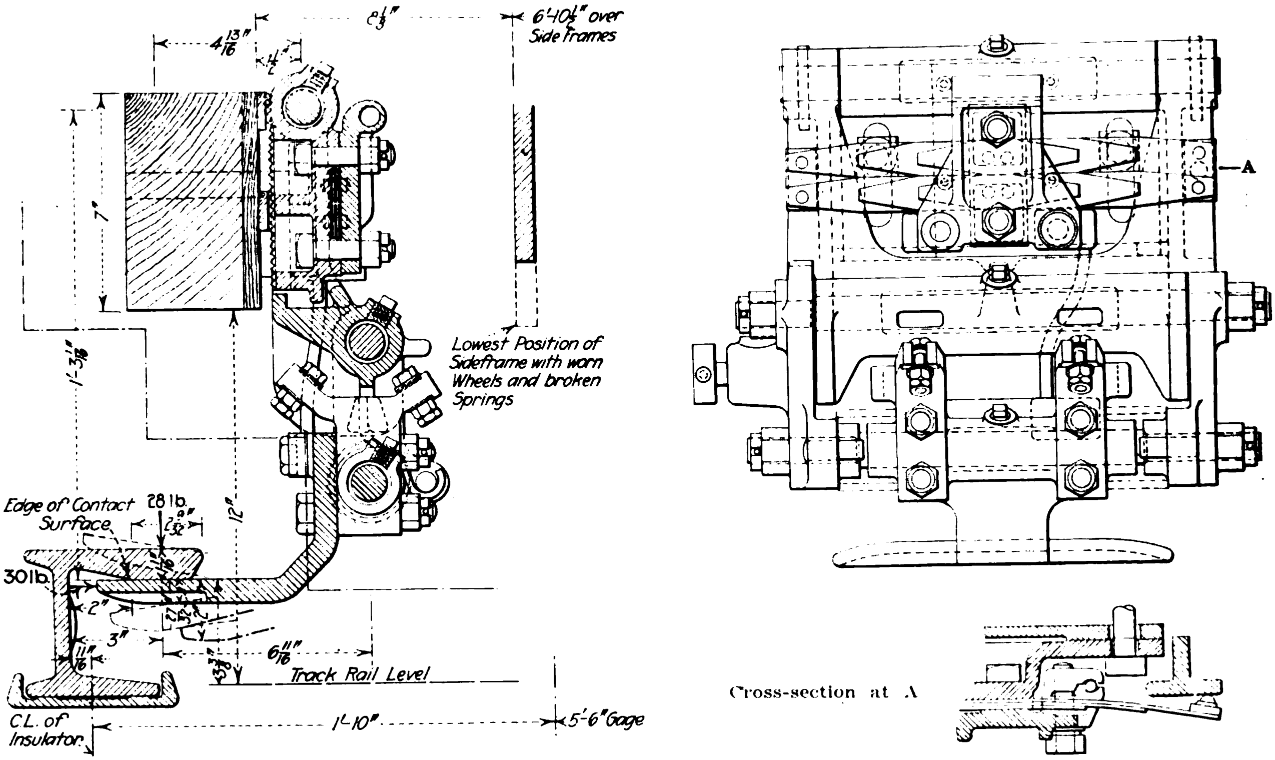
In connection with the electrification the whole route was fenced with wire netting and, to prevent people and animals from straying onto the line at crossings, special "cattle-guards" were installed. Each of these consists of a trench dug across the tracks parallel to the road, with brick retaining walls and concrete inverts. The standard gap is about 7 ft. and the width 6½ ft. The track rails are carried across on wooden beams having the upper corners chamfered off to reduce the foothold. The fences are carried up to the trench and a footway with a locked gate is provided for the use of the maintenance men.

Other incidental improvements were provision under every rail of four ties of extra length for the insulators and the installation of new track fishplates.

The conductor rail is of special form, weighing 36 lb. per yard. The composition of the high-conductivity steel is: Carbon, 0.03 per cent; silicon, none; sulphur, 0.05 per cent; phosphorus, 0.06 per cent; manganese, 0.36 per cent. The electrical resistivity of the steel is 6.7 times that of copper. Cast-steel ramps are used in connection with the conductor rail.

The particular form of rail that was adopted was designed to protect particularly the trespassers on the tracks, trespassing being much more prevalent in Argentina than in most countries. It was felt that the common form of flat-bottom rail with sideboards attached would be too exposed, and it was not possible to provide a top cover or adopt the American type of underrunning rail on account of the limited space available between the structure and load gages. The form shown in one of the accompanying drawings was selected as occupying the minimum space consistent with proper clearance and permitting a very complete insulating covering.

The fishplates are single and applied to the back of the rail, the boltheads being countersunk to provide a free passage for the toe of the shoe. Two bonds with



DETAILS OF COLLECTING SHOE AND ITS MOUNTING, AND OF THE CONDUCTOR RAIL, C. A. R. ELECTRIFICATION solid plug heads are fixed under the fishplates, giving a cross-section of ½ sq.in. of copper at each joint. Where gaps occur the rails finish off with cast-steel ramps 5 ft. long.

The rails and ramps are covered with a protection of creosoted wooden boards, built up in the shops and fixed in position on the ground by hammering over the ends of steel strips to embrace the edges of the top table and foot of the rail.

The rail is carried on malleable-iron castings cemented into porcelain insulators which stand on the ends of long ties and are fixed to them by malleable-iron clips. The ties are of Argentine hardwoods which are very difficult to drill and cut. They are not finished very square, and in order to provide a flat, soft bearing to allow for the running rail sinking into the ties, packing pieces consisting of creosoted pine boards ½ and ¼ in. thick are placed below the insulators. The insulation of the rail is very good, the usual weekly figure for leakage being between 1 and 1½ amp.

To prevent creepage, every length of conductor is anchored and no length exceeds a half mile. The anchors are of three types: (1) Insulated links attached to a plate either fixed in a block of concrete or fastened down to a tie. These are used on long lengths of rail. (2) Clips on the foot of the rail which bear against the cap of a special insulator. These are used on lengths of rail up to 2100 ft. (3) Clips on the rail which engage the lug on a standard insulator. These are used for anchoring one or two rail lengths.

Where the rail is cut to leave room for expansion (say one-quarter mile from an anchor) a short length of rail is mounted behind the gap and bonded to the main rail.

Sectionalizing the Track Electrically

The conductor is so divided into sections by switches mounted in signal cabins that the signal men can quickly isolate any faulty section, leaving the rest of the system unaffected. Provision is made for paralleling the "up" and "down" conductor rails in order to make full use of their combined conductance.

The sectionalizing switches are normally of 1000-amp. capacity, and of the quick-break, knife type. Interconnecting switches and those feeding the tracks in Retiro terminus are automatic circuit breakers.

Emergency switches are provided at the crossovers at wayside stations to allow trains to discharge passengers and setting back to the other line when a fault occurs beyond a platform in a section containing several stations. Sidings and the platform lines at Retiro are controlled by switches mounted in cast-iron boxes, with a danger signal showing when the switch is closed.

The electrical equipment of the track is maintained by seven gangs of five men each. One of these men is a foreman and another is an examiner who goes over his section every day and reports matters requiring attention.

A Fine Operating Record

The first twelve months of operation showed an excellent record of continuity. The total numbers of times the supply to the conductor rail was interrupted were: Under one minute, sixty-six; over one minute, forty-two. The motor coach mileage was 1,782,000 and the trail coach mileage was 1,353,000. The total number of trains run was 41,706, and the total amount of time by which all trains were late arriving at the termini was 817 minutes. The percentage of trains arriving late was 0.213, of which 0.129 per cent were five minutes late. These figures include delays to trains caused by late running of other trains.

Engineers and Manufacturers Listed

The Central Argentine electrification was carried out by Messrs. Merz & McLellan of London, England, with the co-operation of the railway's consulting engineers, Messrs. Livesey, Son & Henderson.

The whole of the apparatus used in connection with the electrification was manufactured in Great Britain, and the principal contracts covered the erection of their plants by the several contractors. The largest firms and their respective parts of the work were as follows: Babcock & Wilcox, Ltd., power-station buildings and complete boiler-house equipment; C. A. Parsons & Company, Ltd., turbo-alternators, transformers and motors; British Thomson-Houston Company, Ltd., switch gear in the power station, auxiliary motors, etc., electrical equipment of substations, electrical equipment of rolling stock and supervision of erection of electrical equipment of permanent way; W. T. Henley's Telegraph Works, Ltd., high-tension transmission and low-tension track cables; David Rowell & Company, Ltd., structural steel for the power-station entrance way, test room, offices and substations, and cranes for the substations; and Metropolitan Carriage, Wagon & Finance Company, Ltd., and Birmingham Carriage & Wagon Company, Ltd., rolling stock, bodies, underframes and trucks.

Provision of the foundations for the power station and substations, walling of the substations, excavation for cables and erection of the third-rail were the work of the railway company itself.

Women as Conductors

WHERE the work of conductors has been undertaken by women—and it is being carried on to a large extent in Great Britain and the United States as well as other countries, chiefly, it must be admitted, as a war necessity—it is being done successfully and without any apparent ill effects. Any detrimental moral effect which there may be is infinitely less than in many occupations in which women are now working under war necessity, and so far as any evil physical effects are concerned, women have been engaged for generations in work supposed to be natural to the sex, with far greater physical danger than when acting as conductors on up-to-date street cars.

The argument is also used that it is not required that women be engaged in this capacity as a war necessity, as should there be a real shortage of men for the work, which does not appear to be admitted, returned soldiers should be engaged to fill vacancies as they occur, since men in broken health or those who have lost a leg could fill the position. The weakness of this argument is apparent, when it is contended that returned soldiers, broken in health or minus a leg, would be able to stand the strain involved better than a woman of ordinary physical capacity.—*Canadian Railway and Marine World.*

Dissecting Passenger Interchange Time Graphs

In This Article the Author Shows How an Interchange Time Graph Can Be Built Up From Simple Elements and Separates Some Actual Graphs Into Their Component Parts

BY D. D. EWING
Professor of Electric Railway Engineering, Purdue University, Lafayette, Ind.

GRAPHS showing the rate of passenger interchange, that is, the relation between the time per passenger and the number of passengers boarding or alighting from a car, have been familiar to students of electric railway traffic for a number of years. Since, for given traffic conditions, each type of car has an interchange time graph peculiar to itself, these are of great importance in comparing car performance. Examples of this type of car characteristic graphs for the Fort Worth (Tex.) cars are given in Fig. 1. These were plotted from data published in the ELECTRIC RAILWAY JOURNAL for Sept. 22, 1917, page 476. It is, of course, understood that they represent the average of many observations and are, therefore representative of the performance of the car when carrying an average passenger load.

While such graphs readily permit of performance comparisons between different types of cars working under the same traffic conditions they do not so readily permit of an accurate analysis of the performance of an individual type of car. For such analyses it is more instructive to plot another form of car characteristic, namely, the graph showing the relation between the total time of stop and the number of passengers boarding or alighting from the car. Such graphs for the Fort Worth car are shown by *A B* in Figs. 4 and 5. The analysis of these into component parts is possibly best understood by first going through the process of building up such a graph with certain elementary assumptions as a foundation.

ELEMENTS OF THE INTERCHANGE TIME GRAPH

From one point of view, possibly, the real ideal car is one whose interchange time for all sized groups of passengers, is zero, that is, a car which will pick up its load on the wing as it were. Practical considerations, however, require that we set up a more reasonable ideal. We may arrive at this as follows: Suppose that a group of persons formed into a long column be walking past a certain point at a uniform rate of speed. (A column of soldiers marching past a point is a good illustration). These persons will pass the point in question at the rate of so many seconds per person. We can for convenience call this rate the rate of traffic flow. The time required for a given number of persons to pass the point will be the number of persons multiplied by the rate of flow, this rate being expressed as so many seconds per person, for example, one and five-tenths seconds per person.

Now if the point referred to be the car door and the operating conditions such that the car is stopped for only the flow time of the group, then the graph showing the relation between duration of stop and number of passengers interchanged will be a straight line as *A B*, Fig. 2. The rate of flow in this case is arbitrarily assumed as two seconds per passenger. Any change in this rate will affect the steepness of the slope of *A B*.

It will be seen that for any size group the
total stop time = rate of flow × number of passengers,
or letting the time be represented by y and the number of passengers by x, $y = mx$, where m is the flow time in seconds per passenger.

An equation giving the total time per passenger can be obtained by dividing the above equation through by the number of passengers, or letting y_1 be the interchange time per passenger, $y_1 = \frac{y}{x} = \frac{mx}{x} = m$, a constant, = the flow time per passenger.

Under our hypothetical conditions, therefore, the graph showing the rate of passenger interchange is a straight line parallel to the horizontal axis of co-ordinates. Such is *C D* in Fig. 2. Comparing this graph with actual graphs for passenger interchange as shown in Fig. 1 we see that only the right hand end of the actual graphs bear any resemblance to our ideal graph. Evidently we must look for other influencing factors.

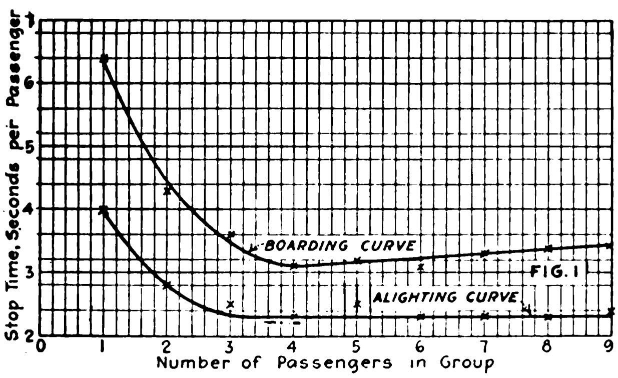
STANDARD FORM OF INTERCHANGE TIME GRAPH

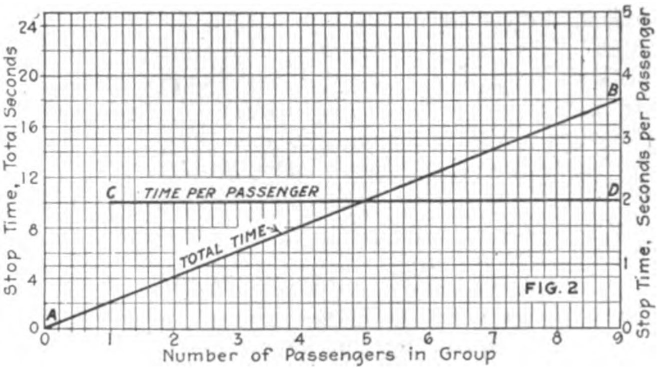
Keeping our idea of passenger flow in mind, let us suppose that some little time elapses, both before the head of the passenger column reaches the car door after the car has stopped and before the car starts after the rear of the column has passed the door. This assumption is in accord with what actually takes place in the process of car loading. The total interchange time graph will now be as *A B* in Fig. 3, where the intercept *O A* represents the total of this elapsed time. In the figure it has been assumed as five seconds. In practice it is usually less than this figure.

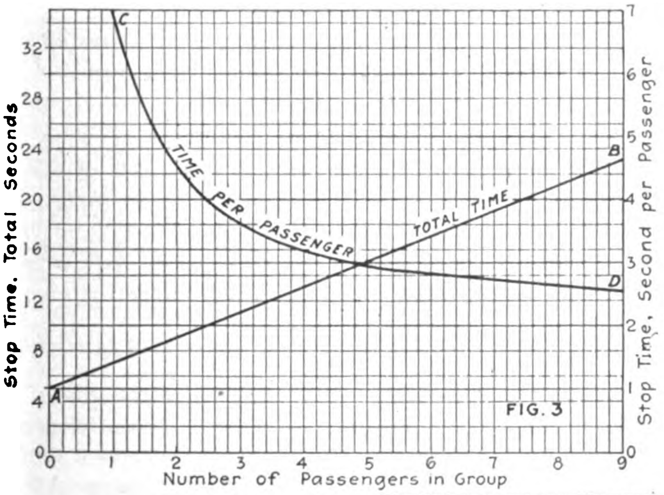
For a given size of passenger group now, the
total stop time = a constant time period + [rate of flow × number of passengers],
or, calling the constant time period, b, $y = b + mx$,

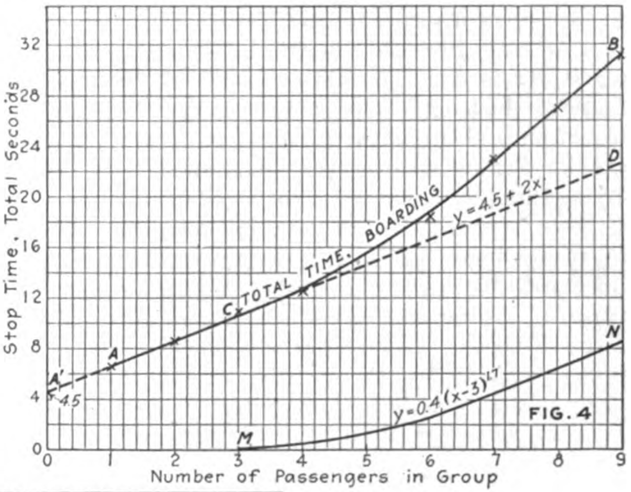
and $$y_1 = \frac{b}{x} + m$$

Thus the interchange time per passenger is now the flow time plus a portion of the constant time period. As the number of passengers in the group increases the constant time charged to each passenger decreases. By plotting the last equation, the graph *C D*, Fig. 3 is obtained. This shows a general likeness to the graphs of Fig. 1. Further, since our assumptions have included all of the factors affecting the duration of stop which are beyond control in the design of the car and in the arrangement of loading platforms we may set up this form as our ideal with which actual graphs may be com-









INTERCHANGE TIME GRAPHS BUILT UP FROM SIMPLE ELEMENTS

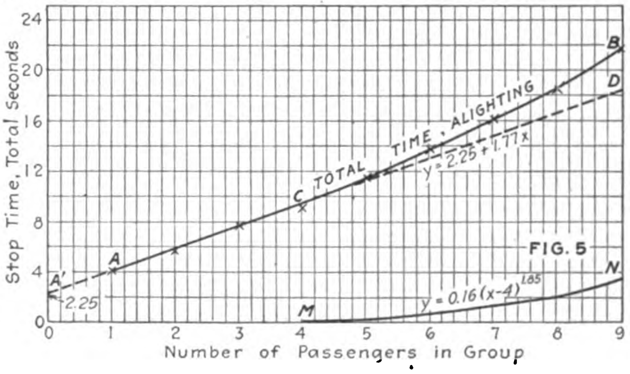


Fig. 1 — Passenger-interchange graphs for the Fort Worth car

Fig. 2—Ideal passenger-flow graph

Fig. 3 — Standard form of interchange-time graphs

Fig. 4—Analysis of the total-stop-time graph, passengers boarding

Fig. 5—Analysis of the total-stop-time graph, passengers alighting

pared. For the same reason the graph *A B*, Fig 3, should be our measuring stick for comparisons of total interchange time graphs. Obviously, while the intercept *O A* and the slope *m* cannot be zero, they should be as small as possible.

With the form of our standard graph in mind we may now proceed to analyze an actual graph, as *A B*, Fig. 4. By extending this to *A'*, its intercept on the time axis, symbolized by *b* in the above equations, is obtained. A scrutiny of the actual points indicated by small crosses on the co-ordinate sheet indicates that for groups up to three or four passengers the points fall on a straight line, but for the larger groups a curve best fits the points. For the case in hand the straight line is *A' D* whose equation is

$$y = 4.5 + 2x$$

Translated this means that the constant time period is four and five-tenths seconds and the rate of flow is one passenger every two seconds. If the ordinates of the line *A' D* be subtracted from the like ordinates of *A' B* and the remainders be plotted, the graph *MN* results. The physical significance of the ordinates of this residue part is that they represent the slowing up of the rate of passenger flow due to congestion somewhere in the passenger stream. The equation of this residue graph, or rather an equation which will fit it without serious error, is

$$y = 0.4\ (x - 3)^{1.7}$$

The equation, or rather the equations for the line *A' B*, are therefore

$$y = 4.5 + 2x$$

for all groups of three passengers or less and

$$y = 4.5 + 2x + 0.4\ (x - 3)^{1.7}$$

for the larger groups.

In this equation the constant term, 4.5, represents the constant time period which is independent of the number of passengers boarding the car; the coefficient of the second term, 2, is the rate of passenger flow expressed in seconds per passenger, and the third term is indicative of the amount of congestion in the passenger stream. The corresponding equation for the interchange time per passenger is

$$y_1 = 2 + \frac{4.5}{x} + \frac{0.4(x - 3)^{1.7}}{x}$$

in which the last term again is a measure of the congestion. The effect of this term is apparent in the boarding graph, Fig. 1, it being the reason for the upward inclination at the right instead of a downward inclination as in our standard graph, *C D*, Fig. 3.

A similar analysis of the alighting graph, *A B*, Fig. 5, gives for groups of four or less passengers the equation,

$$y = 2.25 + 1.77x,$$

and for larger groups,

$$y = 2.25 + 1.77x + 0.16\ (x - 4)^{1.85}$$

The difference between the constant term of this equation and that of the boarding equation is at least partly chargeable to fare collection. Also the difference in the rate of flow is probably due in part to the fact that people naturally walk downhill faster than uphill.

No attempt is made in this article to discuss all of the factors which affect the terms of the interchange time equation, and therefore the shape of the corresponding graph. Suffice it to say that with known operating conditions these terms, namely, the constant-time-period term, the passenger-flow term, and the congestion term, together with their influencing factors may be studied and analyzed. Such studies should yield rich results in the form of improvements both in car design and in operating methods. For a more extended discussion of the factors which affect the duration of stop the reader is referred to an article by the writer in the ELECTRIC RAILWAY JOURNAL for April 22, 1916, page 768.

High Percentage of Ash in Coal Is "Up to" the Miner

APROPOS of the editorial in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 28, the *Coal Age* has the following to say on the same subject:

"Of course the logical place to rid coal of its objectionable impurities is before these impurities have had opportunity to begin their work—that is, objectionable impurities should never be allowed to travel farther or in any other direction than the coal face to the gob, a few feet away. Once bone or slate enters a mine car it begins to be a drag and drain upon transportation, and it never ceases its bad work until it lands upon the ash heap of the ultimate consumer. The farther it travels the more harm it does. The journey from face to gob is the shortest possible and consequently the least expensive.

"When a coal bed contains high ash impurities and the miner is paid by the ton; when the cry is constantly for coal and more coal; when miners are scarce and employers can ill afford to fire anyone, the temptation to load out everything that comes down is ever present and to some it is apparently irresistible. The loader who succumbs to this temptation certainly does not realize the effects of his iniquities. He sees only a chance to clean up his place a few minutes early, or possibly get out an extra car of coal before quitting time. He does not realize that in loading out bone and slate and similar impurities, he is 'giving aid and comfort to the enemy.'

"American miners as a class are unquestionably patriotic. Should you search the country over from Tamaqua to Issaquah it would be difficult to find one who would willfully do aught to aid the Kaiser or any of his inclement brood. None would knowingly or willingly harbor an enemy agent or spy within his gates—he would like nothing better than the chance to turn such a person over to the proper authorities. The enemy agent is in this country—figurately speaking—to throw sledgehammers into the gear wheels of American industry. The miner who loads out dirty coal accomplishes the same result. He could scarcely perform a greater service for the Hun were he actually in the Kaiser's pay."

Electric Railway Men and Safety

An Abstract of H. B. Adams' Paper, Presented at the Safety Conference Held in St. Louis, Is Printed This Week

THE Seventh Annual Safety Conference, held at St. Louis, Mo., Sept. 16 to 20, inclusive, attracted a good attendance of electric railway men, especially at the electric railway section meeting held on Sept. 19. An abstract of one of the papers presented before this section is given below and others will appear later.

THE SMALL COMPANY AND INTENSIVE TRAINING

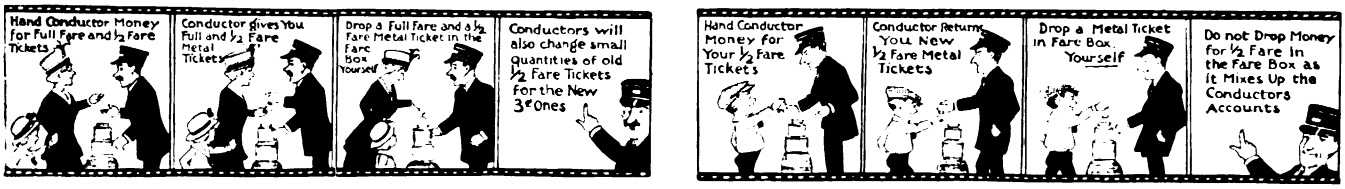
H. B. Adams, safety supervisor Aurora, Elgin & Chicago Railway, emphasized the point that intensive training for efficiency is just as necessary on a short line with few employees as on the largest systems. After outlining the procedure in training motormen and conductors, with particular reference to safety, he made a number of suggestions as to the ways in which interest in safety work can be maintained. In substance these were as follows:

The general manager should have frequent meetings with all foremen to impress them with the importance of seeing that every employee does his work in a safe manner. Interest is maintained by the use of attractive bulletins, by meetings at which accidents are discussed and ways suggested for their prevention, by the showing of safety films and slides, and by short, encouraging talks from officials and foremen, with free discussion.

Occasional social gatherings should be held, and the programs for such gatherings should be of a cheerful and uplifting nature. The relations of employer and employee, as such, should be eliminated.

Every electric railway company desires the good opinion of the communities which they serve. The attitude of the company and its employees upon the question of safety has a powerful influence upon the general reputation of the company. If it is generally known that the company and its employees are cordially co-operating to prevent accidents the public will be more receptive of suggestions for safety.

Electric railways are merchants, selling transportation. In order to hold the trade, transportation must be always in stock—of good quality, regular, prompt and for sale at a reasonable price. It must be nicely wrapped with courtesy, tied with the highest degree of care, sealed with caution and delivered in an absolutely undamaged condition. To this end, every individual connected with the merchandising of transportation, no matter in what department, must do his full share.


Hand Conductor Money for Full Fare and ½ Fare Tickets
Conductor gives You Full and ½ Fare Metal Tickets
Drop a Full Fare and a ½ Fare Metal Ticket in the Fare Box Yourself
Conductors will also change small quantities of old ½ Fare Tickets for the New 3¢ Ones
Hand Conductor Money for Your ½ Fare Tickets
Conductor Returns You New ½ Fare Metal Tickets
Drop a Metal Ticket in Fare Box Yourself
Do not Drop Money for ½ Fare in the Fare Box as it Mixes Up the Conductors Accounts

PUTTING UP INFORMATION IN SUGAR-COATED DOSES AT DENVER
(Originals in Several Colors Respectively)

Publicity for Metal Tickets

Denver Tramway Inaugurates 6-Cent Fare With Intensive Publicity Conducted During Three Days

As was announced in the Electric Railway Journal on Sept. 14, page 479, the Colorado Public Utilities Commission on Sept. 12 granted the petition of the Denver Tramway for emergency relief effective on Sunday, Sept. 15. On all city lines a 6-cent fare was instituted with a 3-cent fare for children. Thus the 6-cent fare was made effective three days after the decision was rendered. It might be assumed that very little publicity could have been given to the change before it actually went into effect, but this was far from being the case.

As a convenience both to the public and the trainmen in the respective paying and collecting of the 6-cent fare, it was considered highly desirable to use a metal ticket and thus eliminate the handling of a large number of copper coins. To attain in any considerable degree the results desirable with such a radical change some publicity was required. The salient features of the campaign were briefly as follows:

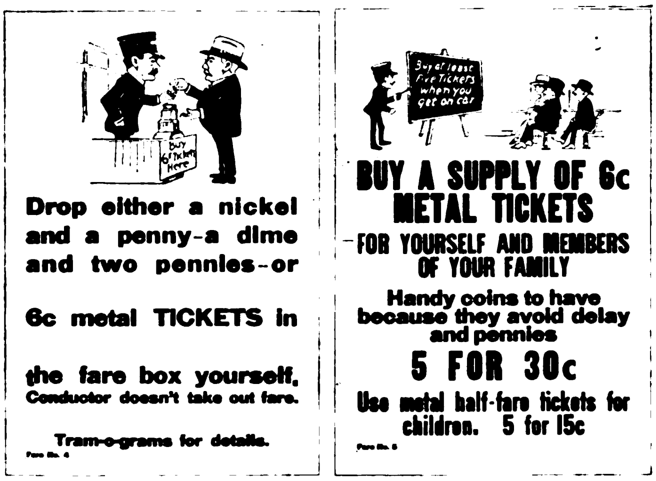
In the first place a series of cards were posted in conspicuous positions in the cars, the first two on Sept. 12, the day the increase was granted, and the remaining three on the three following days successively. A series of posters were also displayed on Sept. 13. These were sent to a large number of employers accompanied by a letter from the general manager, F. W. Hild, explaining the increase in fare and why the metal tickets had been adopted, and asking co-operation in impressing upon their employees the advantage of purchasing the tickets.

On Sept. 13 also, large posters, 18 in. x 38 in., were placed in all carhouses and clubrooms of the company, directing attention to the issue of *Tram-O-Grams* which would appear on Sept. 14, and urging the conductors to give the issue wide distribution. A half-page advertisement was run in the local papers on Sept. 14, explaining the 6-cent fare, the metal tickets, etc., and on the same day the special issue of *Tram-O-Grams* was placed in the cars. Very explicit printed instructions were issued to the trainmen on 3½-in. x 6-in. leaves for their looseleaf notebooks, together with copies of a change making table.

In order to clear up any question which might arise after the first few days of operation with the 6-cent fare, a half-page advertisement giving questions and answers concerning the tickets and payment of fares was inserted in the evening papers on Sept. 16.

Fares on the interurban lines, operated by the tramway, also advanced on Sept. 15. The schedule of rates was advertised in the form of a one-half page advertisement in the local papers.

The accompanying illustrations have been selected from the many pieces of publicity material as being typical of the spirit of the campaign.


Buy 6¢ Tickets Here
Buy at least five Tickets when you get on car

Drop either a nickel and a penny-a dime and two pennies-or

6c metal TICKETS in

the fare box yourself.
Conductor doesn't take out fare.

Tram-o-grams for details.

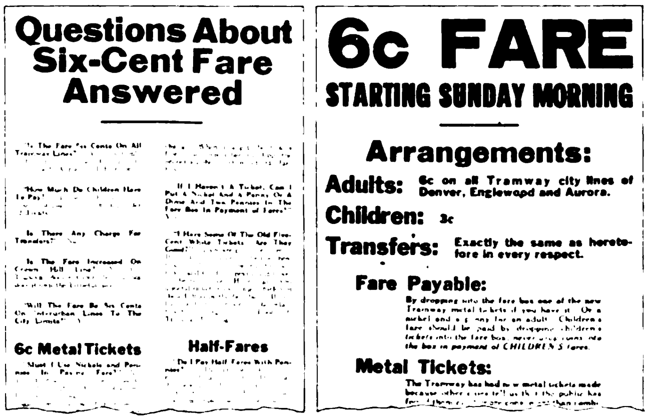
BUY A SUPPLY OF 6c METAL TICKETS
-FOR YOURSELF AND MEMBERS OF YOUR FAMILY

Handy coins to have because they avoid delay and pennies

5 FOR 30c

Use metal half-fare tickets for children. 5 for 15c

TYPICAL POSTERS TELLING DENVER RIDERS HOW TO PAY THEIR FARES



Questions About Six-Cent Fare Answered

"Is The Fare Six Cents On All Tramway Lines?"

"How Much Do Children Have To Pay?"

"Is There Any Charge For Transfers?"

"Is The Fare Increased On Crown Hill Line?"

"Will The Fare Be Six Cents On Interurban Lines To The City Limits?"

6c Metal Tickets

"Must I Use Nickels and Pennies In Paying Fare?"

"If I Haven't A Ticket, Can I Put A Nickel And A Penny Or A Dime And Two Pennies In The Fare Box In Payment of Fares?"

"I Have Some Of The Old Five-Cent White Tickets. Are They Good?"

Half-Fares

"Do I Pay Half Fares With Pennies?"

6c FARE

STARTING SUNDAY MORNING

Arrangements:

Adults: 6c on all Tramway city lines of Denver, Englewood and Aurora.

Children: 3c

Transfers: Exactly the same as heretofore in every respect.

Fare Payable:

By dropping into the fare box one of the new Tramway metal tickets if you have it. Or a nickel and a penny for an adult. Children's fare should be paid by dropping children's tickets into the fare box, never drop coins into the box in payment of CHILDREN'S fares.

Metal Tickets:

The Tramway has had new metal tickets made

NEWSPAPER ADVERTISEMENTS USED IN INAUGURATING THE 6-CENT FARE IN DENVER

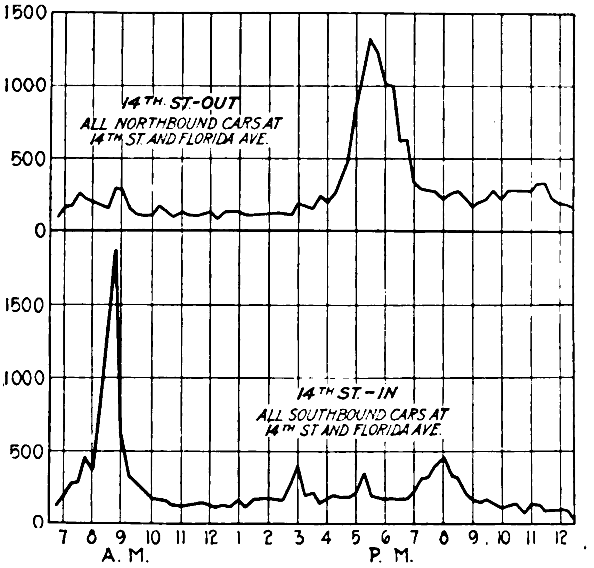
How the Los Angeles Railway Handles Liberty Loans

The Los Angeles (Cal.) Railway handles its Liberty Loan work in the following way: The comptroller, who has charge of the sale of these bonds to employees, has as assistants the foremen of each carhouse of the operating departments and the chief clerks of other departments. They in their turn have assistants under them who get into direct touch with the employees, personally and by means of circulars. Advantage is also taken of the sectional Co-operative Association meetings to urge upon the members the necessity for buying the bonds. The company subscribes for the bonds subsequently purchased through it by employees, and deductions are made from their wages at the rate of 20 per cent a month.

Washington Increases Car-Miles and Reduces Car-Hours

Latest Beeler Report Recommends Changes in Routing and Increases in Schedule Speed as Result of Efficiency Methods Earlier Introduced

IN SECTION 12 of John A. Beeler's report on the Washington transportation situation, made public during the first week in September, a number of important revisions in routing and schedules are recommended. The report is limited to the system of the Capital Traction Company and presumably the suggestions for the Washington Railway & Electric Company will be given later. The suggestions made are due in part to the radical changes in traffic flow in the national capital, caused by the increase in government employees due to the war, and in part to the introduction of skip stops, loading platforms, double berthing, precedence for street cars, etc., recommended in prior sections of the report.



PASSENGER COUNT FOR FOURTEENTH ST. LINE, CAPITAL TRACTION COMPANY, FOR TYPICAL DAY

As a basis for the present report, a traffic survey was conducted whose results are given in the report. In the rerouting recommended several factors received consideration. One was to retain the old routes except where there was a legitimate reason for a change as they naturally were familiar to the residents of Washington. Another was economy of man-power so that all that was available should be placed where the greatest possible amount of service would result. Again, where through routes operate from one outlying terminal across the downtown district to another outlying terminal, the traffic on the two was made as nearly equal as possible, for otherwise injustice would be worked either on the public or on the company, depending on whether the light or heavy end of the line received the proper service. Short-line service has also been introduced where observation shows that this could be done to advantage.

A chart of Fourteenth Street in and out, with the passengers counted at Fourteenth Street and Florida Avenue for fifteen-minute periods, is reproduced. This is the heaviest trunk line of any in the district and is used by more than 50,000 people every day. The peaks occur at 8.45 a.m. inbound and at 5.30 p.m. outbound. There are also marked secondary evening peaks on the inbound lines at 8.15 p.m. and outbound at 11.30 p.m.

RUSH-HOUR SERVICE INCREASED 21 PER CENT THROUGH HIGHER SPEED

As a result of the survey four new routes were established and several of the existing routes were shortened. At the same time advantage was taken of all the improvements recently made to increase the schedule speed on all lines, as shown in Table I. The general average is from 9.71 to 10.95 m.p.h. The average time for each round trip has been cut from 89 minutes to 73.1 minutes. In consequence, each all-day car will on an average make between three and five additional one-way trips per day. This means that with the same number of cars as are now operated, service will be increased 21.8 per cent, and if all available equipment is now in use during the rush hours, this figure will mark the increase in service during these periods.

TABLE I—INCREASE IN RUNNING SPEED WITH NEW SCHEDULES.

Route	Running Speed, Miles per Hour, Old	New	Increase, Per Cent
Georgetown—Fifteenth and New York Avenue	8.59	10.38	20.8
Fifteenth and New York Avenue—Peace Monument	8.23	9.15	11.2
Peace Monument—Union Station	9.34	10.37	11.0
Peace Monument—Eighth and Pennsylvania, S. E	9.39	10.06	7.1
Eighth and Pennsylvania, S. E.—Navy Yard	9.43	10.78	14.3
Eighth and Pennsylvania, S. E.—Seventeenth and Pennsylvania, S. E	9.32	11.39	22.2
Twenty-sixth and Pennsylvania—Seventeenth and Pennsylvania, N. W., via F Street	8.54	9.68	13.3
Seventeenth and Pennsylvania, N. W.—Twenty-sixth and Pennsylvania, via G Street	9.72	11.22	15.4
Union Station—Eighth and F, N. E	7.40	10.17	37.4
Fourteenth and Colorado—Fifteenth and New York	9.27	10.71	15.5
Eighth and Pennsylvania, S. E.—Seventh and Florida	8.98	10.83	20.6
First and B, S. E.—Seventh and Florida via New Jersey Avenue	9.35	10.28	9.9
Seventh Street Wharves—Seventh and Florida	9.42	9.66	2.5
Seventh and Florida—Twentieth and Calvert	8.65	9.44	9.1
Twentieth and Calvert—Chevy Chase Lake	14.81	15.90	7.4
Averages	9.71	10.95	12.8

The new schedule made it possible to rearrange the runs of the crews, as shown in Table II.

TABLE II—COMPARISON OF WORKING CONDITIONS WITH PRESENT AND PROPOSED SCHEDULES

Hours of Work	Straight Runs Present	Straight Runs Proposed	Two-Piece Swings Present	Two-Piece Swings Proposed	Total Present	Total Proposed
9	2	13	1	16	3	34
9 to 10	40	51	31	46	71	97
10 to 11	39	64	56	29	95	93
11 to 12	45	35	40	11	85	46
12 to 13	17	5	6	0	23	5
Total	143	173	134	102	277	275

Circular No. 72 of Bureau of Standards Being Reprinted

The attention of the editors of this paper has been called to the fact that circular No. 72 of the United States Bureau of Standards on "Scope and Application of National Electrical Safety Code" cannot be obtained from the Government Printing Office as it is already out of print. In reply to an inquiry the director of the bureau states that the circular will be reprinted so as to be available probably in December of this year.

Lodging House for Thirty Men Costs $11,000

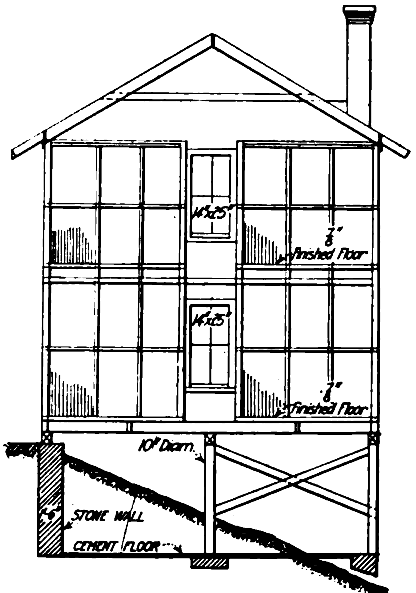
The Connecticut Company Helps to Solve the Serious Labor Problem By Building and Operating a Rooming House at Waterbury

THE CONNECTICUT COMPANY operates in a territory where the expansion of the manufacturing industry during the last three or four years has caused a considerable shortage in housing accommodations for the workers. A few months ago the company completed at Waterbury the construction of a lodging house, somewhat by way of experiment, and this has proved very successful for the purpose intended. This purpose was to provide lodgings primarily for transients until permanent quarters can be found. The men are, however, permitted to occupy rooms in the house as long as they desire, provided the rooms are not required for the use of newcomers.

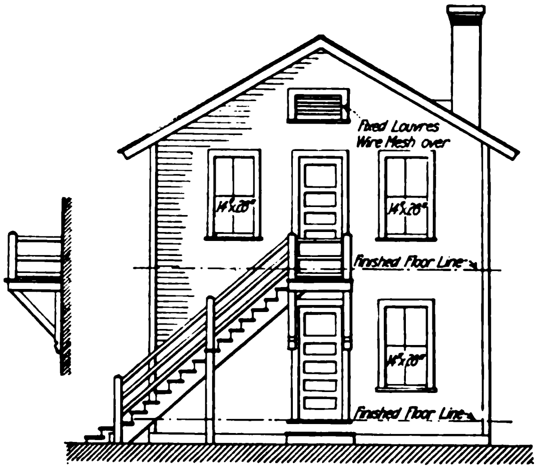
CONNECTICUT COMPANY'S LODGING HOUSE AT WATERBURY

The lodging house has proved a "life-saver" in that it enables the company practically to guarantee a comfortable shelter for new men. Its popularity is attested by the fact that at present the regular bedrooms are all occupied and a number of men are being "bunked" in the clubroom on the first floor on cots.

The house contains thirty-two sleeping rooms, of which thirty are available for the men. It is operated by the company and is in direct charge of a competent woman who attends to all details of administration. The men are charged a uniform rate of $2 per week regardless of location of room, and they pay the same rate when temporarily accommodated on cots in the clubroom. This nominal charge has proved sufficient to cover all operating expenses with a small margin for interest and depreciation. However, the management of the company will feel repaid for the outlay if the house continues to serve the purpose for which it was built even if it should not prove profitable directly as an investment.



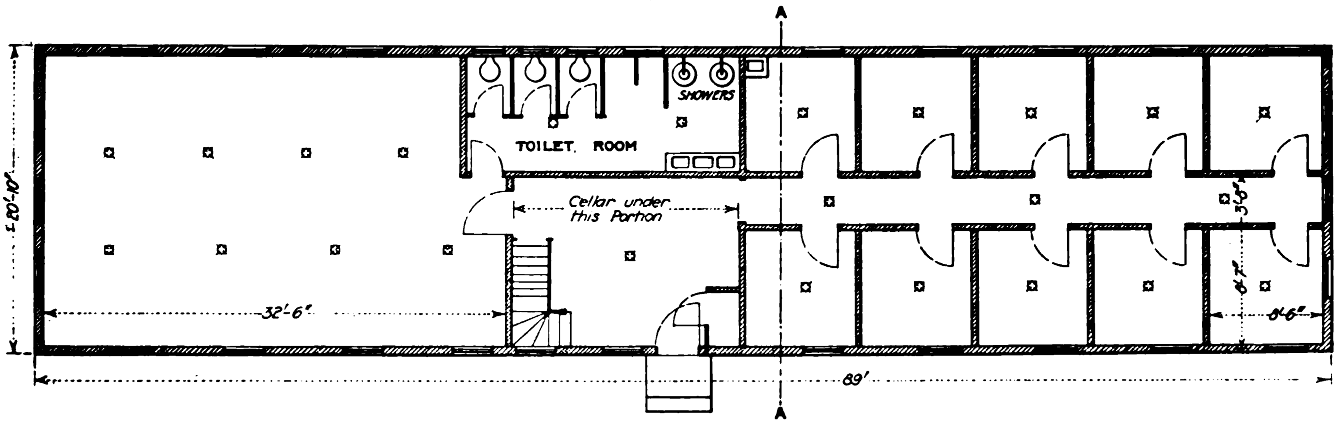
Cross Section at Center



South End Elevation

The cost of the house was about $11,000 complete and furnished, exclusive of the value of the land, which was owned by the company and not required for other purposes.

The lodging house is located between the private

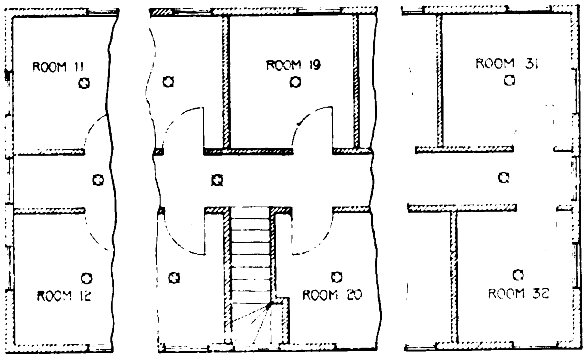


GROUND FLOOR LAYOUT AND STRUCTURAL DETAILS OF LODGING HOUSE AT WATERBURY, BUILT AND OPERATED BY THE CONNECTICUT COMPANY FOR THE BENEFIT OF PLATFORM AND SHOP MEN right-of-way of the company and Watertown Road, west of the bridge over the Naugatuck River. It is about 1000 ft. from the local carhouse and repair shop and is thus able to meet the needs of both platform men and shopmen. It is of simple but substantial construction, without "frills," but has all modern conveniences in the way of lighting, heating and plumbing.

On the first floor is a clubroom 32½ ft. x 20 ft. in size, ten bedrooms about 8½ ft. square, a large toilet room with shower baths, and an office which furnishes the main entrance to the building. Entrance was provided through the office so that the matron could have supervision of the coming and going of the lodgers.

On the second floor there are twenty-one bedrooms, a smaller toilet room and a hallway running lengthwise of the building. An outside stairway furnishes access to the second floor, but is not intended for general use.

The building is of construction to be readily warmed in winter, the walls being covered with sheathing paper and clapboards, but it is not lathed and plastered on the inside. The studding is exposed, but it is finished and stained. A steam heating plant is located in a small cellar under the office portion, which is large enough to accommodate also the coal bins. The heating plant is guaranteed to provide a 70 deg. temperature in zero weather. Ample hot water is supplied throughout the year for the men, a gas heater being used to warm it in summer. The rooms are all electrically lighted, and all windows and doors are screened.



PLAN OF SECOND FLOOR OF LODGING HOUSE AT WATERBURY, CONN.

By way of furnishings each bedroom contains a chair, one steel single hospital bed, a mattress and the necessary bedding, including pillows, two blankets, two sheets and a slip cover for the mattress. All bedding is laundered once a week.

The Waterbury housing experiment is the result of a conviction on the part of J. K. Punderford, vice-president and general manager of the Connecticut Company, to the effect that unusual conditions such as those which now prevail demand adaptability on the part of the electric railway. For some years he has wanted to see if the men would appreciate facilities such as those now afforded at Waterbury. The experience of the last few months has convinced him that the fundamental idea underlying the scheme is all right.

It will be interesting to compare the Waterbury housing plan with that described by Clifford A. Elliott in the issue of the ELECTRIC RAILWAY JOURNAL for July 27, 1918, page 150, in which the Pacific Electric Railway furnishes free housing for section workers.

A French View of Heavy Traction in the United States

A RECENT issue of *Le Génie Civil,* Paris, is largely taken up with the papers presented on "Electrical Night" this year before the New York Railroad Club. In addition to abstracting the papers (see ELECTRIC RAILWAY JOURNAL, March 23, 1918), the author of an article on "The Electric Locomotives of the American Railways," P. Letheule, comments upon the tendencies indicated by the locomotives discussed at the Railroad Club meeting. He says that without doubt electrical engineers would be very glad to apply in the field of electrification the tendency toward standardization which is manifest in other electrical fields. However, in the variety of locomotives discussed at the meeting, there is little evidence of this tendency, but in spite of the disparity between the tendency toward standardization and the diversity here manifested the situation is a perfectly natural one.

The conditions on different railway lines vary greatly and there are also many differences in the equipment which is available. Variety is sure to result even where there is considerable choice in selection of types, but in some cases other conditions beyond the control of the engineer dictate whether, for example, a line shall be alternating current or direct current.

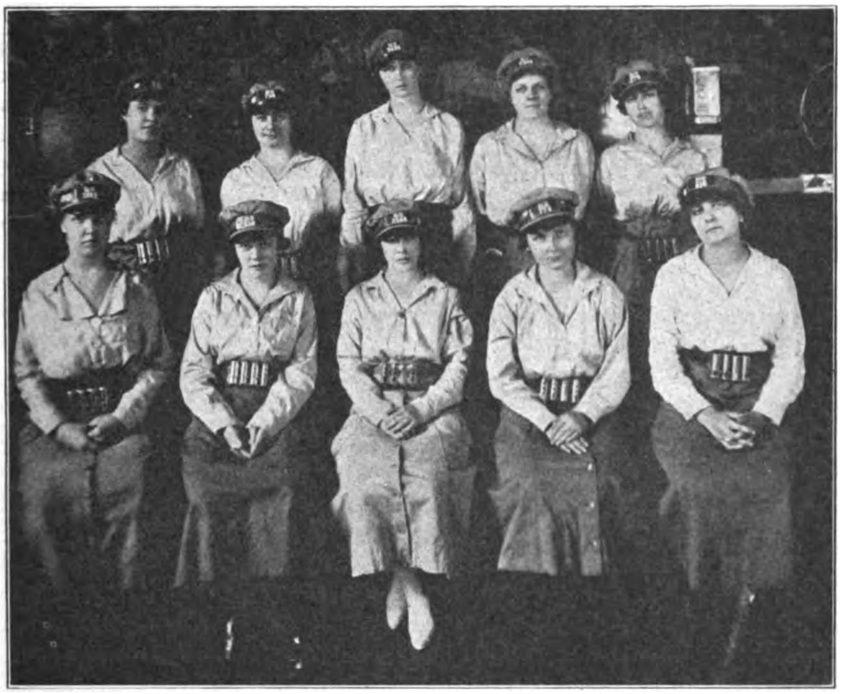
The diversity of types of electric locomotives is no greater than in the steam locomotive field, and Mr. Letheule predicts that the number of types that will persist is not large. It is possibly limited to those taken up at the meeting in question with the addition of the three-phase locomotive which, he points out, has been applied very successfully in a number of instances. It will be remembered that the locomotives which formed the basis of the Railroad Club discussion were the new 180-ton New Haven type (a.c., geared), the recent 134-ton New York Central type (d.c., gearless), and the two new 265-ton Chicago, Milwaukee & St. Paul types (d.c., one geared and the other gearless).

Coal Rationing for Industries

THE controller of coal mines in Great Britain is being assisted in the coal economy campaign, which he has instituted to reduce fuel consumption in every way possible, by a technical staff attached to the head office. The country is to be mapped out in districts, so that all industrial consumers will, within a reasonable time, be in touch with the organization.

The scheme comprises two main sections, namely, electrical undertakings and industrial undertakings. The work includes a careful scrutiny of the quantity and the quality of coal consumed and the efficiency obtained, and the inspection of factories and works by experts to ascertain the best means by which fuel consumption may be reduced. A considerable amount of work has already been done, but it is intended to accelerate the rate of progress as much as circumstances will admit. About 400 fuel engineers will shortly be at work in various parts of the British Isles.

So imperative is the need to reduce coal consumption to a minimum that a rationing scheme for all industrial undertakings in Great Britain will be introduced shortly.



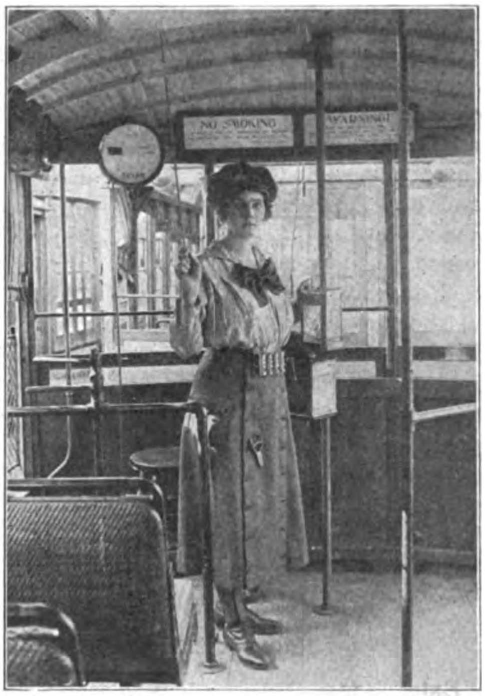


FIG. 1—GROUP OF WOMEN CONDUCTORS AT KANSAS CITY. FIG. 2—UNIFORM WORN BY KANSAS CITY CONDUCTORETTES

Women Conductors a Success at Kansas City

Special Housing Facilities With Matrons, Visiting Nurse and Lady Physician Are Provided—Branch of Local Union Formed

WOMEN conductors have been doing their work so successfully on the lines of the Kansas City Railways that their number has been increased from eight to more than 100 since May 21, 1918. At this time, as was noted in the ELECTRIC RAILWAY JOURNAL for June 15, 1918, page 1147, the first women conductors went into service on the lines of this company. In advertising for applications for positions in its platform service the company has announced that it will receive applications from young women between the ages of 21 and 35 years and that preference will be given in the following order:

Wives and relatives of employees of the company in the service of the United States; wives and relatives of other men in the service of the United States; wives and relatives of present employees; the general public.

With the assurance that women conductors are a success, a comprehensive course has been laid out for their instruction. The applicants are selected by the employment department, and after a physical examination, conducted by a woman physician, they are sent to the instruction room. Fig. 3 shows a class at work under the instruction of one of the women of the first class. The women receive $1.50 per day during the training period.

The preliminary instruction is divided into four parts, covering two days, about as follows: Safety work and car operation, collection of fares and clerical work, transfer system and rules and courteous handling of passengers.

After these two days of preliminary training the women are sent out to a division headquarters where they are received by a matron. Here they are put on the road with a competent platform instructor for a period of five days on one line and two days on another.

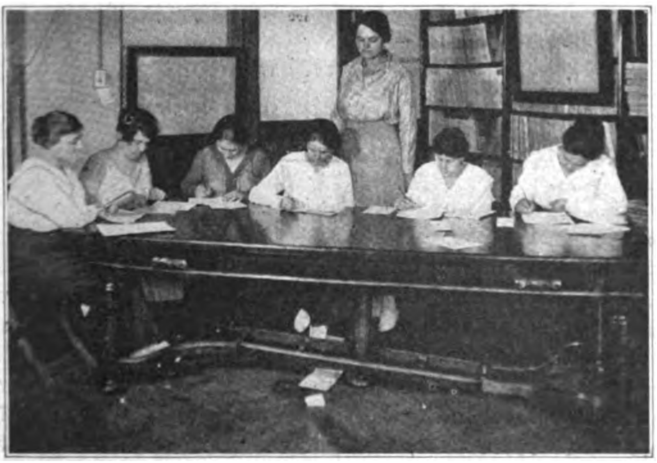


FIG. 3—INSTRUCTION CLASS OF WOMEN CONDUCTORS

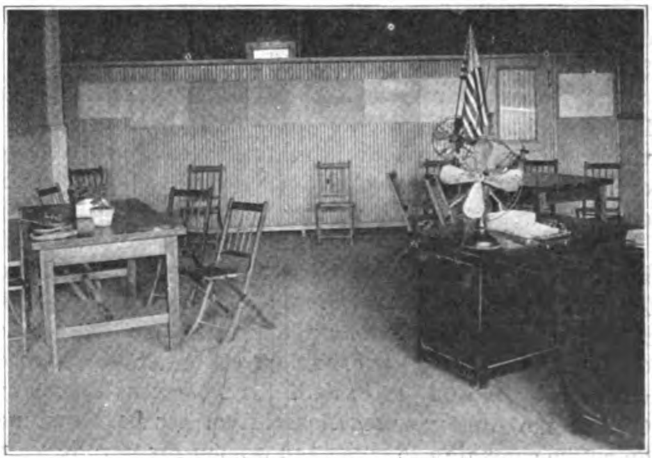


FIG. 4—TYPICAL QUARTERS FOR WOMEN EMPLOYEES

If they meet the requirements up to this point they are given written recommendations by the division supervisor and returned to the office for a final written examination. Grades of average or above average are received on this test. All the instruction is given under the supervision of the regular instruction department, and each student is examined carefully in regard to the following points: Appearance, character, intelligence, education, interest, ability, alertness, punctuality and experience.

The "conductorettes" are now ready for duty subject to occasional instruction from the women instructors at the carhouses. A uniform is provided consisting in winter of a woolen shoe-top skirt and heavy woolen double-breasted reefer, all of an olive-drab color, together with a pair of canvas leggings and an olive-drab cap. The summer outfit includes a khaki cap and skirt, tan blouse and low-heel tan shoes. The uniform is furnished by the company and paid for on the installment plan.

REST ROOM FACILITIES ARE EXCELLENT

Extensive rest rooms have already been provided and others are planned and under construction. Fig. 4 gives an idea of the arrangement of the quarters at Forty-eighth and Harrison Streets. This shows the change-making tables, with the schedules of all runs on the wall at the rear, and the matron's desk at the right. A supply of easy chairs, not shown in the picture, is in the front of the room. In the room at the rear of the one shown are several wicker couches, wash rooms, toilets, etc. One of the newest rest rooms is located at Ninth and Brighton Streets where a two-story brick building has been leased by the company for this purpose. The arrangement here is similar, except that instead of several small tables, a long table arranged for seven or eight women on each side is provided. In the middle of this table a rack several feet high and extending the full length contains the schedules. At these quarters the top floor was formerly rented as a flat and remains at present unchanged. The intention is to remodel this later to provide club rooms and a library.

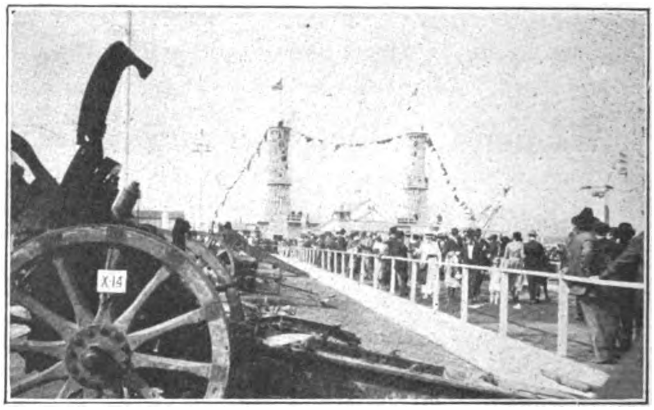
At present women conductors operate on 75 per cent of the lines in Kansas City, Mo. The majority of the cars are of the pay-as-you-enter type with fare boxes. Some of the doors are manually operated, others air operated. The women receive the same pay as the men and are guaranteed a minimum wage of $2 per day. The work is divided into two periods of not more than four hours of consecutive work, with a long rest between periods. Although the law permits women to work nine hours, the work is confined to seven or eight hours per day, and very seldom exceeds six days per week. It is generally terminated by 8 p.m.

The Kansas City Railways Employees' Brotherhood, a local organization, not a part of the Amalgamated Association, opened its doors to the new employees almost immediately and an auxiliary, known as the Kansas City Railways' Women Employees, has been formed with more than 60 per cent of the women as members. Of late the Amalgamated Association has been making an active campaign to enlist the women for membership.

Many of the women have gained in weight, all in health, and all are enthusiastic about the work. The record of efficiency shown is superior to past records as so far there have been no step accidents on cars in charge of women conductors. The clerical work shows more accuracy and neatness, and more alertness is displayed in the collection of fares and issuing of transfers. The women have made a splendid showing and are an elevating element in the service. The public has received them very favorably and every official of the company has only the highest praise for their service and the success of the enterprise.

Government War Exhibit in Chicago

A GIGANTIC war exhibition was held in Chicago by the United States government from Sept. 2 to Sept. 15. To convey an idea of the size of the exhibit, it may be stated that there were thirty-seven carloads of captured war trophies from every fighting front. In one single day 224,871 people attended, and the total attendence for the fourteen days was 1,955,602.



ENTRANCE TO UNITED STATES WAR EXPOSITION AT CHICAGO. NOTE GERMAN FIELD GUN IN FOREGROUND

The Chicago Elevated Railways entered into the spirit of the campaign and sold tickets through its regular ticket sellers at the stations. Fourteen women were also used on trains all over the system, and each turned in from $50 to $75 a day. The Chicago, North Shore & Milwaukee Electric Railway, which is operated under the same management, also aided in the work. Together the companies sold 89,296 tickets, 86,157 being sold by the elevated lines.

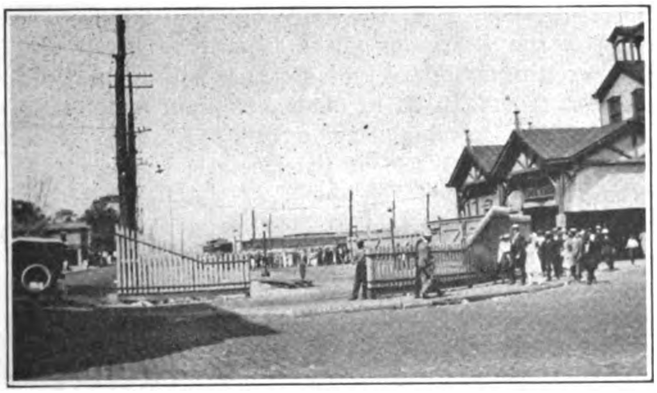
On the single day mentioned when 224,871 persons attended the exhibition, the number of passengers carried on the elevated lines was increased more than 50 per cent as compared to the days preceding the exhibition.

As indicative of the public attitude toward the skip stop at this time a recent editorial statement from the New York *Evening Post* is significant. After outlining the necessity for care in locating stops the editors said: "The general desirability of the plan in the interest of economy is not denied. One may be a bit skeptical of the admittedly rough estimate that adoption of the scheme over the country would save 1,000,000 tons of coal a year, and yet concede that it is worth the inconvenience it costs."

Solving a Difficult Terminal Problem

Soldier and Pleasure Traffic Congestion at Ferry Connection on Public Service Railway Is Relieved by Prepayment Area

THE Public Service Railway gives service to the upper portion of Manhattan Borough, New York City, by means of its Englewood, Palisade, Hudson River and Hackensack lines, which connect at Edgewater, opposite 130th Street, Manhattan, with the ferry of the Riverside & Fort Lee Ferry Company. The Public Service Railway operates this ferry and maintains a fifteen-minute service between Edgewater and the 130th Street terminal. The lines named above reach Leonia, Paterson, Englewood, Tenafly, Hackensack and a number of other small towns within commuting distance of New York. The regular traffic which would naturally exist between these points and upper New York is greatly augmented at times owing to the fact that at the top of the Palisades, some 300 ft. above the river level at Edgewater, is located the Palisades Amusement Park, while farther up the river connections are made to the new natural park known as the Palisades Interstate Park and the great army cantonment, Camp Merritt.



GENERAL VIEW OF EDGEWATER TERMINAL SHOWING THE CAR ENTRANCE TO THE STOCKADE

On Saturdays, Sundays and holidays as many as 40,000 people are sometimes handled to and from the Palisades Amusement Park. On Wednesdays and Saturdays, the days on which visitors are permitted at Camp Merritt, the travel over the lines leading to the camp is also very heavy. In addition to these days on which the traffic can always be reckoned on, peak loads are frequently thrown on the railway without warning, due to large numbers of soldiers from the camp being given permission to visit New York.

During peak periods, the ferry boats deliver to the traction lines between 1500 and 2000 passengers every five minutes. The handling of these large masses of passengers has constituted a most difficult problem, and the Public Service Railway has had an elaborate terminal project in mind, equal, at least, to that now in service at Hoboken, for some years. The war has deferred for the time the development of these plans, but owing to the great increase in the army camp traffic, the congestion at the ferry terminal became so great early this summer that it was found impossible either to carry the passengers safely or to collect the fares.

As a temporary solution to the problem, the company has constructed prepayment areas for use during the heavy traffic periods both at Edgewater and at the Palisades Amusement Park entrance and exit. The area at Edgewater, as shown in an accompanying illustration, is inclosed by a wooden picket stockade and divided into two parts by movable gates. In the illustration the car entrance gate with its guard is shown in the foreground, in the background a crowd of passengers boarding a car within the loading area. As will be noted, passengers leaving the unloading platform can enter the ferry terminal directly. Access to the loading platform is gained through the turnstile gates also shown. It will be noted that three double gates, or six turnstiles in all, are provided.

A high woven-wire fence incloses the area at the amusement park entrance, and the collection booths have been installed under the waiting sheds which previously constituted the station equipment at this point.

ENTRANCE TO CARS
HAVE YOUR FARE READY

PASSENGER ENTRANCE TO THE LOADING AREA AT THE FERRY

Before the installation of the prepayment areas, great confusion existed in the loading spaces at both places. Passengers trying to leave the cars were prevented from doing so by masses of other passengers trying to board at the same time. It was found very difficult to collect fares in the short distance, between the ferry terminal and the amusement park. The installation of the stockade has removed entirely the confusion resulting from the meeting of opposing passenger streams, all fares can now be collected, and considerable increase in safety of operation has resulted.

Steam Roadmasters Hold Thirty-sixth Annual Meeting

A MEETING of the Roadmasters' and Maintenance of Way Association was held in Chicago on Sept. 17 and 18 and it was voted to meet in the same city on Sept. 16, 1919.

The principal business was the consideration of reports of committees on conservation of track material, on fences and allied topics, and on labor-saving devices. Papers were read by C. W. Gennett, manager rail inspection department C. W. Hunt & Company, on "Common Defects in Rails and Means of Detecting Them in the Track," and by John Foley, forester Pennsylvania Railroad, on "Inspecting Ties; the Outlook for an Adequate Supply."

The secretary of the association, who was re-elected at the meeting, is P. J. McAndrews, roadmaster Chicago & Northwestern Railway, Sterling, Ill.

AMERICAN ASSOCIATION NEWS

War Board Raises Jitney Question Again

TO A GREAT MANY people it has seemed a great anomaly during the past year, when there has been such an acute demand for man-power, as well as for gasoline, rubber tires and other automobile supplies for military purposes, that jitneys are allowed to continue in operation in many cities. They duplicate service for which the electric railways have the equipment and are able to supply, so that jitney service is about as "non-essential" an industry as can well be conceived. Yet, while the "work or fight" order affects waiters in hotels and clubs and elevator men and the ordinary citizen is asked to be as sparing of gasoline as possible, jitney operation has continued unaffected just as if there were no such thing as a war in Europe.

Impressed by this condition of affairs, W. V. Hill of the American Electric Railway War Board wrote a letter on May 31 describing the situation to Major General E. H. Crowder, provost marshal general. This letter was published on page 1199 of the issue of this paper for June 22, 1918. Mr. Hill followed it on June 7 with one addressed to M. L. Requa, director of oil, United States Fuel Administration, and on July 12 with one to Addis E. Whitney, conservation division, War Industries Board. He and other members of the War Board have also been in communication with other departments of the government on the same subject, among them the transportation department of the United States Shipping Board, Emergency Fleet Corporation, the department of inland transportation of the War Industries Board, and the Highways Transport Committee of the Council of National Defense.

The general nature of the situation can be well understood from the following outline prepared by Mr. Hill at the request of Col. Roscoe S. Conklin, judge advocate at Washington, chief of classification division, provost marshal general's office, and sent to him on Aug. 29:

> *First.* Automobiles engaged in carrying passengers for hire are performing a service that can and should be performed by the electric railways, which under municipal and state regulations are required to perform a definite and dependable service to the public.
>
> *Second.* It requires an average of twelve men operating automobiles to carry an equivalent number of persons that can be transported by one electric car with two men. Their operation means therefore a wastage of man power in addition to duplication of service.
>
> *Third.* They consume large quantities of gasoline, steel and other materials required by the government at this time for war purposes.
>
> *Fourth.* They do not operate a continuous service, usually confining themselves to the congested hours of travel in the mornings and evenings, thereby not performing a full day's work.
>
> *Fifth.* There is to-day a serious shortage of labor for essential war work, including electric railways serving industrial centers engaged in war work, cantonments, shipbuilding plants, navy yards, etc.
>
> It would seem, therefore, that men engaged in non-essential automobile service of this nature should be forced to obtain some useful occupations or compelled to enter the service, and if this class of men was subjected to the "work or fight" order, it would place thousands of men in this country in useful occupations or in the Army.

The American Electric Railway War Board is now conducting a study as to the present extent and character of jitney competition.

Standard Car for Housing Corporation

THE Electric Railway War Board some weeks ago, at the request of the United States Housing Corporation, appointed a committee to prepare plans for a standard car in three types. This was covered in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 14, page 455. The committee is actively at this work and is making up plans in accordance with the following general specification:

The car will be 45 ft. to 48 ft. long and 8½ ft. wide, over all, with a height of 11½ ft. from rail to trolley board. The underframe will be of steel and the superstructure of steel or composite type. Cross-seats will be used with the exception of longitudinal seats in each end for the space of two windows. The type of roof is left to the discretion of the committee.

An existing standard type of truck will be used with wheels of from 26 to 31-in. diameter. Four-motor equipment, adapted for single-car or train operation, is specified, as is also the use of thermostatic control of the car warming system.

The three general types to be considered are: The end-entrance car for double-end operation, with air-operated platform doors, folding steps and no bulkheads. Car of the same general type and dimensions, with seat and door arrangements as submitted by C. O. Birney, embracing the pay-as-you-leave, center-exit feature for a double-end car. Center-entrance car similar to that used by the Boston Elevated Railway.

New York Conference Soon

ALTHOUGH the exact date of the conference of the American Electric Railway Association scheduled to replace the annual convention has not yet been set it is understood that it will come soon after the close of the Fourth Liberty Loan campaign. Secretary Burritt announces that at the same time the executive committee will meet and, in accordance with the practice inaugurated last year, President Stanley will retire and J. H. Pardee, first vice-president, will assume the duties of president. The other three vice-presidents will each advance one step and a fourth vice-president, *ad interim*, will be nominated by the committee. The five manufacturer members of the committee will probably be retained.

For the four affiliated associations, the same procedure as last year will undoubtedly be followed. That is, the present officers will hold over until their successors are elected. In the Accountants' Association there is a vacancy in the office of secretary-treasurer, caused by the resignation of S. C. Rogers; in the Engineering Association there is one in the office of first vice-president, caused by the resignation of G. W. Palmer, Jr., and one in the office of secretary-treasurer of the Claims Association caused by the death of B. B. Davis. The filing of these vacancies will be left to the executive committees of the several associations.

The policy pursued last year of leaving in abeyance the routine committee work both of the American and the affiliated associations will undoubtedly be continued by the several executive committees. By this means important matters may be taken up from time to time for consideration either by standing committees or by special committees, while the less important work not dealing directly with war matters can be allowed to lapse.

Combined Social and Informational Meeting at Chicago

AT THE MEETING of the Elevated Railroads company section held on Sept. 24 at the Edison Building, Chicago, the principal speakers were H. A. Johnson, superintendent of shops and equipment, and James K. Miller of the legal department. Mr. Johnson gave what the secretary described as "a remarkably interesting and instructive talk on the electrical control system of the company's rolling stock. This was illustrated with numerous lantern slides and some very cleverly prepared apparatus, the speaker laying particular stress on the importance of the train line in the proper operation of a train and to the necessity for very careful handling of the jumpers." Mr. Miller gave an inspirational talk on enemy propaganda, and brought out clearly the damage which might result to our country's morale from the repetition of "information" which cannot be verified. There was patriotic singing, a brief program of Irish dancing and some business items, including the appointment of a nominating committee to report at the October meeting. An evidence of co-operation with other clubs was the announcement by President B. J. Fallon that the Chicago Elevated Bowling League had changed its meeting night to avoid conflict with the meetings of the company section. One hundred and twenty members and guests attended this meeting.

"Rail Light Minstrel Show" at Toledo

EIGHT hundred members and guests of the local joint company section attended its first entertainment for the season at the Auditorium Theater, Toledo, Ohio, on Sept. 25. No business was transacted at the meeting, the idea being to start off the activities of the year with a program which should arouse enthusiasm, prepare for the more serious work of the winter and incidentally set a high standard for later entertainments. The program was designed to bring in as many entertainers from the company's ranks as possible.

Skip Stops in New England

In the New England campaign by electric railways to save coal in accordance with the suggestion of the United States Fuel Administration, it has been reported to James J. Starrow, federal administrator for New England, that 4161 stopping places or 22 per cent of the 18,582 stopping places on the Massachusetts roads have been eliminated. On the Boston Elevated Railways alone about 1000 out of a total of 4000 stopping points have been wiped out and the public has accepted these changes in a patriotic spirit, apart from the possible improvement in service thus accomplished which comes as a pleasant surprise to many patrons.

Prevent Smoke and Save Coal

Boiler Room Instruments Help Save Fuel—Suggestions for Fuel Economy

JUST now every practical suggestion along the lines of fuel conservation is a matter, not only of personal comfort but what is vastly more important, of the national welfare. Naturally the best place to save coal is the place where it is being used, and the boiler room offers a fruitful field for the exercise of fuel economy. The following summary of the experience of the combustion engineers of the Westinghouse Electric & Manufacturing Company, as gained from their own experiments and their observations of practical operation in customers' boiler rooms, will therefore be of value.

The formation of smoke, which contains much unconsumed fuel, should be prevented by proper firing methods and the flue gases should contain from 10 to 12 per cent of CO_2. Fires should be kept free from holes, and the fuel should be so distributed over the grate as to prevent the influx of excess air which accompanies thin fires and the incomplete combustion resulting from excessive thickness of fires. The proper fuel distribution for a given type of stoker is illustrated in the accompanying figure.

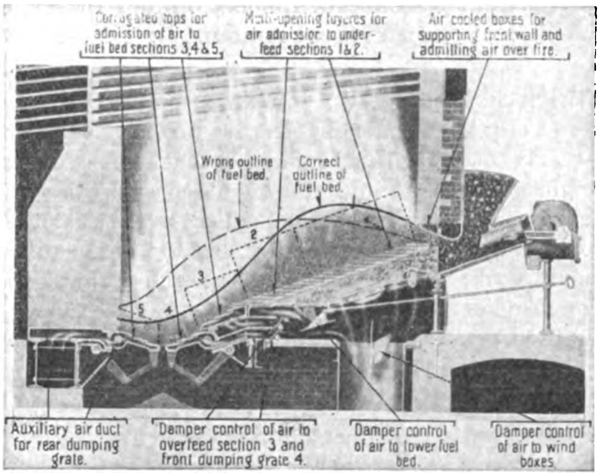
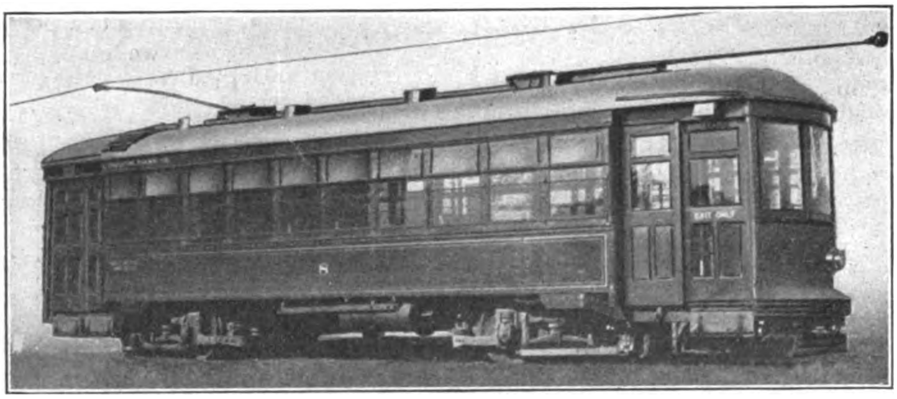

Corrugated tops for admission of air to fuel bed sections 3,4 & 5.
Multi-opening tuyeres for air admission to underfeed sections 1 & 2.
Air cooled boxes for supporting front wall and admitting air over fire.
Wrong outline of fuel bed.
Correct outline of fuel bed.
2
3
4
5
Auxiliary air duct for rear dumping grate.
Damper control of air to overfeed section 3 and front dumping grate 4.
Damper control of air to lower fuel bed.
Damper control of air to wind boxes.

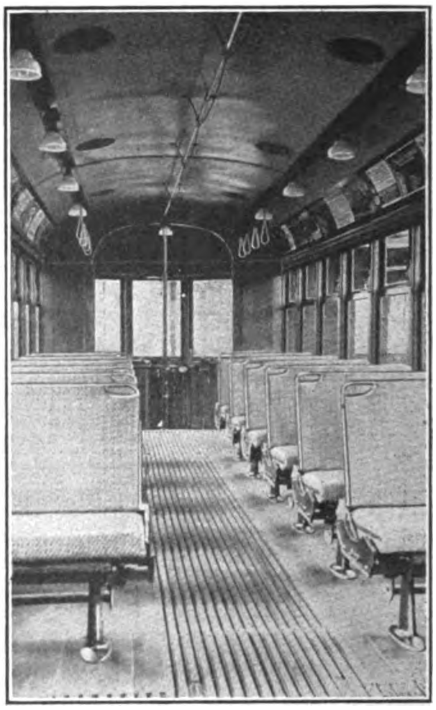
DIAGRAM SHOWING CORRECT AND INCORRECT OUTLINES OF FUEL BED ON BOILER FURNACE GRATE

Gages which indicate boiler operating conditions should constitute a part of the equipment of every boiler room. As a minimum, the instrument equipment should consist of draft gages connected with the furnace above the fuel bed and on the boiler side of the flue damper, and a steam flow meter for each boiler. Gages and dampers should be conveniently located, otherwise they will not be used.

The loss due to the presence of unburned fuel in the ash should be avoided, boiler settings should be kept air-tight and baffles in proper condition, and under no condition should live steam leaks be tolerated. Exhaust steam should be used in place of live steam for auxiliary purposes wherever practicable. All steam pipes should be insulated and the tubes kept free from soot and scale. The size of the coal has much to do with the capacity and efficiency of a boiler. In general, the air pressure penetrates a fuel bed formed of coarse fuel more readily than one formed of finer coal, producing greater disturbance of furnace conditions and lowered boiler efficiency.



FOUR-YEAR-OLD CAR WHICH HAS MADE 180,000 MILES



INTERIOR OF EVANSTON CAR

Efficient and Systematic Maintenance Prolongs Life of Rolling Stock and Reduces Operating Costs

Evanston Railway Cuts Power Costs Over 20 per Cent by Careful Inspection and Increases Fare Collections an Equal Amount by Efficient Maintenance

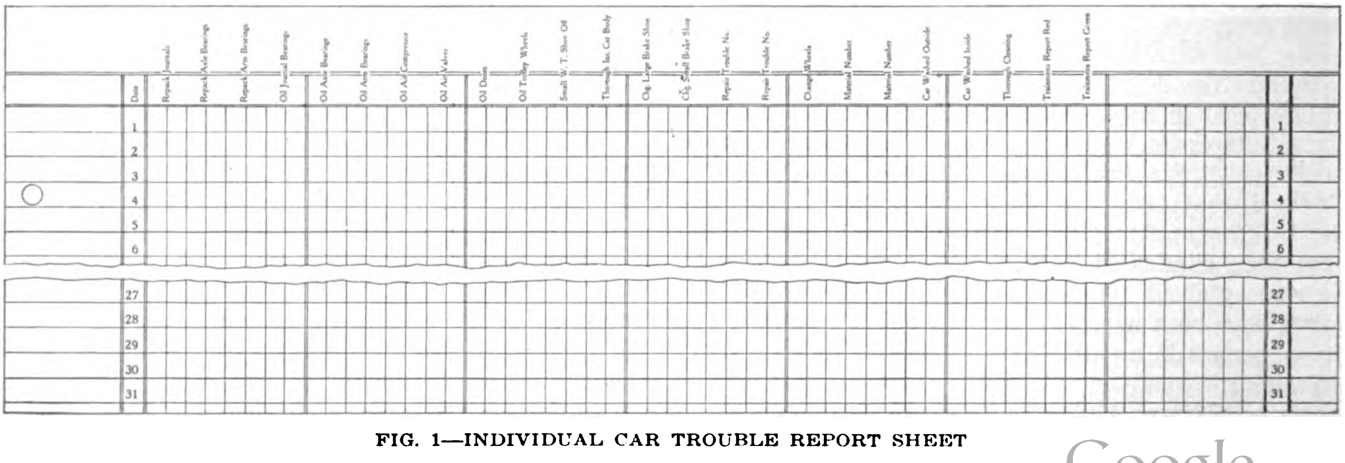
THE Evanston (Ill.) Railway, operating 10 miles of city track and thirteen cars, took over this property in 1913. The system at that time consisted of eight rented cars and approximately the same track mileage as at present. Fate had not been kind to the predecessor and the cars were on the order of the famous "Camel Backs," with the track in a similar condition of deterioration.

As the first step in the rejuvenation thirteen new cars were purchased from the St. Louis Car Company and delivered in 1914. Much of the track was rebuilt and repaved and the balance was rehabilitated by the use of new ties, an Indianapolis welder and a grinder, so that it would last for a few years longer. The entire track was Lorain welded.

The cars to date have made approximately 180,000 miles apiece, operating about 200 miles per day per car at a speed varying from 11 to 12 m.p.h., and with a haul of about 1400 passengers per car per day. This rolling stock to-day has every appearance of new equipment, as is indicated in accompanying illustrations. The company has had practically no motor trouble and an axle failure has never been known. In spite of rising costs, operating expenses have been maintained at normal and many items have been materially reduced. The secret behind this rather exceptional record is chiefly tied up in the one word—efficiency. Some of the methods of maintenance followed at Evanston may interest other roads of similar size which are fighting rapid depreciation because of lack of funds to be used in maintenance.

INSPECTION AND REPAIR GIVE MAXIMUM SERVICE

On Jan. 1, a thorough overhauling of rolling stock begins. Shall we follow one car through the process to see what happens? First, the car is given a thorough washing on the outside. It is then run into the shop and jacked up, the trucks are run into the repair bay and the motors are taken out for a thorough cleaning. Armatures are turned and slotted and painted with P. and B. paint, and journal boxes are packed. In the meantime the inside of the car receives a good scrubbing from the roof to the floor. The cane seat backs and seats are removed from the car, scrubbed and allowed to dry for four or five days, when they are varnished with a quick-drying flexible varnish intended to last one year. The trucks are scrubbed, all bolts inspected and tightened and then the trucks are painted. Before the car is placed back on the trucks, all iron and steel of the



Date	Repack Journals	Repack Axle Bearings	Repack Arm Bearings	Oil Journal Bearings	Oil Axle Bearings	Oil Arm Bearings	Oil Air Compressor	Oil Air Valves	Oil Doors	Oil Trolley Wheels	Small W. T. Shoe Oil	Thorough Ins. Car Body	Chg. Large Brake Shoe	Chg. Small Brake Shoe	Repair Trouble No.	Repair Trouble No.	Change Wheels	Material Number	Material Number	Car Washed Outside	Car Washed Inside	Thorough Cleaning	Trainmen's Report Red	Trainmen's Report Green	
1																									1
2																									2
3																									3
4																									4
5																									5
6																									6
27																									27
28																									28
29																									29
30																									30
31																									31

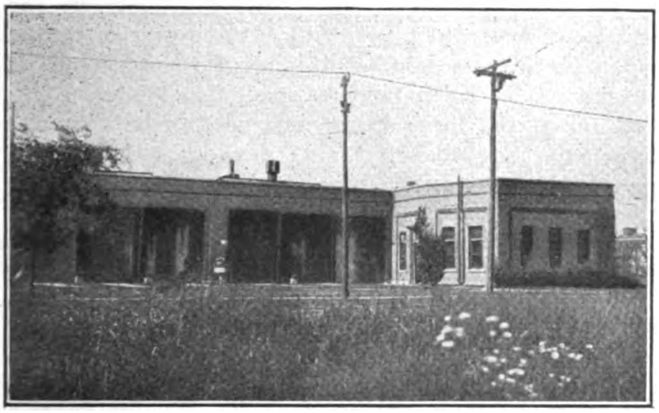
FIG. 1—INDIVIDUAL CAR TROUBLE REPORT SHEET

underframe is gone over with a wire brush and painted. The car body is then varnished and the floors oiled. The Evanston company is convinced that the oiling of floors on its property has demonstrated beyond all question of doubt the advantage of this method as compared with the old method of painting. This constitutes the annual inspection and repair. In addition to this the air brakes and the control equipment are inspected for every 400 miles of operation, which is normally a two days' run. The motors are blown out with air every four months and the floors are oiled every four months. The cars are washed periodically, depending upon the weather conditions.

About May 1, the Peter Smith stoves are removed and overhauled. New grates are installed if necessary, broken parts are welded with the oxy-acetylene torch and the stoves are painted and stored away to be installed in the fall on a moment's notice. Storm sashes come off about April 1. These are cleaned, varnished and stored away to be put on with the first cold weather. A temperature of 65 deg. is maintained in the cars throughout the winter season.

TROUBLE REPORTS VALUABLE

Every crew makes out a daily report of troubles on a sheet similar to that shown in Fig. 2 or O. K.'s the report. This report is printed in green, but one of exactly the same form printed in red signifies that the trainman considers the trouble to be of so serious a nature that the car is not fit for operation until repaired. The main feature of this report is that each trouble listed has a number. The master mechanic enters the car report by numbers on a large sheet like that shown in Fig. 1 each morning. A page like this is kept for each car. A work order similar to Fig. 3 is made from the regular inspection report entry and the trouble report. Thus everything is recorded by numbers. This saves time in making the reports and makes it easy to note at a glance what troubles predominate. When the work is done it is checked off and the order is filed for record.



SHOPS AND OFFICE OF THE EVANSTON RAILWAYS

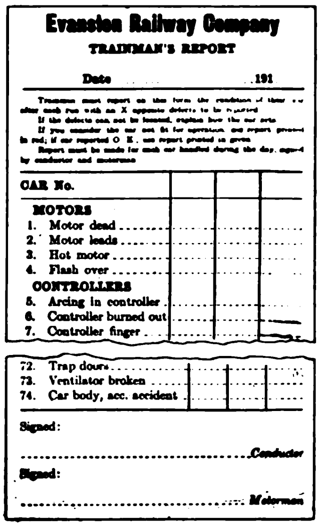
Another item which has helped to reduce the cost of operation has been foresight in the purchase of materials. The order for a recent month to keep the stock replenished consisted of the following:

Fifty 1-in. x 6-in. machine bolts,
Fifty 1-in. x 5-in. machine bolts,
Thirty segments No. 143751,
Twenty-five ½-in. x 3½-in. lag screws,
Fifty K-51 lock trigger controller fingers,
One dozen brooms,

a total amount of less than $40. This was made possible because supplies were stocked up two or three years ago when prices were lower. Fuel for the season is bought, stored and paid for in April of each year.

POWER COSTS REDUCED 24 PER CENT—FARE COLLECTIONS INCREASED 20 PER CENT

An example of what has been done in the way of reducing certain operating costs since the road was taken over by the present management is shown by the amounts paid for power. More cars are operated, more passengers hauled and better schedules maintained, and yet, through careful semi-annual inspection of the overhead and the transmission lines, the amount was decreased from $27,537.34 for the year 1912-1913 by the former company to $20,808.73 for the year 1913-1914 by the present company. This amount has increased gradually to $22,055.02 for the year 1917-1918.



Evanston Railway Company
TRAINMAN'S REPORT

Date 191

Trainmen must report on this form the condition of their car after each run with an X opposite defects to be reported.
If the defects can not be located, explain how the car acts.
If you consider the car not fit for operation, use report printed in red; if car reported O. K., use report printed in green.
Report must be made for each car handled during the day, signed by conductor and motorman.

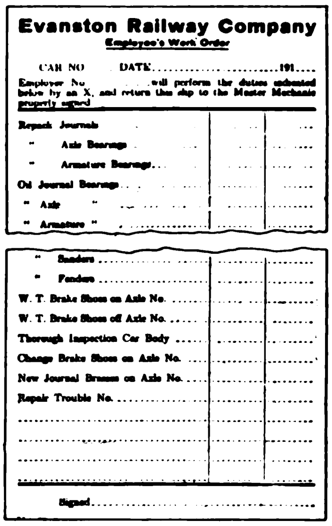
CAR No.

MOTORS
1. Motor dead
2. Motor leads
3. Hot motor
4. Flash over

CONTROLLERS
5. Arcing in controller
6. Controller burned out
7. Controller finger

72. Trap doors
73. Ventilator broken
74. Car body, acc. accident

Signed:
.... *Conductor*
Signed:
.... *Motorman*



Evanston Railway Company
Employee's Work Order

CAR NO DATE .... 191....
Employee No .... will perform the duties indicated below by an X, and return this slip to the Master Mechanic properly signed

Repack Journals
" Axle Bearings
" Armature Bearings
Oil Journal Bearings
" Axle "
" Armature "
" Sanders
" Fenders
W. T. Brake Shoes on Axle No.
W. T. Brake Shoes off Axle No.
Thorough Inspection Car Body
Change Brake Shoes on Axle No.
New Journal Brasses on Axle No.
Repair Trouble No.

Signed ....

FIG. 2—TROUBLES NUMBERED ON REPORT USED AT EVANSTON. FIG. 3—WORK ORDER FOR REPAIR OF ROLLING STOCK

Careful supervision in the collection of children's fares has increased the number from approximately 3000 per month by the old company to 15,000 per month at present. Mail carriers, who formerly rode free at all times, are now permitted this privilege only when in the performance of their duties. The government stood back of this action and advised the company that it could tell when a carrier was on duty as he must then always carry his bag and was not allowed to carry it at any other time. Free rides have thus been reduced by about 15,000 per year.

The wage scale at Evanston is said to have been among the highest in the country for a town of its size. The company enjoys the most congenial relations with the public and fare collections have been increased approximately 20 per cent, due not to an increase in population but to the clean and well-kept rolling stock and the public attitude. In the words of General Manager Speed, "It is the difference between what a company is entitled to receive for its service and what it gets through thoughtless operation, together with the difference between what its expenses should be and what they really are, that makes a company prosperous or otherwise. In other words, it is the petty details that make or break."

How Many Units Should There Be in the Substation?

Advantage of Many Small Units to Follow Load Closely May Be Offset by Higher Cost and Switchboard Apparatus Needed

By G. H. McKelway

Engineer of Distribution Brooklyn (N. Y.) Rapid Transit System

IN THE April 15 issue of the ELECTRIC RAILWAY JOURNAL there was an article entitled "Designing and Operating the Substation for Maximum Efficiency," which describes the Cedar Avenue substation of the Cleveland (Ohio) Railway. The writer of the article is to be congratulated upon the fact that instead of merely describing the general features of the substation, he endeavored to show why the substation was constructed as it was and gave the reasons for departing from what might be considered normal practice.

I am not sufficiently familiar with the prices and efficiency curves of 60-cycle railway substation apparatus to check the statements with any accuracy but I would like to issue a warning against the use of similar arguments in favor of the installation of a large number of comparatively small machines rather than a few large ones, where 25 cycles are employed.

The station in question had a capacity of 12,000 kw. and was built to contain eight 1500-kw. machines. The reasons for installing the 1500-kw. size instead of perhaps four 3000-kw. rotaries were as follows:

1. Better economy could be secured by putting in a large number of small units and cutting them in and out to follow the load as closely as possible.

2. The rotaries and other apparatus used were standard with other apparatus on the system so that an operator requires no breaking in when transferred from one station to another.

3. If one of the eight units is out of commission the others have to carry only 14 per cent overload as against 33 per cent on the other three machines, if one of four rotaries should be lost.

In support of these arguments the following statements were made:

(a) The efficiency of the 1500-kw. unit is practically as high as that of the 3000-kw. unit.

(b) The cost of the two 1500-kw. machines is not much, if any, higher than that of one 3000-kw. machine.

(c) The slightly larger building required for eight of the smaller rotaries was not a factor for consideration as the length of the building was practically controlled by the number of feeder panels necessary.

Now let us look into the merits of the arguments:

1. The efficiency curves of recently designed 3000-kw. 25-cycle rotaries, with static transformers, are practically flat between the limits of two-thirds load and 50 per cent overload, and within these limits the efficiencies are as high as those of 1500-kw. machines working at rated load. It is, therefore, only at times when the load on the station drops to from 3500 kw. to 4000 kw., and when it is below 2000 kw. that there is any advantage in using the smaller machines. If it is desired to follow the load closely at those times it can be done just as well by the use of three 3000-kw. and two 1500-kw. rotaries as if all of the machines were of the smaller size. At the same time advantage can be taken of the higher efficiency of the large machines whenever the load is heavy enough to warrant the running of one, or more than one, of them. The writer has had some experience with a station equipped with one small and several large machines and no station on the system could keep its rotary capacity closer to the actual load than this one, the small machine being the one most used in the entire station.

2. The argument for standardization of all rotaries is a good one. If two sizes of machines were used they would be handled in the same way, the differences if any being so slight as to be entirely unimportant and less than are often found between machines of the same size and general type but differing by a few years in age. What is more important is that two sets of repair parts would have to be carried instead of one. This, while a slight disadvantage, should be greatly outweighed by the advantages dependent upon the use of the larger machines.

3. There is no escaping the fact that with a large number of rotaries the loss of one would overload the others less than if a smaller number were in service. If the load factor of the station were nearly unity this argument would have much greater force than is the case with the usual city railway where there are two marked peaks, one in the morning and the other at night, corresponding with the rush hours. These peaks, while they may extend over a period of perhaps two hours each, are much shorter when the duration of the tip of the peak is considered, that is, the time when the maximum load is on the station. For this reason, even with one rotary out of service, the others may be overloaded for only one hour or even less, and the extreme overload will probably be carried for only fifteen minutes to a half hour. The modern 25-cycle machines are made to carry a 50-per cent overload for two hours without overheating, and for a short time will carry 100 per cent overload without ill effects. Therefore the increase in load which would have to be carried by the remaining large machines, if one of them should be damaged, is of comparatively small importance.

So far as the three statements, used to back up the arguments, are concerned, (a) dealing with the efficiency of the machines is answered in the reply to argument No. 1.

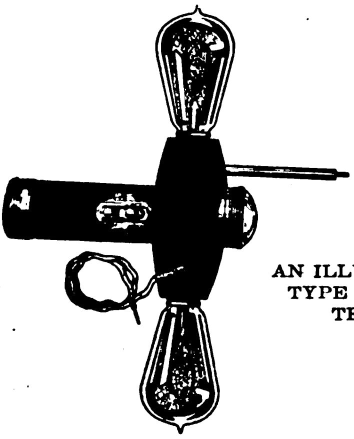
(b) A recent quotation on both 1500- and 3000-kw. machines leads the writer to believe that the single larger rotary would cost approximately $2,000 less than two of the smaller type. Therefore if the equipment of the station were made up of three 3000-kw. and two 1500-kw. machines the cost of the rotaries alone would be about $6,000 less than if eight 1500-kw. machines were purchased. In addition to this there would be a saving on the static transformers, while the smaller number of machines would make unnecessary the purchase of considerable switchboard equipment, both high and low tension. This switchboard material is expensive and the saving occasioned by its being unnecessary to purchase so much of it would add considerably to the amount to be saved on the rotary and static transformers.

The last statement, (c), is to the effect that the size and, therefore, the cost of the building could not be reduced even if the larger machines were used because the switchboard determined its length. The writer evidently did not take into account the fact that, while the number of feeder panels would be unchanged, yet he would save three a.c. and three d.c. machine panels which would presumably shorten the length of the switchboard by 12 ft. A still further reduction in the length of the building could be made by placing the switchboard closer to the end wall of the building and by placing the large door in the end instead of the side wall. By these means the building could be shortened to 90 ft. or 100 ft., instead of an average length of 135 ft. The cost of the building would be approximately in proportion to its size and if that were reduced to two-thirds of the size needed for eight machines there would be a saving of about one-third of the cost of the structure, not including the basement. As the building shown in the plans would cost at least $30,000, it is safe to say that from $8,000 to $10,000 could be saved on the building alone. Add this amount to the saving due to the use of fewer large rotaries and their transformers and to the amount to be saved in switchboard panels, high-tension switches, etc., and the total will be at least $20,000 in first cost as well as a smaller maintenance cost due to the higher efficiency of the machines and the smaller number of them to be taken care of.

Device for Testing Fuses in Service

When a car is in service and trouble of a nature that would indicate an open circuit occurs, the first thing an inspector does is to examine the fuses in that particular circuit. When the time is short, these are usually replaced with new fuses and those removed are kept to be tested in the shop at some future opportunity. This method requires an additional stock of spare fuses above the normal requirement.

A device designed to facilitate the detection of blown fuses and provide a quick means of testing them in service is being marketed by E. S. Blake, 230 South La Salle Street, Chicago.



AN ILLUMINATED TYPE OF FUSE TESTER

The device consists of a dry-cell flashlamp on which are mounted two contacts and two test lamps for testing the fuses. The flashlamp provides light where it is necessary to make the test at night or in dark places. Connections are made across the fuse contacts by means of two contact points connected to the test lamps. In making tests on 500-volt circuits, it is necessary to use two 220-volt lamps connected in series. The device is made also without the flashlamp for the convenience of electricians having their own lamps.

A Universal Bearing Chuck that Saves Time and Labor

By J. W. Strawbridge

Master Mechanic Williamsport (Pa.) Passenger Railway

In the accompanying illustration are shown the details of a chuck and ring for holding motor bearings while they are being bored in a lathe. We have found that the use of such a chuck saves much time and labor and also insures accuracy in the boring of the bearings.

The chuck shown in Fig. 1 is of cast iron. It has a hub at one end, and is bored out and threaded so that it can be screwed onto the spindle of the lathe when the lathe chuck is removed. The larger end of this chuck is bored to a taper of about 1 in. per foot.

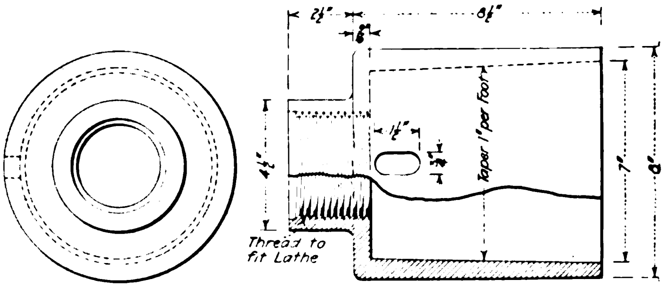


FIG. 1—BEARING CHUCK USED IN THE SHOPS OF THE WILLIAMSPORT PASSENGER RAILWAY

The bearing to be machined is centered and clamped by the split bushing shown in Fig. 2. This type of split bushing was described in the issue of the Electric Railway Journal for June 2, 1917, page 1015. These split bushings are made of cast iron and have the inside bored out so that they will just slip over the motor bearing. The outside of the bushing is turned to a taper corresponding to the inside of the chuck shown in Fig. 1. After the machine work on the bushing has been completed, it is cut through with a hacksaw for its entire length. Where several bearings of different diameters are to be machined the bore of the split bushings is made to fit the different size bearings while the outside has the same diameter and taper necessary to fit the chuck.

In preparing a bearing for machining, it is inserted in the split bushing which is then shoved into the chuck. Owing to the large surface in contact between the bushing and the chuck, it is only necessary to shove this in with the hand to secure it properly. A slot is cut in the chuck at the hub end, and to remove the bearing a drift should be inserted through this slot. A slight tap on the drift is sufficient to remove the bearing.

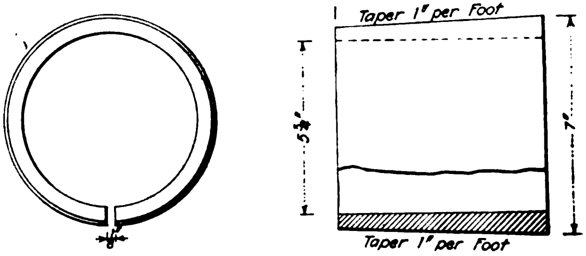
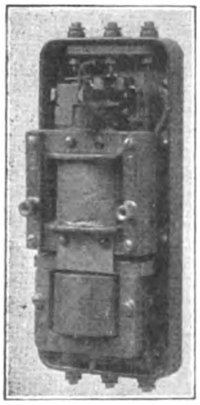


FIG. 2—SPLIT BUSHING USED TO CLAMP BEARING INTO THE UNIVERSAL CHUCK

Transfer Relay Used to Energize Circuit-Breaker Trip Coil

PROTECTIVE relays that operate by closing a separate direct-current tripping circuit which in turn trips the circuit breaker have come into very general use. In some cases, however, a separate direct-current tripping circuit is not available and "transfer" relays are used to provide for energizing the trip coil of the circuit breaker through current transformers. The Westinghouse Electric & Manufacturing Company has placed on the market the type BT relay which can be applied to any make of circuit-closing relay similar to its CO or CR relay. The breaker operates solely through the current transformer and the relays. When there is no fault on the line, the trip coil of the breaker is mechanically and electrically isolated from the circuit, avoiding possibility of tripping due to imperfection in the relay contacts ordinarily shunting the trip coil.


TRANSFER RELAY, COVER REMOVED.

The type BT transfer relay contains two series coils, an upper or operating coil and a lower or holding coil. The holding coil holds down the armature core, until a third coil, wound on the same magnetic circuit and known as the releasing coil, is short-circuited by the protective relay. The releasing coil acts as the secondary of a transformer, and when short-circuited a current flows through it, demagnetizing the core. The holding coil, therefore, allows the operating coil to raise the core which operates the transfer switch, thus closing the trip coil circuit.

The transfer switch and other current-carrying parts of the relay are designed to carry 5 amp. continuously, but during times of short-circuit the switch may be called on to handle as much as 100 or 200 amp.

A current transformer must be selected of sufficient capacity to operate the protective relay, the transfer relay and the trip coil. Low-ratio bushing-type current transformers sometimes used on high-voltage circuit breakers are not suitable.

Only one trip coil is required for use on a polyphase circuit, but if the breaker is equipped with as many trip coils as there are relays, it is advisable to connect each trip coil to its corresponding relay.

Some Data on Heavy Oil Engine Operation

IN A RECENT publication of the Bureau of Mines on the subject of the Diesel engine some interesting data are given as to the cost of generating electrical energy by means of this prime mover. A statement is made that a small plant having a fluctuating load with a yearly output of 1,250,000 kw.-hr. was supplied by a 500-kw. steam turbine, operating condensing, and consuming about 6½ lb. of coal per kilowatt-hour. By the installation of a 200-kw. Diesel engine unit, at a cost of $30,000, a yearly fuel saving of $11,000 could have been realized. The coal in this case was expensive, costing nearly 20 cents per 1,000,000 B.t.u. Variable-speed Diesel engines coupled to generators and built into passenger railway cars have, it is stated, been used in several instances in Europe with great success. The fuel consumption varied from 0.8 lb. to 1.2 lb. per train-mile with a train weight of 30 to 66 tons. The average fuel consumption was from 2 to 2¾ lb. per 100 ton-miles. On a basis of 1 kw.-hr. being generated with a fuel consumption of 0.7 lb. of oil this equals in round numbers 3 to 4 kw.-hr. per 100 ton-miles, or 30 to 40 watt-hours per ton-mile.

New Haven Installs Lead-Covered Cable for Dispatching Circuits

THE officials of the New York, New Haven & Hartford Railroad decided to use lead-covered cable for their dispatching circuits in an attempt to prevent interruptions to service previously occasioned by sleet storms, wind storms and other disturbances that spell ruin to open-wire overhead construction.

The New Haven installation is particularly interesting owing to the electrical and construction difficulties encountered. It extends from the Mott Haven yards in New York, a distance of 70 miles to the New Haven end. As it follows the right-of-way, it parallels the high-tension line over which power is transmitted, at 11,000 volts, single phase.

Much of the right-of-way is through rock formations, making underground construction prohibitively expensive. On such parts of the line, the cable is put on short, heavy, storm-resistant poles. At crossings and at points where the high-tension leads are in close proximity, concrete-incased duct is used. Where conditions permit at other places, the cable is put underground.

The cable, furnished by the Western Electric Company, is of the latest design paper-insulated duplex type containing one pair of No. 10 B. & S. gage conductors, six "quads" of No. 13 and sixteen "quads" of No. 16. Special insulation provides ample protection between pairs and between core and sheath.

All train dispatching is to be over this cable by telephone in conjunction with a complete equipment of Western Electric alternating current selectors. All other wire traffic will also go through this cable, the large conductors of which will be used for through service between New York and Boston. By arrangement with the American Telephone & Telegraph Company, the cable will be "loaded" to provide proper transmission facilities for permitting long distance connections with other points.

The details of construction have been worked out under the direction of N. E. Smith, superintendent of telegraph, and H. A. Shephard, assistant superintendent. Both are personally supervising the details of installation. The construction work is being done by Gibbs & Hill, consulting engineers, New York City.

The Aberdeen (Scotland) Corporation Tramways proposes to extend its present facilities for carrying parcels to include the delivery of bread and meat from shops by means of messengers who would leave the cars at certain points.

Recent Happenings in Great Britain

Women in London Strike for the Same Pay as Men—$750,000 Fire Destroys Equipment—Several Important Construction Developments

(From Our Regular Correspondent)

As the result of a strike, the omnibus services of London were practically at a standstill for nearly a week recently. Several of the tramway services in the outer districts were also suspended. The strike originated in a demand by the women workers for the 5s. additional "war wage" recently given to male employees doing similar work. At the end of June last an application for increased wages to tramway and omnibus employees was referred to the committee on production, which awarded an additional wage of 5s. a week, making a total war advance of 25s. a week. The women were not included in this as the committee held they had not established the same claim to it. The award was unsatisfactory to the women workers and a strike was commenced by the conductresses on certain of the London tramway systems and several of the bus routes refusing to work except on terms of equal pay for work like the men's. The trouble spread rapidly, with the result that in a short time practically all the bus services of the metropolis were idle. The inconvenience to the public may be gathered from the fact that the buses carry an average of about 2,000,000 passengers daily. The London County Council Tramway service and the tubes and underground railways were not affected to any extent and the crowding of these systems by the people ordinarily employing other means of transit created great congestion. Work was resumed as the result of negotiations between the employees and the Ministry of Labor and the matter was again referred to the committee on production. That committee has now issued its award, as follows:

1. To those grades of women, aged eighteen years and over, whose terms of employment include an undertaking that they shall be paid the same rates as the grades of men whose places they have filled, there shall be paid such advance as shall give 25s. a week over the pre-war rates of the grades concerned, payment to be made on the basis of a week of six days or six shifts.

2. In the case of women, aged eighteen years or over, not covered by the above clause, the advances now being paid shall be increased by 5s. a week, subject to a maximum of 25s. a week over the pre-war rates of the grades concerned, payment to be made on the basis of a week of six days or six shifts.

3. The increases hereby awarded shall take effect as from the beginning of the first full pay following July 9, 1918. They are to be regarded as war wages, and recognized as due to and dependent on the existence of the abnormal conditions now prevailing in consequence of the war.

The committee recommends that the whole question of women's wages and advances should be made the subject of a special inquiry, and a notice has been issued stating that the government has decided to appoint a committee "to investigate and report as to the relations which should be maintained between the wages of women and men, having regard to the interests of both, as well as to the value of their work. The recommendations should have in view the necessity of output during the war and the progress and well-being of industry in the future."

Following the omnibus and tramway strike in London, a partial stoppage of work took place on some of the tube railways, due to a section of the employees of the Underground Electric Railways, London, going out on strike. In this case also the demand was for equal pay to women and to men for equal work. After two or three days the strikers returned to work on the advice of the union officials and negotiations have been entered into for a settlement of the points at issue.

The London General Omnibus Company is about to introduce on selected routes twenty double-deck gas-driven omnibuses. The scarcity and the high price of petrol have led the company to make a series of investigations with the object of finding an efficient substitute, and the conclusion arrived at is that coal gas is the only satisfactory alternative fuel available. The method of carrying on the roof of the vehicle a large bag inflated with gas, as was done in the case of a number of commercial motor vehicles, was not applicable to double-deck omnibuses. Instead, the vehicles have been equipped with wire-wound metal cylinders to hold compressed gas. The cylinders are placed out of sight under the longitudinal seats of the lower deck. The gas-equipped vehicles present practically the same external features as the ordinary petrol-driven omnibuses. As regards running expense, it is stated that including charges for compressing the equivalent in gas of 1 gal. of petrol, the cost is 1s. as against approximately 3s. for oil.

One of the most destructive fires which have occurred on Tyneside for many years broke out recently at the electric train sheds of the North-Eastern Railway at Heaton, Newcastle. Thirty-eight electric coaches and the sheds, which covered 5 acres of ground, were completely destroyed. The damage is estimated at £150,000. Electric train traffic from Newcastle to the sea coast is very heavy and there were more than ninety coaches in the sheds when the fire was discovered about 7 o'clock in the morning. It was not until midday that the fire was under complete control. Fifty-three coaches were taken out undamaged. In order to meet the needs of passengers to the coast steam trains have been utilized to supplement the electric service.

With the object of reducing the consumption of electricity, the number of usual stopping places on the Keighley Tramways has been reduced by about one-third. At present two of the three trackless car routes are not in use owing to the inability of the tramways department to get motors repaired, and it is likely if the necessary 15 per cent reduction in current is not secured by the reduction of the number of tramway stopping places that the remaining trackless car service may be stopped.

A linking-up of Sheffield and Chesterfield—12 miles—by tramcar is being arranged, the Sheffield Corporation having entered into an agreement with the Chesterfield Rural Council to construct a tramway to Dronfield.

It has been decided to discontinue the Sunday service of tramcars in Huddersfield so long as the present restriction on coal continues.

In view of the necessity for exercising economy in regard to the consumption of electrical energy, the Wallasey tramway committee is reducing the number of stopping places and is granting a bonus to motormen for the saving of current. It is also proposed that the cars stop half an hour earlier.

A conference of representatives of publicly owned electric undertakings on the North-East Coast was held at Newcastle recently to consider the report of the government committee, which recommends the creation of a number of super-power plants in various parts of the country. The feeling of the meeting was strongly opposed to the idea of such plants being in private hands, and it was suggested that representations should be made to the government in favor of the proposed plants being controlled by a public electricity board. The conference was adjourned without any definite decision being arrived at.

A scheme is being promoted by the Dublin and Lucan Electric Railway to utilize the Salmon Leap Falls on the River Liffey in Ireland for the generation of electrical energy. The main feature of the plans is an increase in the present fall of 17 ft. to 40 ft. The estimated cost is £50,000, and it is proposed that the entire capital expenditure shall be borne by the government. It is stated that the scheme should save more than 16,000 tons of coal a year.

The Birmingham Corporation has adopted the amended scheme for the permanent generating station at Nechells, for the mains and substation equipment and for a linking-up main between Nechells Station and the Smethwick boundary. The estimated cost of the work is £1,626,140. A. C. S.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Staggered Hours Win

Fear of Spanish Influenza Accelerates Adoption for Government Employees in Washington

The plan for staggering the hours of Washington car riders, submitted by John A. Beeler to the Public Utilities Commission of the District of Columbia on March 22, 1918 (ELECTRIC RAILWAY JOURNAL on April 6, page 655), went into effect in large measure on Oct. 3. The details of the plan had been under consideration for some time, but it did not become effective for one reason or another until the ravages of Spanish influenza made it desirable to reduce street car crowding immediately as much as practicable.

The following table shows the old and new opening hours of the principal interests affected:

	Employees
Agriculture, from 9 to 8.30 a.m....	3,243
Commerce, 8.45 to 8.30 a.m.......	625
Bureau of Engraving, 8 to 7.30 a.m.	7,400
Interior, 8.45 to 8.30 a.m..........	2,300
Labor, 9 to 8 a.m.................	500
Patent Office, 9 to 8.30 a.m.......	1,000
Pension Office, 9 to 9.30 a.m.......	1,000
Post Office, 9 to 8.30 a.m.........	1,800
Treasury, 9 to 9.30 a.m...........	2,900
Int. Com. Commission, 9 to 9.30 a.m.	1,000
Railroad Administration, 9 to 9.30 a.m.	1,000
Business houses, 9 to 10 a.m......	15,000

Changed hours for the War Risk Bureau, now employing 11,000 people, are also under consideration. Washington stores have been ordered not to open before 10 a. m., and no employees of such stores save those in freight and shipping departments may report before 9.50 a. m. Chairman Brownlow of the District Commission has taken up also with the Merchants and Manufacturers Association and store people generally the matter of opening stores at 10 a. m. and closing them at 6 p. m. The only exception would be such stores for groceries, meat and other food.

This really startling adoption of the staggered hour is due in large measure to the quick wit of the commission which impressed Surgeon-General Blue and Secretary McAdoo, who has the Public Health Service under his jurisdiction, that this method of thinning out electric railway travel would be an excellent precaution against the spread of Spanish influenza.

The half-hour peak in Washington has now been spread over two hours, and the crowding has been greatly decreased. The only obstacle to perfection is the sick list of two hundred car operators.

Let the City Try It

Colonel Kealy Offers Kansas Lines of His Company to City for Six Per Cent Guaranteed Return

The Kansas City (Mo.) Railways has met squarely the issues raised by the officials of Kansas City, Kan., over service, fares and wages. After numerous published interviews with city officials and two mass meetings at which public ownership was discussed, P. J. Kealy, president of the company, sent a letter to Mayor Harry A. Mendenhall of Kansas City, Kan., offering to turn over the electric railway property to the city, the only condition being the payment by the city of 6 per cent interest on the capital investment of the company.

The wages of employees on the Missouri side were increased, as the company promised, when the Missouri Public Service Commission granted the 6-cent fare for the lines in Missouri. There has been no such fare advance on the Kansas side, and consequently no means of paying increased wages except from the savings arising from the suspension of service on one of the Kansas lines. On Sept. 24, however,

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You Don't Always See the Target

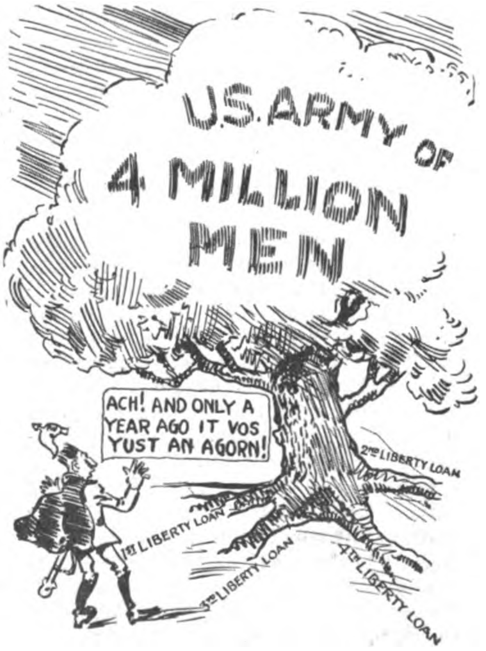
AN ARTILLERYMAN works behind the fighting line. Often his gun is parked in some quiet field where the birds sing and there is no indication of warfare.

Over a telephone comes the small voice that gives him the range and orders him to fire.

The breech block is swung open, a shell pops into the big bore, the block closes greedily upon it, the engine is discharged. With a roar of exploding gases the big shell whines along, rising high in a great arc that drops it miles beyond the gunner's horizon.

THE fire continues with a steady rhythm of work—the block opens, the shell slides home, the breech closes and the gun is discharged over and over again. The artilleryman, sweating, blinded with smoke and gases, choked with dust, supplies the mechanism with the mechanical regularity of the stoker of an ocean liner—and sees no more of his work's result than does the fireman.

Except for occasional distant word by telephone or signal the artilleryman sees no more of battle than the man at home who buys a Liberty Bond to supply the big gun with ammunition.



Yet both men are serving to the limit. Without them wars could not be won.

The shell that screams its way beyond the horizon hits the enemy's ammunition dump or breaks his line of supplies, though the artilleryman works on in ignorance of his hit. The Liberty Bond smashes the enemy's morale when its total of billions is known to him—and it buys the rifle that sends a victorious American safely into an opposing trench to capture a new position, though the man at home who bought it never sees more than the dotted line where he signed his application blank and the engraved certificate that came in return for his money.

THE artilleryman is a soldier schooled to keep on with his monotonous work regardless of the fact that he cannot see his hits.

Should the man at home, asked to buy more Liberty Bonds, be any less of a soldier because he cannot see the damage caused by his contribution?

We must be a nation of well-trained soldiers, each doing his share faithfully, until this war is done. Then we may all rejoice in the victory our work has brought.

the Kansas Public Utilities Commission directed the company to restore this service.

The letter of Colonel Kealy follows in part:

> Contrary to the action of municipal authorities in the majority of the cities of the United States, you have constantly opposed any form of relief which would help meet the expenses of the service demanded. For this reason we have been unable to grant the increase in wages to our Kansas side employees which was given those in Missouri on July 16, 1918. In order to deal justly with these employees and give them an increase commensurate with the increase in the cost of living, it was necessary to discontinue service on the Argentine-Minnesota line. The resulting saving has made it possible to pay the same wages in Kansas as in Missouri.
>
> We are now operating in Kansas City, Kan., at a daily loss of $1,200. No return on the investment has been paid in more than five years, and the operation of the Kansas lines has not even earned any interest on the bonds for three months. The lines in Kansas have been supported and the service rendered has been made possible by Missouri earnings.
>
> In view of the seriousness of the situation and in order to guarantee to Kansas City, Kan., the continuation of good street car service at its cost of production, I am empowered to make the following offer through you to the people of Kansas City, Kan.: We will surrender to the city complete control of the electric railway system in Kansas City, Kan. In return, the city is to guarantee a 6 per cent interest return on the capital invested.
>
> If there is any legal or other obstacle to entering into such an arrangement, insuring the carrying out of such plan and adequately protecting the rights of both parties thereunder, then we offer to aid you in removing same. Under this plan the city will be in a position to furnish service at cost and to charge whatever fare is necessary to cover the actual expense of service.
>
> We stand ready to turn over a street railway system which would cost to reproduce much more than its present valuation. We have endeavored to give good service, fulfilling in so doing our legal responsibilities and our moral obligations to the city. If, in public opinion, we have failed, we shall be very glad to be relieved from a thankless task and let public officials assume the management and fix the rate of fare. The matter is extremely urgent and demands prompt action if total and immediate suspension of service is to be prevented.

Kansas Employees' Demands Excessive

Hearing Before War Labor Board Shows Wage Advance of 146 per Cent and Rise in Living Cost of Only 81 per Cent

Representatives of the War Labor Board in Kansas City on Sept. 18 took testimony in regard to higher wages for employees of the Kansas City (Mo.) Railways. The subject came before the board under a joint agreement between the company, the Kansas City Railways Employees' Brotherhood and the Amalgamated Association of Street & Electric Railway Employees. The agreement stipulated that any advance in wages granted should be limited by the financial ability of the company. Part of the evidence, therefore, consisted of the showing by the company of its financial condition.

Could Not Meet Operating Expenses

The men in their petition to the War Labor Board asked for an increase which would add over $4,000,000 to the present payroll, or $1,500,000 more than double the present payroll. The increase given in July added $560,000 to the payroll. Although demanding this enormous increase from the War Labor Board, the union in July in making their demands on the company asked for an increase of approximately $1,500,000. The company is now facing, on a basis of the 6-cent fare and present wages, a deficit of more than $900,000 for the year ending June 30, 1919. If the demands of the union were granted, the company would fail to earn its bare, day-to-day operating expenses by $2,500,000 a year. It would have a deficit under fixed charges of more than $5,000,000 a year.

The company's tables showed that (using figures of the United States Bureau of Labor Statistics, of the Railroad Wage Commission and from the results of inquiry in the local field) the cost of living has increased 81.63 per cent in Kansas City between 1900 and July of 1918, and that in the same period wages have increased 146 per cent. This showing is particularly interesting in view of the testimony of employees that living conditions were much better in 1900 than in 1914.

Furthermore, the company showed that the scale of wages adopted in August, 1917, was the result of collective bargaining and therefore represented a response to any advanced standards of living. Since then living costs have advanced 11 per cent, and in July of this year a wage advance of 20 per cent was granted, thus keeping the wages consistently ahead of living costs.

The company had taken much pains to collect for the War Labor Board accurate information on actual living conditions among its employees. One of the exhibits, for instance, contained photographs of homes which employees owned or had equity in—paid for out of wages, and many times at the rate of $15 a month. There were other photographs of houses rented by employees, at $15 and $16 a month. All these were obviously modern homes in good neighborhoods. The company also exhibited copies of *The Railwayan*, the monthly publication formerly issued for the employees, containing many pictures of homes built for or by employees and accompanied by the employees' stories of the purchases.

Housing Conditions Good

The company went even further and exhibited photographs of modern houses, in good neighborhoods convenient to carhouses, that could be rented at $15 to $18 a month. These houses were discovered as available in the "want ad." columns of the daily papers. It was particularly significant that moderate priced homes were available within walking distance even in the high-class residence district adjacent to one south-side carhouse. A statement of the secretary of the Real Estate Board was exhibited, declaring that the rent of detached houses had not increased in Kansas City.

The company's exhibits also indicated that food prices in Kansas City are from 3 to 16 per cent below food prices in Eastern cities, and more than 5 per cent lower than food prices over the entire United States.

An elaborate display of vital statistics, collected largely through questionnaires, proved of real value. This exhibit showed that the average family among employees of the company consists of 3.4 persons, and that 68 per cent of married employees have family groups of less than five persons, five being the unit on which estimates are based in cost of living budgets. More than 42 per cent of the employees either own their homes outright or have an equity in real estate, and 33 per cent are living in their own homes. Of 1000 employees selected at random from among the employees, 512 came to the company from farms.

The company also showed that Kansas City Railways employees are now receiving an average annual wage higher than is paid to 51 per cent of steam road employees. Employees of steam roads who in 1915 were getting from 22 to 28 cents an hour are now, since the general advance to railroad employees, getting in no case more than 1½ cents, in most cases less than 1 cent, in excess of the wages paid the electric railway employees. It was mentioned that with the two free uniforms given the electric railway employees, such employees are receiving considerably more than steam road employees. It was also pointed out that steam road employees usually have to ride to their work, while the electric railway employees usually live near their work and do not have to pay car fare.

Strike On in Buffalo

Unable to meet the demands of its employees for a wage increase because of the restrictions of a 5-cent fare, the International Railway, Buffalo, N. Y., could not prevent a strike of 1800 trainmen on the morning of Oct. 3. The War Labor Board recently granted higher wages contingent upon the adoption of a 6-cent fare. This fare was later voted down at a public referendum, although approved by Council.

At a mass meeting on Oct. 3 in the Chamber of Commerce the business interests of the city agreed to raise a fund of $75,000 and loan it to the company to meet the wage increases. The trainmen, however, refused to accept the offer because it did not allow them back pay.

No effort is being made by the company to operate cars. All of the International lines are tied up, including the Niagara Falls, Lockport and Olcott interurban divisions and part of the Niagara Gorge route. The Buffalo & Lake Erie Traction Company, operating between Buffalo and Erie, is tied up by a strike at the same time.

Cleveland Women Object

Organize to Fight Dismissal From Railway Service by Federal Labor Investigators—Chamber of Commerce and Women's Clubs Ask Rehearing

The women conductors of the Cleveland (Ohio) Railway met on Sept. 24 to formulate plans for asking Secretary of Labor Wilson to reverse the decision of the two federal investigators who recently barred them from their positions after Nov. 1. The decision was noted in the ELECTRIC RAILWAY JOURNAL cf Sept. 28.

The decision of the investigators was not derided, and no fight was made against the union. The women simply insisted upon an opportunity to render patriotic service in releasing men who could perform more important duties in connection with the war.

A formal organization was effected at the meeting, and a general committee was selected to conduct the case. A telegram was sent to Secretary of Labor Wilson, informing him of the first step that had been taken, and a more detailed communication is being prepared for transmission by mail. The women have in preparation 9000 petitions, signed by citizens, asking that they be retained as conductors. It was intended to have them ready for shipment to Secretary Wilson on Oct. 3.

CHAMBER OF COMMERCE PROTESTS

The Chamber of Commerce has interested itself in the finding of the investigators on the broad ground that it is not in line with the policy of the government in urging women to enter industry. In order to place the matter squarely before him, the Chamber on Sept. 27, sent Secretary Wilson a telegram reading in part as follows:

> Whether the decision reached by your representatives was justified by the narrow limitations of their field of investigation we do not pretend to know, but we earnestly urge upon your attention that these limitations have produced a ruling that is a source of widespread dissatisfaction to the working people of Cleveland, and particularly to the women in industry; that it tends to discourage women from entering industry on patriotic grounds as well as economic grounds; that it produces a condition of uneasiness and uncertainty on the part of women in industry; that it renders more difficult the labors of other representatives of your department who are seeking to convince manufacturers of the national necessity of diluting labor; that it suggests to particular classes of industry, by inference, the approval of the government of a policy restricting the employment of women so long as men can be employed, and that these general conditions are brought about by reason of the fact that the working people do not understand that the field of your investigators' study was restricted by the nature of the question submitted to them.
>
> The records of your department offer abundant proof of the extreme shortage of man power to meet the national requirements of production in the interests of the United States and her allies. Your records show in detail the situation in the Middle West and form the basis of the urgent representations which your department has made to industry to bring about as speedily as possible the dilution of labor necessary to send and maintain an army abroad.
>
> The Cleveland Chamber of Commerce therefore earnestly urges that you cause as speedily as possible a rehearing of this case on the broad question of policy and of national interest involved in the employment of women by the Cleveland Railway.
>
> We believe an investigation on these broad grounds would lead to a totally different conclusion from that reached by the previous restricted investigation. Whether or not it produces a different conclusion, it is exceedingly desirable that such an investigation be made at once in order to dispel the disastrous misunderstanding and misinterpretation of the government's policy toward the employment of women in industry which the present decision fosters.
>
> We believe it to be true that the effect of the ruling upon the electric railway service in this city would be extremely serious. Indeed, your investigators admit that the decision would lower the standard of electric railway service. But the purely local application of the decision so completely fades into insignificance that we lay no stress upon this point.
>
> We believe a gross injustice will be done to a large number of women employees of the Cleveland Railway if the decision stands. But, again, we admit that individual injustices are perhaps inseparable from a period of severe industrial stress.
>
> We base our request for a reopening of this question upon its broadest aspects and entirely without regard to the particular interests of the Cleveland Railway, the women employees, or the electric railway men's union, all of whose interests must be made subservient to the paramount interests of the times.

WILSON SAYS QUESTION IS LOCAL

In reply to a telegram that was sent to Secretary Wilson on Sept. 25 by the State Committee on Women and Children in Industry, the following telegram was received on Sept. 28:

> There is no question of general policy respecting the work of women involved in the Dielmann-Russanowska decision. All questions of general policy affecting women in industry will be passed upon by the women in industry bureau of the Department of Labor.
>
> There was but one issue submitted, viz.: Is the Cleveland Railway justified in employing women as street car conductors in Cleveland because of shortage of man power? The agents visited the company's employment office and in one day fifty men and twenty-five women sought employment; thirteen men and twenty-three women were permitted to file application papers. Since January the Cleveland employment office has had 13,500 more applications for jobs than the requests of employers; 500 men applied daily for the first three days of each week to the Cleveland employment office for jobs. The street car company has not applied for men to the employment service.
>
> Upon these and similar facts the decision was made. Unless it can be shown that there is error in the information secured or the issue is submitted in a different form, it does not seem that anything would be accomplished by reopening the case.

PUBLIC AND WOMEN NOT CONSIDERED

In discussing the case at a meeting of the women conductors, Miss Rose Moriority, assistant secretary and treasurer of the Champion Stove Company, said that the decision itself indicated that the rights of the two most interested parties had not been considered by the agents at all—first, the rights of the public, and second, the rights of the women conductors. Neither was called upon to furnish any information, and apparently their existence was entirely forgotten in the consideration of the question as to whether the union should or should not dictate the company's course.

Another phase of the situation not mentioned in their decision by the agents, or by Secretary Wilson, is the character of the male applicants. In one day while the investigators were in Cleveland, Miss Moriority said, eleven of the applicants were men classified by the draft as morally unfit for service in the army, and a number of others almost as bad presented themselves.

A. L. Faulkner, United States commissioner of conciliation for the Cleveland district, has gone to Washington to present to Secretary Wilson affidavits from John J. Stanley, president of the company; George L. Radcliffe, general manager, and A. L. Behner, employment manager, in which they assert that before they employed women they attempted, without avail, to secure male help from the United States employment service.

The women's suffrage organizations and a number of clubs are upholding the women in the fight for their rights, and apparently strong support is rallying to them all the time. It is believed that the labor department will not be able through academic argument to escape reopening the case. It looks as if there would be a demand for recognition of the right of women to work where they chose to work.

A statement, signed by Mrs. Laura Prince, chairman of the women conductors' organization, sets forth the following reasons for asking reconsideration:

1. The decision rendered by the federal investigators was given without any hearing being afforded the women.

2. The investigation proceeded upon the assumption that only two parties were concerned in the controversy; namely, the union men and the Cleveland Railway. Two other important parties should have been considered, the public and the women operators.

3. The interests of the Cleveland public demands that the women now employed as conductors be retained. There are 183 women now operating cars. The interest of the public demands as little change as possible in the service. The discharge of 183 conductors on Nov. 1 will affect the service. The men who displace women must learn their jobs. Very few of these men are more than 45 years old. They will again be displaced as the new draft goes into effect, and early in 1919 a second change is inevitable. This break in the efficiency of the service, admitted by the investigators, is particularly serious in Cleveland, which is the center of munitions manufacture.

4. The women conductors are worthy of some thought. They have left other positions to enter the railway service. Many of them have dependents, owing to the fact that their husbands, sons or brothers have entered the military service. Justice to these women demands that they be retained.

5. The interest of the American public demands not only that the women now in the service be retained. but also that new women be employed upon the street cars. Women act as conductors with ease and efficiency. It is true that men are applying for posi-

tions as conductors, but meanwhile munitions factories and farms are short of men. The men who apply for the conductors' work could get jobs elsewhere, for they can do essential war work which women cannot perform.

Deferred Classification

New York Will Retain Skilled Workmen and Men in Positions Women Cannot Fill

A general expression of opinion in regard to the draft status of electric railway employees in New York City has been given by G. L. Ingraham, chairman of the district board, in reply to a letter from Samuel H. Ordway, member of the Public Service Commission for the First District of New York. The finding, in brief, is that those who are shown to be essential to the maintenance and operation of the railways will receive deferred classification.

Mr. Ordway, after explaining the important war service being carried on by electric railways, said:

"In view of these facts the Public Service Commission is of the opinion that all employees of the subway, elevated and street surface railways in the city who are necessary to efficient and adequate maintenance and operation ought in the public interest to receive deferred classification.

"It seems to us that this classification should include the men actually engaged in both maintenance and operation, including motormen, conductors and guards, platform guards, switchmen, starters, dispatchers and their assistants, tower men, signal maintainers, inspectors, trackmen, skilled mechanics engaged in the maintenance and repair departments and powerhouse employees. In our opinion it is not so essential that this classification should include the ticket agents and ticket choppers at the stations.

In reply Mr. Ingraham said:

"This board has held that these transportation companies are industries essential to the national interests during the war, and that those employees who are essential to the maintenance of these railways should receive deferred classification. In view of the situation as stated in your letter, I have no doubt that the board will grant deferred classifications to all of those who are essential to the management and proper conduct of the train service of these roads, and especially those positions which women are not fitted to fill. This would include, of course, all those workmen who are skilled in the repair of machinery and cars of the system and skilled mechanics in powerhouses.

"It is quite essential in preparing claims for deferred classification that it be shown that the registrant is essential to the maintenance and operation of the railroad, and those who are essential I am satisfied will receive deferred classification. You may take this communication as the general determination of the district board to that effect."

Seattle Sale Being Closed

The city of Seattle, Wash., has engaged Smith, Robertson & Moorehouse of Seattle, certified public accountants, to check the books of the Puget Sound Traction, Light & Power Company prior to closing the deal for the purchase of the system by the city for $15,000,000. It is expected the firm will have a statement ready in about ten days. Oct. 1, as noted in last week's issue, was the date set for the transfer of the property.

Ford, Bacon & Davis, New York, have notified Mayor Hanson that one of their experts will be sent to Seattle to assist in closing the deal for the purchase of the system. Peter Witt, Cleveland, advised the City Council that he would be unable to come to Seattle to assist in the transfer.

M. E. Sampsell, president Seattle & Rainier Valley Railway, is in Seattle to arrange for the sale of this property to the city. Besides the city lines, the property includes a 4-mile interurban to Renton. The Rainier line would give the city an outlet to the south end and relieve the congestion on First Avenue. It also would solve the problem of getting a cross-town line in the south end that would serve a big industrial section now without transportation. Prices have not been discussed, but it is intimated that about $2,000,000 will be the figure set by the company.

Grand Rapids Men Get 40-46 Cents

Members of the City Commission, sitting as a board of arbitration in the wage dispute between the Railway Employees' Association and the Grand Rapids (Mich.) Railway, have reported the following findings:

Motormen, conductors and motor inspectors to be paid 40 cents an hour for the first three months of service; 43 cents per hour for the next nine months of service, and 46 cents an hour after the first year's service, with no extra pay over schedule for overtime.

The same ratio of increase shall apply to all other employees referred to in the arbitration. The new scale will be dated from Sept. 1, 1918.

A rate of 50 cents an hour with time and a half for overtime was asked by the men. They are now receiving 38 cents an hour for the first six months, 39 cents an hour for the next six months and 40 cents an hour thereafter.

According to the previous arrangement, a signed contract for one year will now be prepared. The new wage rates, it is said, constitute the third increase since Jan. 1, 1918.

With the wage problem settled, the commission will next turn its attention to the question of the 7-cent fare asked by the company. An ordinance granting the requested increase has been placed on its first reading by the commission, and if passed it will be sent to the electors at the Nov. 5 election for ratification.

News Notes

Chicago Wants Engineer.—The West Chicago park commissioners are looking for an electrical and mechanical engineer to take charge of their electric lighting system for more than 30 miles of boulevard and 800 acres of parks and to look after their steam heating plants. The salary is $3,300 a year.

Detroit Injunction Dissolution Denied.—On Sept. 24 Judge Dingeman in the Circuit Court denied the motion of the Detroit United Railway for a dissolution of the injunction restraining the company from violating the Kronk ordinance. This ordinance forbids a fare higher than 5 cents and orders the company to sell tickets for six for a quarter. Attorneys for the company are now seeking to upset the injunction in the Supreme Court on the ground that these rates are confiscatory.

Twin City Unionists Bob Up.—The War Labor Board has been asked by Minneapolis and St. Paul locals of the Amalgamated Association of Street & Electric Railway Employees of America to consider the situation among employees of the Twin City Rapid Transit Company. The petition demands 60 cents an hour for trainmen, 50 cents an hour for shop and track employees, a basic nine-hour day to be performed in not more than eleven hours, and time and a quarter for overtime. The petition attacks the Minnesota Public Safety Commission and various citizen organizations for their diligence in suppressing disorder during a strike several months ago.

Conciliator Settles Lexington Differences.—Federal Conciliator Hywel Davies has settled the trouble between the Kentucky Traction & Terminal Company, Lexington, Ky., and its employees. The new contract, as accepted by both sides, dates from July 1, 1918, and will continue six months after the signing of the treaty of peace. It provides for a general increase of 5 cents an hour for motormen, conductors and shopmen. The "open shop" principle is to prevail in the selection of employees, with no discrimination against members of the union. Members are to be permitted to wear the union button, and employees will have free transportation for themselves and families. Future differences, when not settled by a conference of the grievance committee and the company officials, are to be submitted to a board of arbitration, composed of a representative of the company and of the association and an umpire selected by the Secretary of Labor. After the settlement the men pledged themselves to invest all back pay in Fourth Liberty Loan bonds.

Financial and Corporate

770,900,000 Passengers a Year

Increased Costs and Taxes, However, Cut I. R. T. Operating Income $2,700,000, or 13 Per Cent

While there was an increase in the number of passengers carried by the Interborough Rapid Transit Company, New York, N. Y., during the year ended June 30, 1918, on both the subway and elevated divisions, as compared with the previous year, the increased costs of labor, materials and taxes more than absorbed the increased income from fares. The number of passengers carried was 770,998,335, as compared with 763,574,085 last year, an increase of 7,424,250, or 0.97 per cent, the result of a gain on the subway division of 4,143,674, or 1 per cent, and a gain on the Manhattan Railway elevated division of 3,280,576, or 0.94 per cent.

The gain on the subway division was the result of an increase of 15,002,257 in passengers carried over new lines in operation and a decrease of 10,858,583 in the traffic over the old subway lines. The increase on the Manhattan division was due principally to the opening of extensions during the year.

The gross operating revenue for the year ended June 30, 1918, increased $631,581 or 1.58 per cent. This was the result of a gain on the subway division of $385,555 or 1.80 per cent, and on the Manhattan Railway division of $246,026 or 1.33 per cent.

OPERATING EXPENSES UP 15 PER CENT

The operating expenses increased $2,530,043 or 15.25 per cent. Of this $1,041,579 was on the subway division, caused by an increase of 1,433,721 in car mileage operated, an increase of 1.62 in the number of miles of road operated at the close of the year and the continued tendency to increased cost of labor and materials. On the Manhattan Railway division the increase of $1,488,463 reflected the continued increase in the cost of labor and materials; operations over extensions, and the increase of 4,043,450 in car-miles operated.

The net operating revenue decreased $1,898,461 or 8.15 per cent. The loss on the subway division was $656,024 or 4.92 per cent, and on the Manhattan Railway division $1,242,436 or 12.49 per cent.

TAXES JUMPED 30 PER CENT

The total amount of taxes represented an increase of $887,198 or 30.89 per cent. The subway division showed an increase of $847,900 or 105.79 per cent as the result of an increase in the rate of the federal income tax, the federal capital stock tax and the excess profits tax. The Manhattan Railway division showed an increase of $39,298 or 1.90 per cent, the result of an increase in the special franchise and real estate taxes.

As a result of the increased expenses and taxes, the income from operation showed a decrease of $2,785,659 or 13.65 per cent, the result of a loss on the subway division of $1,503,924 or 12 per cent, and on the Manhattan Railway division of $1,281,735 or 16.27 per cent. The non-operating income increased $34,523 or 6.17 per cent.

$28,200,000 EXPENDED FOR NEW CONSTRUCTION

The gross income decreased $2,751,136 or 13.12 per cent, the loss on the subway being $1,491,987 or 11.46 per cent, and on the Manhattan Railway division $1,259,149 or 15.38 per cent. Income deductions increased $1,471,462 or 12.17 per cent. The surplus after dividends of 17½ per cent on the capital stock was $1,046,267, or $1,056,387 below that of the previous year.

Additions and betterments were made during the year, including the company's contribution toward the construction and equipment of new lines, to the amount of $28,267,877.

Three hundred and forty-four additional cars were purchased and placed in service, and all of the Manhattan Railway division motor cars were equipped with trip devices for the purpose of automatically stopping trains should the motorman pass the danger signal.

According to T. P. Shonts, president of the company, an increase in fare is needed, not for the purpose of increasing compensation to the company over that established by the contracts with the city, but to enable the city to meet current deficits. An increased fare would force more than 500,000 or 600,000 non-residents of the city of New York, who use the transportation lines, to bear a portion of the cost; whereas the continuance of the present 5-cent fare would result in increasing the burden upon taxpayers of the city of New York, through an increase of the tax rate to meet the current deficits. Application has been made to the Public Service Commission and the Board of Estimate and Apportionment for an increase.

It is now estimated, says President Shonts, that unless the 5-cent fare is increased the city will face on its total dual subway investment an annual deficit, varying according to the exigencies of the war, of from $12,000.000 to $20,000,000. When it is remembered that every $10,000,000 increase in the tax budget means at least a five-point increase in the tax rate, the advisability of requiring non-residents to pay their just share of the added war costs is impressed.

An increase in fare would not only prevent the accrual against the city, with compound interest, of the company's deficits in failing to earn its preferential, but would place the city in a position to receive immediately an actual return upon its own investment.

COMPARATIVE INCOME STATEMENT OF INTERBOROUGH RAPID TRANSIT COMPANY FOR YEARS ENDED JUNE 30, 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation	$38,548,910	95.19	$38,177,195	95.76
Other operating revenue	1,948,818	4.81	1,688,951	4.24
Gross operating revenue	$40,497,728	100.00	$39,866,146	100.00
Maintenance of way and structures—actual	$2,068,686	5.11	$1,801,474	4.52
Maintenance of equipment—actual	2,667,436	6.58	2,121,721	5.32
Total maintenance	$4,736,122	11.69	$3,923,195	9.84
Maintenance of way and structures—depreciation	$95,545	0.23	$104,030	0.26
Maintenance of equipment—depreciation	144,537	0.36	398,144	1.00
Total depreciation	$240,082	0.59	$502,174	1.26
Total "maintenance" appropriation	$4,976,204	12.28	$4,425,369	11.10
Traffic expenses	174	......	38	......
Transportation expenses	12,473,087	30.80	10,376,612	26.03
Accidents and damages	474,437	1.17	661,023	1.66
General expenses	1,189,434	2.94	1,120,251	2.81
Total operating expenses	$19,113,336	47.19	$16,583,293	41.60
Net operating revenue	$21,384,392	52.81	$23,282,853	58.40
Non-operating income	593,600	1.46	559,076	1.40
Gross income	$21,977,992	54.27	$23,841,930	59.80
Taxes	$3,758,583	9.28	$2,871,385	7.20
Interest on bonds—rental	4,192,818	10.35	4,183,995	10.50
Manhattan dividends—rental	4,200,000	10.37	4,200,000	10.53
Manhattan cash rental	35,000	0.09	35,000	0.09
Interest on notes and 5 per cent bonds	4,327,177	10.69	3,572,515	8.96
Sinking fund on 5 per cent bonds	438,821	1.08	....	......
Amortization	665	......	625	......
Interest on unfunded debt	123,315	0.31	37,600	0.09
Other rent deductions	199,513	0.49	36,554	0.09
Interest on investment of depreciation reserve	39,341	0.10	18,897	0.05
Total deductions	$17,315,232	42.76	$14,956,571	37.51
Net corporate income	$4,662,759	11.51	$8,885,359	22.29

Net Earnings Drop 5.5 Per Cent

Comparison of First Half of 1918 and 1917 Shows a Continued Decrease for the Entire Country

Figures compiled by the information bureau of the American Electric Railway Association, covering the first six months of 1917 and 1918, and representing the operation of more than 5000 miles of line distributed throughout the country, reflect the condition that has been long known to prevail in the electric railway industry.

For the entire country operating revenues increased 5.77 per cent, as compared to an increase in operating expenses of 11.46 per cent, or nearly double. At the same time the net earnings decreased 5.56 per cent, while the operating ratio grew from 66.57 per cent for the first six months of 1917 to 70.15 for the corresponding period of 1918.

For the companies reporting taxes the showing was even more discouraging. For them the operating revenues increased 4.83 per cent, while operating expenses increased 10.86 per cent and taxes 5.80 per cent. The net earnings, therefore, decreased 7.58 per cent, and operating income 11.16 per cent. The increase in operating ratio was practically the same for both classes, amounting in each instance to more than 3½ per cent.

The figures show that for companies which did not report taxes, there was a drop in net earnings of $188 per mile of line, and that for the companies which did report taxes, the drop amounted to $338 per mile of line.

As in previous compilations the most unfavorable showing was made by the companies operating in the Eastern District. The Southern District made the best showing, although even there a decrease in net earnings was shown. A glance at the operating ratios for the three districts will give a hint of the reason. The ratio for the Eastern District was 73.62 per cent, for the Western District 68.88 per cent and for the Southern District 60.76 per cent. This disparity in the cost of operation seems, moreover, to be increasing, since the rise in the Eastern District for the six months was 4.32 per cent, as compared with 3.01 per cent for the Southern and 3.07 per cent for the Western.

A somewhat different situation seems to be presented when the figures for June are considered. Then the Western

TABLE I—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR SIX MONTHS, JANUARY-JUNE, 1917 AND 1918

Account	United States				Eastern District				Southern District				Western District			
	Amount, January-June, 1918	Per Mile of Line			Amount, January-June, 1918	Per Mile of Line			Amount, January-June, 1918	Per Mile of Line			Amount, January-June, 1918	Per Mile of Line		
		1918	1917	% Increase Over 1917,		1918	1917	% Increase Over 1917,		1918	1917	% Increase Over 1917,		1918	1917	% Increase Over 1917,
Operating revenues	$56,760,723	$10,707	$10,123	5.77	$28,014,491	$8,957	$8,516	5.18	$7,435,298	$9,385	$8,792	6.74	$21,310,934	$15,426	$14,515	6.28
Operating expenses	39,819,695	7,511	6,739	11.46	20,622,713	6,594	5,902	11.72	4,517,323	5,702	5,077	12.31	14,679,659	10,626	9,552	11.24
Net earnings	16,941,028	3,196	3,384	†5.56	7,391,778	2,363	2,614	†9.60	2,917,975	3,683	3,715	†0.86	6,631,275	4,800	4,963	†3.28
Operating ratio, per cent	1918, 70.15; 1917, 66.57				1918, 73.62; 1917, 69.30				1918, 60.76; 1917, 57.75				1918, 68.88; 1917, 65.81			
Average number of miles of line	1918, 5,301; 1917, 5,217				1918, 3,128; 1917, 3,115				1918, 792; 1917, 739				1918, 1,381; 1917, 1,363			
COMPANIES REPORTING TAXES																
Operating revenues	$47,507,945	$12,322	$11,754	4.83	$25,100,976	$10,772	$10,290	4.68	$3,430,317	$11,014	$10,211	7.86	$18,976,652	$15,630	$14,986	4.30
Operating expenses	33,823,741	8,772	7,913	10.86	18,542,122	7,957	7,171	10.96	2,063,197	6,625	5,674	16.76	13,218,422	10,888	9,926	9.69
Net earnings	13,684,204	3,550	3,841	†7.58	6,558,854	2,815	3,119	†9.75	1,367,120	4,389	4,537	†3.26	5,758,230	4,742	5,060	†6.28
Taxes	3,309,339	858	811	5.80	1,799,990	772	722	6.93	278,791	895	859	4.19	1,230,558	1,014	971	4.43
Operating income	10,374,865	2,692	3,030	†11.16	4,758,864	2,043	2,397	†14.77	1,088,329	3,494	3,678	†5.00	4,527,672	3,728	4,089	†8.83
Operating ratio, per cent	1918, 71.19; 1917, 67.32				1918, 73.87; 1917, 69.69				1918, 60.15; 1917, 55.57				1918, 69.66; 1917, 66.124			
Average number of miles of line	1918, 3,855; 1917, 3,821				1918, 2,330; 1917, 2,317				1918, 311; 1917, 308				1918, 1,214; 1917, 1,196			

TABLE II—COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR JUNE, 1917 AND 1918

Account	United States				Eastern District				Southern District				Western District			
	Amount, June, 1918	Per Mile of Line			Amount, June, 1918	Per Mile of Line			Amount, June, 1918	Per Mile of Line			Amount, June, 1918	Per Mile of Line		
		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917
Operating revenues	$10,226,317	$1,904	$1,748	8.92	$5,074,634	$1,577	$1,480	6.55	$1,343,985	$1,696	$1,535	10.49	$3,847,698	$2,785	$2,494	11.67
Operating expenses	7,090,673	1,315	1,138	15.55	3,543,735	1,101	992	10.99	822,701	1,038	890	16.63	2,724,237	1,972	1,617	21.95
Net earnings	3,175,644	589	610	†3.44	1,530,899	476	488	†2.46	521,284	658	645	2.02	1,123,461	813	877	†7.30
Operating ratio, per cent	1918, 69.07; 1917, 65.10				1918, 69.82; 1917, 67.03				1918, 61.20; 1917, 57.98				1918, 70.81; 1917, 64.84			
Av'ge number of miles of line	1918, 5,392; 1917, 5,307				1918, 3,218; 1917, 3,205				1918, 792; 1917, 739				1918, 1,382; 1917, 1,363			
COMPANIES REPORTING TAXES																
Operating revenues	$8,570,008	$2,172	$2,010	8.06	$4,527,067	$1,870	$1,767	5.83	$610,786	$1,961	$1,761	11.36	$3,432,155	$2,827	$2,562	10.34
Operating expenses	6,017,160	1,525	1,325	15.09	3,168,608	1,309	1,193	9.72	371,159	1,192	1,012	17.79	2,477,393	2,041	1,674	21.92
Net earnings	2,552,848	647	685	†5.55	1,358,459	561	574	†2.26	239,627	769	749	2.67	954,762	786	888	†11.49
Taxes	590,260	150	135	11.11	315,385	130	119	9.24	48,617	156	143	9.09	226,258	186	165	12.73
Operating income	1,962,588	497	550	†9.64	1,043,074	431	455	†5.27	191,010	613	606	1.16	728,504	600	723	†17.01
Operating ratio, per cent	1918, 70.21; 1917, 65.92				1918, 70.00; 1917, 67.52				1918, 60.79; 1917, 57.47				1918, 72.20; 1917, 65.34			
Av'ge number of miles of line	1918, 3,946; 1917, 3,912				1918, 2,421; 1917, 2,408				1918, 311; 1917, 308				1918, 1,214; 1917, 1,196			

† Decrease.

District made much the worst showing, its decrease in net earnings amounting to 7.30 per cent, with an increase in operating ratio of almost 6 per cent. For companies reporting taxes, the increase in operating ratio was almost 7 per cent. For the country as a whole the decrease in net earnings was lower than for the six months, which may be accounted for by the unusually severe operating conditions caused by the storms of January and February. The operating ratio for the country showed, however, an increase of nearly 4 per cent. The good showing of the Southern District continued, and an actual gain in net earnings was shown.

The returns from the city and interurban electric railways, as shown in detail in the tables on page 533, were classified according to the following geographical grouping: Eastern District—East of the Mississippi river and north of the Ohio river. Southern District—South of the Ohio river and east of the Mississippi river. Western District—West of the Mississippi river.

Portland Financing

New Essential Industries Finance Corporation Will Probably Aid Portland Utility First

In all probability the first public utility company to receive financial aid from the Essential Industries Finance Corporation, now in the process of formation, will be the Portland Railway, Light & Power Company, Portland, Ore. There are a number of details and formalities which have to be attended to before the corporation can begin operations, however, and it will not undertake any financing until after the Liberty Loan campaign.

The Portland Railway, Light & Power Company has $4,000,000 of notes due on Nov. 1. These notes matured on May 1 last but were extended for six months at 6 per cent. The notes originally matured May 1, 1917, but were extended for one year.

The company has outstanding $15,000,000 of common stock, on which 75 per cent has been paid in, and $5,000,000 each of first and second preferred stock, the second preferred being non-cumulative. Besides the notes the company has outstanding $34,646,000 of bonds. The company serves shipyards and other war industries.

Last Obstacle Removed in Northern Electric Reorganization

The last legal obstacle, it is said, to the operation of the Sacramento Northern Railroad will be removed by the dismissal of the appeal taken to the United States Circuit Court of Appeals by the minority stockholders of the predecessor company, the Northern Electric Railway, Chico, Cal. These stockholders have compromised with the reorganization committee in regard to certain minor terms of the settlement.

P. S. C. Cuts Dividend in Half

The Public Service Corporation of New Jersey, Newark, N. J., has declared a dividend of 1 per cent, payable on Oct. 15 to stock of record on Oct. 10. Previous quarterly dividends since June, 1916, have been at the rate of 2 per cent. Thomas N. McCarter, president of the company, has authorized a statement in part as follows:

"In declaring a dividend of 1 per cent the board was governed by existing conditions and by a desire to conserve the resources of the corporation to as great an extent as possible in these unsettled times."

Boston Gains 12 Per Cent

The gross earnings of the Boston Elevated Railway during August, 1918, were only $184,500 more than during August, 1917, or 12 per cent, in spite of the 40 per cent increase in fare. Changes since January, 1917, compare as follows:

	1918		1917	
	Inc.	Per Cent	Inc.	Per Cent
January	*$96,269	*5.94	$122,000	8.2
February	*69,832	*4.86	31,000	2.25
March	*40,000	*2.5	86,500	5.56
April	8,000	0.5	37,000	2,33
May	13,000	0.8	11,500	*0.69
June	*44,000	*2.08	*38,000	2.5
July	*46,000	*3.00	70,000	4.6
August	369,000	23.81	40.580	2.69
September	184,500	12.00	13,400	0.88
October	.....	.....	23,000	1.42
November	.....	.....	20,500	1.4
December	.....	.....	61,800	*3.6

*Decrease.
August was the first seven-cent fare month.

It is uncertain whether the trustees will advance the fare continuously until a balance is struck or will consider the possibilities of the zone system.

Financial News Notes

Worcester & Warren Line Stops.—The Worcester & Warren Street Railway, Brookfield, Mass., has ceased to operate and will be entirely dismantled by Swift-McNutt Company, Boston. The work is now under way.

$15,000,000 Deed of Trust Filed.—A deed of trust from the Monongahela Valley Traction Company, Fairmont, W. Va., to secure the Central Union Trust Company of New York for a loan of $15,000,000, represented by bonds dated July 1, 1918, and maturing in five years, has been filed in the Taylor County Court of Records, located at Grafton.

San Francisco-Oakland Coupon Payment.—Funds for the payment of coupons which were due July 2, 1917, for the San Francisco, Oakland & San José Terminal Railway second mortgage 5 per cent bonds have been deposited by the San Francisco-Oakland Terminal Railways with the Wells-Fargo Nevada National Bank, San Francisco.

Ware & Brookfield Line Going.—Swift-McNutt Company, Boston, Mass., is entirely dismantling the Ware & Brookfield Street Railway. The sale of the road to the junking company was noted in the ELECTRIC RAILWAY JOURNAL of April 27, 1918.

Preferred Dividend in Scrip.—Kelsey, Brewer & Company, Grand Rapids, Mich., announce that the regular quarterly dividend of 1½ per cent on the preferred stock of the American Public Utilities Company will be paid in scrip on Oct. 1 to holders of record on Sept. 20.

Road Will Suspend.—Officers of the Claremont Railway & Lighting Company, Claremont, N. H., say the railway will suspend service about the middle of October because of the failure of the company to pay a dividend during twenty years of operation. They say they will sell the road as junk unless a purchaser appears.

Two-Year Notes for Sale.—E. W. Clark & Company, Philadelphia, are offering at 98½ and interest $2,500,000 of two-year 7 per cent secured gold notes of the Columbus Railway, Power & Light Company, dated July 1, 1918. The authorized amount is $3,000,000. The offering has been approved by the Capital Issues Committee.

Three-Year Notes Offered.—A. B. Leach & Company, New York, are offering a new issue of $450,000 of three-year 7 per cent notes of the South Carolina Light, Power & Railways Company, Spartanburg, S. C., due on Sept. 1, 1921. The proceeds are to be used to pay for floating indebtedness incurred for betterments and additions to property.

Bids for Retiring Bonds.—The Central Union Trust Company, New York, N. Y., recently received bids from holders of the first mortgage 5 per cent sinking fund gold bonds of the New York Municipal Railway Corporation, Brooklyn, N. Y., for the sale by them to the trust company at not more than 107½ per cent of the full value of the bonds of sufficient bonds to exhaust the sum of $190,500 under the terms of the mortgage provisions.

Parsons Line Wants to Stop.—On Sept. 24 the Parsons division of the Kansas Electric Utilities Company filed an application with the Kansas Public Utilities Commission for permission to junk its plant. The Kansas Electric Utilities Company owns and operates street car systems at Parsons, Lawrence and Emporia. The Parsons company operates about 6 miles of track. During the year from March 1, 1917, to March 1, 1918, the company lost in operating expenses and in interest on the investment $46,614, according to the petition. During the months of March, April, May and June of this year, this loss was $15,870, or a total of $62,484 in sixteen months.

Traffic and Transportation

Six-Cent Fare for Trenton

New Jersey Commission Grants Emergency Surcharge and Orders Improvements in Service

The Board of Public Utility Commissioners of New Jersey on Sept. 25 granted the Trenton & Mercer County Traction Corporation, Trenton, N. J., authority to impose a 6-cent fare with free transfers on all its divisions on and after Oct. 15. The company is now charging a 5-cent fare with six tickets for 25 cents. The increase is granted as a war surcharge, and the commission retains jurisdiction for the purpose of either abrogating or altering it when conditions shall be deemed to warrant a change.

Concurrent with the fare decision the commission filed its finding on the application of the Trenton City Commission to require the company to improve its equipment and service. In this case the commission declares that the company is not rendering proper service.

Situation Demands Six Cents

Under the old rate of fare the company estimated that it would have a deficit of $297,160.12 for 1918, and even with the increase to 6 cents it will have a deficit of $96,000 at the end of the first twelve months.

In granting permission to the company to charge the 6-cent fare the commission says:

"In the present emergency the board will not under these trying circumstances determine from the record either the total amount of property on which the petitioner is entitled to a fair return or the rate of return applicable to the property, or whether the fixed charges are properly related to such a fair return under normal conditions, but will base its conclusions in this matter upon the exigencies of the times and afford such relief as is necessary to continue service. When the present emergency shall have passed, the board will resume consideration of the case."

On this basis the commission finds that an emergency exists and that in order to render the public continuous, safe, adequate and proper service, the company will be required to raise additional revenue of at least $201,194 a year, this being the "reasonably accurate" estimate of the company for the increase to be produced by the 6-cent fare.

Improvement of Service

In its service finding the commission suggests that the company replace its "dinkey" cars with double-truck cars as rapidly as possible, the replacement to occur "preferably by five new cars on or before March 15, 1919, and the remainder on or before Jan. 1, 1920." The operation of the "dinkey" cars in regular service should be stopped as soon as they are replaced, except that repaired ones may be operated on some lines for light traffic.

Other desirable changes recommended, but not ordered, are: Equip city cars with wheel guards and suburban cars with pilots; equip with air brakes ten double-truck cars that are now operated with hand brakes; remodel the present carhouses by installing a repair pit for at least four large cars at one time; provide a motor-driven line wagon, and install certain double-track connections, turnouts, sidings and additional track to provide for parking, more service and efficient routing.

The company is ordered to improve immediately the discipline of its employees, especially platform men; equip all suburban cars from twenty minutes after sundown to twenty minutes before sunrise with rear signal lights by Nov. 15; maintain cars at all times in good repair and in clean condition, to begin immediately; make necessary repairs to roof of carhouses; repair overhead special work at carhouses, replace broken or decayed crossarms, properly secure all feed wires to insulators, tighten all slack span and guy wires and repair all broken span and guy wires by Jan. 1; provide suitable fire protection at the carhouses, either by a sprinkling system or by ample hose and standpipes by Jan. 1; renew or replace broken track construction in certain sections and repair all broken rails and defective joints in all sections of the city by Feb. 1, and make several local operating changes.

Skip Stop Ordered for Portland, Oregon

The Portland Railway, Light & Power Company, Portland, Ore., has been ordered by Fred J. Holmes, fuel administrator for Oregon, to install skip stops as a war measure. In residential sections the cars will stop at every other block. In small business communities, and at points near shipyards and other industrial plants, the cars will come to a stop at each street corner.

In order to comply with another order of the fuel administrator to save "dead car mileage," the company will change the routing of the Vancouver cars. More than a quarter of a mile will be saved on each trip, or a total of more than 13 miles a day.

The government has agreed to finance a number of extensions to the Portland Railway, Light & Power Company's lines, in order to give better service to the shipyards. These include one loop in the southern part of the city, in the neighborhood of the Columbia River Shipyards; another in the center of the city, and one in the north end.

Transfer Charge Dropped

Quebec Commission Also Includes Cut-Rate for Workmen in Final Fare Revision in Montreal

The Public Utilities Commission of Quebec, which has final jurisdiction over the fares of the Montreal Tramways, on Sept. 20 handed down a decision fixing the various rates. The preliminary decision on the part of the Montreal Tramways Commission, noted in the ELECTRIC RAILWAY JOURNAL of July 13, had been appealed by the company and by the various municipalities concerned.

The final decision follows that of the Montreal Tramways Commission except in two important points, viz: It abolishes the charge of 1 cent for transfers and it allows workmen to purchase six tickets for 25 cents. The first commission had made a straight 5-cent ticket rate for all classes of the community.

The fares now authorized for the City of Montreal follow:

(a) Day tariff, 6 cents cash or a ticket to be sold at the rate of five for 25 cents.

(b) School children, a ticket to be sold at the rate of seven for 25 cents.

(c) Special day tariff of a ticket to be sold at the rate of six for 25 cents, to be good only between the hours of 6 and 8 a. m. and 5 and 7 p. m. on week days only.

(d) Night tariff, 15 cents cash.

(e) Passengers paying fares shall be entitled to the receipt of a transfer free of charge.

In regard to the company's need for higher fares the Public Utilities Commission said:

"We believe we have made ample allowance for all expenditures the company may be called upon to meet and have not been more optimistic in our forecast as to revenue than the Montreal Tramways Commission. To take the franchise in its entirety, the benefit of any doubt should, in our opinion, be construed in favor of lower fares.

"It is far from an agreeable duty to a public body to increase the rates of a public utility. It is simply, however, a matter of maintaining the public utility in question as an efficient and going concern. Urban transportation in this community is essential and it cannot be for a long time maintained at less than cost.

"This has had to be recognized the world over and is a consequence of the abnormal conditions through which we are passing. We have not gone farther than necessity and the terms of the contract between the city and the company appear to demand."

Public Service Gets Seven-Cent Fare

This Temporary Rate, with Continued One-Cent Transfer Charge, Granted to Cover Increased Wages—Zone System Perhaps Before April

In order to meet the higher wage expenditures recently ordered by the War Labor Board, the Board of Public Utility Commissioners of New Jersey on Sept. 27 granted the Public Service Railway authority to charge 7 cents instead of 5 cents as its unit fare from Oct. 15 to March 31, inclusive, and 6 cents from April 1 until such time as the "war emergency" ceases to exist. In connection with the new rates the company is permitted to continue to collect 1 cent for all initial transfers, as provided in an order issued by the commission last July.

The first application of the company for higher fares, to be effective April 1, provided for a 7-cent fare, a 2-cent transfer charge and a 1-cent charge for a transfer on a transfer. That application was denied, but an order was issued in July allowing a charge of 1 cent for transfers, the commission being of the opinion that this increase would give the company the $860,000 of additional revenue needed for rendering proper service. The commission, however, made allowance simply for the wage increases already granted by the company.

On Aug. 1 the War Labor Board handed down a decision increasing the pay of motormen and conductors, retroactive to June 7, and thereafter the company concluded that other increases were necessary to equalize wage conditions on the property. The company then on Aug. 7 applied for a 7-cent fare in addition to the 1-cent transfer charge. A hearing was held on Aug. 29, but protesting municipal representatives offered no evidence. They attacked the right of the board to alter franchise rates of fare, but inasmuch as the board had fully considered this point in its prior decision it did not reopen the point.

The simple question involved, therefore, was that of making proper provision for the wage award of the War Labor Board. The retroactive feature of this somewhat complicated the problem. It was shown, however, that the excess of the total annual wage increases effective in August, 1918, over the wage increases for which provision had been made through the 1-cent transfer charge was $1,630,000. The excess from Aug. 1 to Dec. 31, a period of five months, would be $680,000. The total excess up to the close of 1918 would be approximately $860,000, which gives $180,000 as the amount of deficiency on Aug. 1, 1918, applicable to the period prior to this date. During each month at the present rate of fare the deficit would be increased by $136,000 (one-twelfth of $1,630,000), and accordingly on Sept. 15 the deficiency would be approximately $384,000 and on Oct. 15 $520,000.

According to company counsel, the deficit accruing up to Sept. 15 would be practically wiped out at the close of the year by raising the fare on Sept. 15 from 5 to 7 cents. At the same average monthly gain in revenue, the commission calculated, the loss of $520,000 accruing up to Oct. 15 would be made up in approximately five months. The commission therefore fixed March 31, 1919, as the proper time limit for the making up of the deficit by means of the 7-cent fare and 1-cent transfer charge.

As for the time thereafter, the commission said, the evidence showed that when the deficit was made up, a fare of 6 cents and a charge of 1 cent on each initial transfer would yield sufficient revenue to enable the company to meet its operating expenses, pay bond interest and rentals on leased properties and provide an annual appropriation of $800,000 for depreciation.

The board, therefore, determined that the 1-cent transfer charge granted in its order of July 10 should remain unchanged and that in addition the company might charge 7 cents and 6 cents before and after April 1, 1919, respectively. The new rate becomes effective on Oct. 15. The company must file monthly comparative statements of finances, wages and salaries, and the board retains jurisdiction over the increase granted.

Moreover, the company is not relieved by the present decision from complying with the requirement in the order of July 10 that the company work out and submit by Jan. 1 a zone system for its lines in order "more properly to relate the cost of service with the length of haul and the value of service." In regard to this point the board said on Sept. 27:

"The company is now and has been for some time past gathering data of traffic on its lines to be used in the preparation of such a plan, and the president assured the board that such a plan will be filed early in January. Any plan submitted will necessarily have to be investigated by experts employed by this board before adoption to ascertain the fairness of the scheme and the probable results of operation. We anticipate that it may be possible to adopt some plan before April 1. The plan with its schedule of rates when adopted will be substituted for the then existing rate."

The company's field study of the zoning question, it may be stated, is now complete, as many as 100 field observers and fifty office workers having been engaged upon the task at one time.

Business Men Approve

Labor Leaders, However, Oppose Adoption of a Six-Cent Fare for Rochester

Business interests and labor clashed on Sept. 26 at a hearing before the law committee of the Rochester (N. Y.) Common Council in attempts to show why a 6-cent fare should or should not be allowed the New York State Railways in that city.

Taking the stand that the railway is losing money with a 5-cent fare and that its service will be demoralized if something is not done for it, many leading business men appealed to the committee and the Council to give a square deal to the company as well as the people and, as patriots, to heed the advice of the National War Labor Board and allow the increase.

Labor representatives vehemently opposed any increase in fare. They suggested that if the company is making no money it turn its franchise over to the city and allow the city to operate the lines. Union leaders declared that their organizations are unanimous in opposition to a 6-cent fare, believing it unnecessary.

Chairman Carroll, in opening the meeting, briefly outlined the situation relative to the two investigation reports just filed, as noted in last week's issue. He said the Scudder report, made at the instance of the city, considered only the city lines, while the report made by Price, Waterhouse & Company included the suburban and interurban lines of the Rochester district with the city lines.

D. M. Beach, counsel for the railway, reiterated the arguments filed in his brief recently. He concluded with the flat-footed statement that it could be shown that the city lines are now, exclusive of outside lines, operated at a deficit.

Omaha Wants Seven-Cent Fare

The application of the Omaha & Council Bluffs Street Railway, Omaha, Neb., before the Nebraska State Railway Commission for the authorization of an emergency 7-cent fare in Omaha was scheduled to be called up for final arguments on Oct. 5. The original application, filed on May 1, 1918, asked for an increase from 5 to 6 cents. The application was based on advances in materials costs and voluntary advances in wages. Before the hearing on the 6-cent application was held, the differences between the company and the men were submitted to the War Labor Board and an additional increase of wages was ordered.

The company asserts that the total of increased costs approximates $1,200,000 for the last four years. Within this period it has used all of its surplus funds and is now without means to meet its expenses. The deficit for 1919, unless the increase applied for is allowed, will amount to approximately $822,200.

Asks 3-Cent Transfers

New York Railways Adds a Cent to Its Original Request to Public Service Commission

In a supplemental petition filed with the Public Service Commission for the First District of New York on Oct. 1, Theodore P. Shonts, president New York Railways, asked permission to charge 3 cents for transfers, 1 cent more than was asked for in the original application filed last year.

The New York Railways, in company with the Third Avenue Railway and other New York City companies, then filed an application for a 2-cent transfer charge. On June 6, 1918, however, the commission handed down a decision in the leading Third Avenue Railway case to the effect that under the recent Rochester decision of the Court of Appeals the commission could not legally grant a transfer charge on other than a fragmentary basis and that the company should discuss with the city the question of the most advisable procedure for relief. The hearings in the several transfer cases were then held subject to call.

As noted in last week's issue, Chairman Hubbell in the present service inquiry remarked that if the company thought it advisable to renew the transfer-charge proposition it would be "hospitably entertained" by the commission. The present application for a 3-cent charge is the result, and a hearing will be set in the matter.

Mr. Shonts, as a reason for the request, says that from Jan. 1 to July 31, 1918, the company operated its lines at a loss of $469,341, exclusive of interest on its income bonds, and that the imperative need for additional income makes the compulsory giving of free transfers "unreasonable, unjust and confiscatory."

Interborough Wants Modified Service Order

Objections to the form of an order issued by the Public Service Commission for the First District of New York, requiring the Interborough Rapid Transit Company to maintain a schedule of thirty express and twenty local trains an hour during rush hours, were made on Oct. 1 by Frank Hedley, vice-president and general manager, and James L. Quackenbush, general counsel. Both declared the order too inflexible.

"This is a serious question when the failure to live up to the order makes it a misdemeanor punishable by fine and imprisonment," said Mr. Quackenbush. He explained that while the commission would not demand the observance of the order in times of accident, prosecuting officials of the counties through which the subway operates could proceed legally against the management of the company and be strictly within their rights.

Mr. Hedley, who was the principal witness, told of the difficulty to obtain sufficient labor and its deterioration in quality. He said the service was subjected to greater danger of interruption than in ordinary times, and therefore he did not want to be placed in the position of committing a misdemeanor by unavoidably violating the commission's order.

Before the hearing closed, Commissioner Ordway said he was reluctant to abolish the order and agreed that counsel for the commission and Mr. Quackenbush should confer as to the framing of a new one, which will be presented at the next hearing before the commission.

Referendum for Houston

The new city ordinance granting the Houston Electric Company a regular fare of 6 cents with half fares of 3 cents, noted in the ELECTRIC RAILWAY JOURNAL of Sept. 21, will be referred to a referendum vote. Labor union leaders have circulated petitions and have secured the necessary number of signers.

Labor leaders last week appeared before the City Commission to enter formal protest against the ordinance. In answer to the charge that the Council had acted in haste, the Mayor informed the callers that the Council began its investigation in June and did not complete it until early in September. In the meantime Lamar Lyndon, an expert employed by the city, had verified the company's figures.

Women Prove Highly Satisfactory

The Kansas City (Mo.) Railways is finding women highly satisfactory in all the positions to which they have been assigned. Up to July 9 the company had employed seventy-three women. Only nine of these failed to make good. These were for reasons usually outside of their ability to perform the tasks. On July 9 there were sixty-four women in active regular service as conductors and collectors.

One of the first of the women to receive instruction several months ago, Mrs. Edna Johnson, has been appointed as special instructor for women put into the train service. She holds a class six hours a day, giving instruction in the use of fare boxes, etc. The older conductors, however, give the women the special training on the cars.

The women were tried out gradually, first on trailers on the short lines, then as conductors and finally as front-end collectors, in the downtown districts. They have proved reliable, even on the cars carrying passengers from the resorts at night. They work as late as 11.30 p.m.

In selecting women preference is given to applicants whose husbands are in war service. A third of the women in the train service are the wives of motormen. Many of them have children. They are paid the same wages as the men and share in the 5-cent advance which was made effective on July 15.

Atlanta Mandamus

Georgia Company's Attorneys Are Trying to Make Commission Assume Jurisdiction in Fare Case

Contending that the city of Atlanta is not empowered under its charter to contract with the Georgia Railway & Power Company as to the rate of fare to be charged within the city limits, attorneys for the company have presented their case before Judge George L. Bell, of the Fulton Superior Court, in the mandamus proceedings brought to compel the State Railroad Commission to assume jurisdiction in the matter of granting an increased fare in Atlanta and suburban communities.

Counsel for the city and the special citizens' committee opposing the proposed increase contend that statutes contained in the code of 1899 confer upon the municipality the necessary charter powers, and that many years before the organization of the Georgia Railway & Power company as such, contracts had been entered into between the city and the railway corporation fixing the fare at 5 cents for one full trip.

The mandamus proceedings brought by the company is the result of the action of the commission in ruling that it had no jurisdiction over the fares in Atlanta, because these were fixed by contract made prior to the organization of the commission in 1907. The commission handed down this ruling several weeks ago, as noted in the ELECTRIC RAILWAY JOURNAL of Aug. 31, along with its decision increasing electric light, power and gas rates in Atlanta. The company had asked not only for the light, power and gas increases, but also for a 6-cent carfare and a 2-cent charge for transfers.

The commission, in refusing a higher railway rate, called attention to the fact that under the statute creating the commission it is expressly provided that the commission shall have no authority to alter existing contracts between municipalities or private corporations and public utility enterprises. The commission admitted that the company was entitled to a higher fare and that a 6-cent fare without a charge for transfers would be reasonable and just.

After the conclusion of arguments in the mandamus proceedings Judge Bell announced that he would allow counsel ten days in which to file briefs.

Grade-Crossing Stop for Autos

At the recent meeting of the National Safety Council held in St. Louis, H. B. Adams, safety engineer Aurora, Elgin & Chicago Railroad, represented the Illinois Electric Railway Association. Mr. Adams presented the draft of a bill requiring automobiles to come to a full stop before a grade crossing and succeeded in having this adopted by the electric railway section, the steam railroad section and the public safety section, and referred to the executive committee for its approval.

Transportation News Notes

Seven-Cent Rate Wanted in Fitchburg.—The Fitchburg & Leominster Street Railway, Fitchburg, Mass., has asked the Public Service Commission for permission to raise its fare unit from 5 to 7 cents on Oct. 19.

Increase In Fare Asked.—The Murphysboro & Southern Illinois Railway, Murphysboro, Ill., on Sept. 27 filed a petition with the Public Utilities Commission for an increase in passenger fare between Murphysboro and Carbondale.

Fare Increase in Mattoon.—The Illinois Public Utilities Commission has authorized a 6-cent fare on the properties of the Central Illinois Public Service Company, including Mattoon, Taylorville and Charleston. The authorization is effective over a period of one year.

Humboldt Rides for Six Cents.—On Oct. 1 a 6-cent fare became effective on the lines of the Humboldt Transit Company, Eureka, Cal. For the convenience of the public strips of six tickets each are sold at different places in the city, but there is no reduction in price.

Athens Asks Seven-Cent Rate.—The Athens Railway & Electric Company, Athens, Ga., has filed an application with the State Railroad Commission for authority to make increases in its light and power rates, and to increase the street car fare from 5 to 7 cents and to sell four tickets for 25 cents. The commission has set the case down for hearing on Oct. 8.

Six-Cent Fare for Springfield, Ill.—The Illinois Public Utilities Commission has authorized the Springfield (Ill.) Consolidated Railway to increase fares for a period of one year as follows: Adult fare, 6 cents, and nine tickets for 50 cents; school children's tickets, thirty-five for $1; children over six years of age, same fare as adults, and children under six years of age, free.

Fare Hearing Postponed.—The hearing on Sept. 25 in regard to the application of the Atlantic Coast Electric Railway, Asbury Park, N. J., for a 7-cent fare was abandoned by the Board of Public Utility Commissioners of New Jersey until Oct. 9, to permit the company to prepare valuation and operating figures for its railway property as distinct from its lighting property.

Mayor Recommends Fare Increase.—Mayor J. F. Rall of Cedar Rapids, Iowa, after receiving a report from Billings, Prouty & Tompkins on the financial status of the Cedar Rapids & Marion City Railway, made the following statement: "The report shows that in order to pay its present wages and to meet the increased costs of coal and the like, the company will need an increase in fare, and if the company is to continue business on its present basis the raise must be granted."

Accountants See Need.—The audit of the books of the Muskegon Lighting & Traction Company, Muskegon, Mich., has been completed by the firm of Touche, Niven & Company, accountants, and in their report filed with the city they hold that the company is entitled to a 6-cent fare and also an increase of 25 cents per 1000 cu. ft. in the price of gas. Council held an informal meeting recently to go over the report but no action has been taken on the matter.

Injunction Filed Against State.—The Alton, Granite & St. Louis Traction Company, Alton, Ill., has filed an injunction restraining officials of the State from interfering with the charging of a 3-cents-a-mile rate on its lines. The matter is now before a master in chancery. This company, together with the East St. Louis Railway, has filed application with the Illinois Public Utilities Commission for permission to charge an 8-cent cash fare and a 7½-cent ticket fare in East St. Louis and Alton.

Coney Island Commutation Restored.—At a hearing on Sept. 30 before the Public Service Commission for the First District of New York the Brooklyn Rapid Transit Company announced that the Coney Island commutation rate, which had been suspended on Sept. 15, would be restored. The company on Sept. 14 filed a new tariff for Coney Island, which established a 10-cent fare from Coney Island to Manhattan. The commutation rate had been 5 cents each way to and from Manhattan up to that date, during certain hours of the morning and afternoon, for the accommodation of business commuters.

Fare Appeal in Beaumont.—The East Texas Electric Company, which operates the Beaumont Traction lines, the Port Arthur traction lines and the Beaumont-Port Arthur Interurban line, has announced that greater revenue is necessary if it is to continue to operate its plant and maintain the present efficiency and standard of service. The company will go before the City Council and ask for authority to increase its city fares possibly to 7 cents. The additional revenue it is stated, is needed to meet additional cost of operation, particularly wage increases, the wages of motormen and conductors having been fixed by the War Labor Board at 38 cents to 42 cents an hour.

Skip Stops and Staggered Hours Help.—Officials of the Lehigh Valley Transit Company, Allentown, Pa., report that the system of skip stops which has been in operation for some time in Allentown, Pa., has resulted in a better adherence to schedules and improved service. In all, 234 stops were eliminated and in general there have been no complaints from the public. Early closing of the stores and a system of staggered hours which has been instituted at some of the industrial plants have scattered the traffic morning and evening and helped to relieve congestion. The Bethlehem Steel Company is co-operating with the railway in a study of the question of staggering its working hours with a view to bettering existing conditions.

Seven-Cent Fare for Galesburg.—The Public Utilities Commission of Illinois on Sept. 18 approved the tariff filed by the Galesburg Railway, Light & Power Company, included in the Illinois Traction System. The new rates follow: Adults, 7 cents; four tickets for 25 cents and ten-coupon books for 60 cents; children under five, accompanied by adults, free; children five years or more, the same fare as adults. The rates are to continue in effect not longer than six months after the war has been terminated. The fare application went to the commission with a recommendation in its favor from the City Council.

Fare Increase in La Crosse.—The Wisconsin Railway, Light & Power Company has been authorized by the Railroad Commission of Wisconsin to put a 6-cent fare into effect at La Crosse. The order provides for books of eighteen tickets to be sold for $1, also for 5-cent workingmen's tickets to be sold in strips of six tickets each, good for transportation from 6 a. m. to 8 a. m. and from 5 p. m. to 7 p. m.; also for 4-cent school tickets. These several varieties of tickets are increased rates over similar tickets which have been in use. The city fares of the company at Green Bay were increased to 6 cents on Aug. 10 and the interurban fares there have been increased to 3 cents per mile. On Aug. 10 the city fares of the company at Manitowoc were increased to 6 cents and on the interurban line from Manitowoc to Three Rivers to 3 cents per mile for interurban passengers.

Shuttle Operation Succeeds in New York.—Under the authorization of the Public Service Commission for the First District of New York, the Interborough Rapid Transit Company on Sept. 29 resumed the operation of crosstown service on the Forty-second Street shuttle between east and west side subway lines. This service was discontinued on Aug. 3, after the opening of the new lines, partly because the general public was unfamiliar with the plan of operation and also partly because changes in the track and terminal layouts at Times Square and the Grand Central station had not been completed. Now, with the construction work progressing and with colored guide lines painted on the ceilings of the shuttle passageways, the public is being well handled. This work is facilitated, of course, by the fact that the suspension of the shuttle service for a time has taught many New Yorkers how to use the through uptown and downtown lines so as to avoid a crosstown transfer at Forty-second Street.

Personal Mention

More Responsibilities for Mr. Fehr

Now in Charge of Various Lighting Properties in Addition to Railways—Mr. Patterson New Railway Manager

An announcement of considerable moment in public utility circles is the statement that H. R. Fehr, president Lehigh Valley Transit Company, Allentown, Pa., the Easton Transit Company and the Lehigh Valley Light & Power Company, has also been placed in charge of several electric light and power and gas companies whose headquarters are in Allentown.

A brief outline of the gas and electric interests now under the management of Mr. Fehr follows: The Lehigh Valley Light & Power Company, operating throughout the Allentown-Bethlehem district; the Northumberland County Gas & Electric Company, operating in Sunbury, Milton and Northumberland; the Columbia & Montour Electric Company, which supplies gas as well as electric light and power in Berwick, Bloomsburg and Danville; the Harwood Electric Company, operating in Freeland, McAdoo and Hazleton; the Stroudsburg Electric Company; the Schuylkill Gas & Electric Company, operating in Shenandoah and Mahanoy City; the Lehigh Navigation Electric Company; the Northern Central Gas Company, operating at Williamsport, and the Hagerstown Light & Heat Company, operating at Hagerstown, Md.

Mr. Fehr was elected president and general manager of the Lehigh Valley Transit Company in 1913. Prior to that time he had been city engineer for Easton from 1891 to 1899. In 1904 he became general manager and in 1905 president of the Easton Transit Company, which is now a part of the Lehigh Valley Transit Company system. In 1911 Mr. Fehr was president of the Pennsylvania Street Railway Association.

New Transit Manager

H. H. Patterson, of Philadelphia, has been elected vice-president and general manager of the Lehigh Valley Transit Company, in which capacity he will direct the operations of the transit company and its subsidiaries. Mr. Patterson has been associated with the management of a number of street railways in the East, including a period of ten years of service with the Easton Transit Company. He is now in charge of the transportation facilities of one of the plants of the DuPont Powder Company.

In the electric light and power and gas departments of the organization, Mr. Fehr will be assisted by John S. Wise, Jr. Mr. Wise was formerly manager of the Harwood Electric Company and the Lehigh Navigation Electric Company.

Capt. Arthur A. Mitten, a son of T. E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company, is reported a prisoner in a German camp. Captain Mitten is a medical officer in charge of Ambulance Company 125, Thirty-second Infantry.

Charles Hamilton, formerly general shop foreman Springfield (Ohio) Railway, has been appointed acting master mechanic, vice Joseph H. Towle, who has accepted the position of assistant electrical engineer with the Railway Improvement Company.

R. O. Wortman, formerly manager of the securities department of the Northern States Power Company at Minneapolis, Minn., has been transferred to the Chicago office of the bond department of H. M. Byllesby & Company, who operate the Northern States Power Company.

C. B. Zeigler has been appointed treasurer of the Kansas Electric Utilities Company, with headquarters in New York City, to succeed L. A. Pettit, Jr., who severed active connection with the company to engage in the business of controlling and managing public utility properties.

E. J. Cooney, reported in the issue of this paper for Sept. 21, 1918, as having resigned his position in the publicity department of the Rhode Island Company, has been engaged to handle the publicity end of the campaign of United States Senator LeBaron B. Colt for re-election.

H. C. Foss, for the last five years acting manager of the Savannah (Ga.) Electric Company, has been appointed by Stone & Webster as acting district manager for the Southeastern district. Mr. Foss became connected with the Savannah Electric Company in 1912 as general superintendent, previous to which time he was manager of the Cape Breton Electric Company, Ltd., Sydney, N. S.

B. L. Grooms, for the last few months superintendent of the transportation of the Key West (Fla.) Electric Company, has been appointed acting manager of the company to succeed R. G. Carroll, who has been appointed acting manager of the Savannah (Ga.) Electric Company. Before becoming superintendent of the Key West Electric Company, Mr. Grooms was for some time superintendent of transportation of the Savannah Electric Company.

R. G. Carroll, who has been manager of the Key West (Fla.) Electric Company, has been appointed acting manager of the Savannah (Ga.) Electric Company to succeed H. C. Foss, who has been appointed by Stone & Webster as acting district manager for the Southeastern district. Mr. Carroll has been connected with Stone & Webster properties for a number of years, during which time he has acted as assistant treasurer of the Pensacola Electric Company, assistant treasurer of the Northern Texas Traction Company and acting manager of the Beaumont Street Railway, the Beaumont Lighting Company, the Beaumont & Port Arthur Interurban Railway and the Port Arthur Lighting Company.

G. Sabin Brush has resigned as superintendent of transportation of the Springfield (Mass.) Street Railway to accept a position as superintendent of the Houston (Tex.) Electric Company, a Stone & Webster property. Mr. Brush has been in the employ of the Springfield Street Railway since last March. Prior to that time he was for three years superintendent of the railway department of the Cumberland County Power & Light Company, Portland, Me., where he had direct charge of operation of about 107 miles of city and suburban trackage. During this time he was actively identified with the Cumberland County company section of the American Electric Railway Association and was regarded as one of the best of the younger operating executives in New England electric railway circles. Before his work in Maine Mr. Brush gained much experience in the transportation departments of the Middlesex & Boston Street Railway and the Boston Elevated Railway.

Obituary

Maskell E. Curwen, European manager of the J. G. Brill Company, died on Oct. 1 from pneumonia, after a short illness in Philadelphia. Mr. Curwen joined the staff of the J. G. Brill Company more than twenty-five years ago and had been European manager for more than twenty years, with offices in London and Paris. He was educated at the Episcopal Academy, Philadelphia. His first years in the car and truck industry gained him an intimacy with the details of manufacture and a practical knowledge of the railway field, especially of British and Continental practice, which, with his natural capacity for adapting himself to conditions as he found them, made him of value to the foreign clients of his company. He was widely known and esteemed for his upright character, lovable nature and innate refinement. His loss is deeply felt by a wide circle of friends on both sides of the Atlantic and by his business associates. Mr. Curwen was a member of the American Society in London and of the American Club in Paris. He is a brother of Samuel M. Curwen, president of the J. G. Brill Company.

Manufactures and the Markets

D.SCUSSIONS OF MARKET AND TRADE CONDITIONS

FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Demand for Car Wheels Limited to Maintenance Needs

No Stock Carried Because of Wide Range of Sizes Demanded for Electric Railway Use

Wheels the electric railway industry certainly must have in order to carry on its business of transportation, but in spite of that fact the demand may be greatly reduced when it is limited to the requirements of maintenance. That is practically the condition today. Wheels wear out, and unlike some equipment, have to be renewed at once. But as the construction of new rolling stock is practically limited to that essential for the transportation of shipbuilders, munitions workers, and employees of other industries essential to the speedy culmination of the war, the demand for wheels has been considerably reduced. Thus the manufacturers of rolled and cast-steel wheels report a small demand from the electric railway field and this limited mostly to repeat orders, while the manufacturers of iron wheels report that orders from this source are slightly less than normal. Government requirements have increased in much greater proportion than those for the electric lines have decreased, so that increased facilities in manufacturing rather than a curtailment have been necessary.

It must be borne in mind, however, that the steam railroad wheel is standard, while wheels for electric railway use vary through a wide range of sizes. For many years it has been a source of great discomfort to wheel manufacturers that electric railways could not decide on a few standard sizes of wheels and thus eliminate the necessity of carrying, and constantly adding to, an endless number of patterns. Orders for the various sizes are small, thus making the overhead charges high, in comparison with those on wheels for steam railroads which are purchased in carload lots all from a standard size. For this reason electric railway business cannot be of primary importance with manufacturers.

The standard 33-in. steam railroad wheel is the only one now carried in stock. Consequently deliveries of other sizes cannot be made in much less than three to four months except on priority order. There is no curtailment of the supply of raw material for the manufacture of wheels so that all demands for essential maintenance and construction can be filled. The construction of much needed rolling stock is being postponed until after the war and for this reason manufacturers are optimistic that with a possible future decrease in government demands for the steam railroads there will be a comparatively large increase in the demand for electric railway use.

Higher Prices Recorded

Weather Proof Wire, Pole Line Hardware Cambrics and Schedule Material Increased

A number of increases in price have been reported very recently. The higher prices are due largely to the demands of labor and in some cases also to raw materials. The increase in price of lamps will be found in another column.

Weather proof wire went higher this week. One manufacturer advanced his price 2 cents a pound and another large producer, it was learned, added 2½ to 3½ cents a pound to his price. Wire base, however, still ranges from 30 to 37 cents. Considering discounts, however, this amounts roundly to 34 cent base.

Varnished cambric advanced in price about 10 per cent on Sept. 15. Further price movements will be governed largely by the price of cotton.

An increase in the price of pole-line hardware of from 10 to 20 per cent has been made in the last couple of weeks. Other recent advances include schedule wiring material in the neighborhood of 10 to 20 per cent and insulated wires in varying amounts.

Change in Quality of Crossarms

The Pacific Northwestern Lumber Mills have notified their distributers of a change of quality of wood used in crossarms. This has occurred because the United States government is demanding the best grade of Rainier fir for aircraft production and the cheaper grades of yellow pine for ship construction. This leaves an intermediate grade only for crossarms in amounts, it is reported, insufficient to apply against the demands anticipated on account of the difficulty in securing labor and cars.

At the present time utility operators are beginning to think of pole and crossarm strengthening against the winter storms. To some extent, of course, the demand on the available supply will be tempered by the curtailment of new construction by the telephone and lighting companies. Nevertheless, it would appear from this report that if orders for such material are to be considered they should be placed early.

Railway Not Anticipating Sleet Cutter Needs

Supply Is Adequate But Procrastination in Purchase Should Not Be Practiced

During a recent conversation with a manufacturer's agent he said: "Do you know, the most serious trouble with electric railway managers to-day is that they can't or won't look ahead far enough?" This is true to a considerable extent, but whether it is any more typical of the buyers in the railway industry than of any other line of business, it is difficult to state.

In the case of sleet cutters, for instance, the tendency to postpone purchase applies right now. Every electric railway located in a zone where more or less severe sleet conditions are not only possible but very probable, would naturally be expected to have on hand or order by this time enough sleet cutters to take care of its needs throughout the coming winter months. Such, however, is not the case and the trade foresees similar conditions to last year when the purchase of cutters was postponed until the necessity had arisen. At that time roads rushed into the market for two, ten or fifty cutters and wanted them at once. As a rule they could be and were accommodated simply because the distributer happened to have a stock. There were cases, however, where such good fortune did not exist and poor operation and service delays were the result.

Manufacturers of sleet cutters report no activity in buying, stating that this is nothing surprising as the main activity always comes when the storm is on. In anticipation of this urgent demand, one manufacturer reports enough sleet cutters in stock to fill all demands for the coming winter based on sales for the past years. Immediate deliveries are, therefore, possible. Raw materials are scarce and it is reported that in the near future it may be impossible to obtain any malleable castings whatever. Due to this scarcity and the increased cost of the castings, the price of this equipment has advanced from 20 to 30 per cent. Although no further advance is contemplated at this time, it is to the advantage of the railways to order now.

Coal Conveyers Higher

Effective Oct. 1, the John F. Godfrey Company materially advanced the prices of coal conveyers. Conveyers can now be had on thirty days' delivery.

Coal Production Falls Off

Slight Slump in Bituminous—Strike Causes Large Decrease in Anthracite Output

Bituminous coal production during the week ended Sept. 21 varied but little from the week preceding and is estimated at 12,650,000 net tons, according to the regular weekly statement of the Geological Service. This output, while 0.4 per cent below the production during the week of Sept. 14, exceeded production during the corresponding week of 1917 by 2,060,000 net tons or 19.4 per cent. It will be noted that while the decrease in production during the week ended Sept. 21 was slight, compared with the week preceding, the decrease during the corresponding week of 1917 compared with the week of Sept. 14, 1917, amounted to 387,000 net tons or 3.6 per cent, thus interrupting for the second successive week parallelism of the curve of daily production this year and last maintained during the past three months. The daily average during the current week is estimated at 2,108,000 net tons, slightly lower than the week preceding, but considerably in excess of the daily average (1,765,000 net tons) during the week of Sept. 21, 1917.

The strike in the anthracite fields during the week ended Sept. 21 caused production to decrease 11.3 per cent. The output is estimated at 1,847,000 net tons as compared with 2,088,000 net tons during the week preceding, and as against 2,006,000 net tons during the corresponding week of 1917. The daily average during the current week is estimated at 308,000 net tons, considerably less than the daily average for the coal year to date of 337,000 net tons, which is 2.1 per cent of the daily average of the same period of last year.

Electrical Jobbers on Preference List

War Industries Board Issues Statement Regarding Rating of Supply Men

Electrical jobbers have been given a place on the priorities list with a class B-4 rating. In order however to take advantage of this rating, each jobber must make a standard material conservation pledge.

In its statement regarding the classification of the electrical supply jobber, Judge E. B. Parker, priorities commissioner, War Industries Board, stated:

"It is in the public interest that all jobbers, wholesalers, and resale distributers of, and dealers in, electrical equipment, apparatus, appliances and supplies should be permitted to maintain reasonable stocks from which government agencies, war industries, contractors and the civilian population may draw to meet essential requirements. Such persons, however, should recognize the existing necessity for rigid economy in the use of all such products and their duty to see that such products shall be devoted to essential uses and they should pledge their wholehearted co-operation in such a program."

Incandescent Lamps Advance

Increases of 5 Cents on Small Sizes and 15 Cents on the 94-Watt Sizes Are Announced

Effective Oct. 1, vacuum incandescent Mazda lamps increased in price roughly 15 per cent. Electric railway lamps for 525-650 volt circuits are now listed as follows: 23-36 watts, 35 cents clear, 38 cents frosted; 56 watts, 40 cents clear, 45 cents frosted; 94 watts, 85 cents clear, 92 cents frosted. This is an advance of 5 cents per lamp on the 23 and 36-watt sizes, 5 cents on the 56-watt clear and 6 cents frosted and 15 cents on the 94-watt size.

According to the contract forms of last November, the manufacturers reserved the privilege to increase the price of lamps during the life of the contract (one year) by not more than 10 per cent on any one lamp to consumers who hold these contracts. The new contract forms, which are just out, are similar to these others except that a provision is made that the price during the life of the contract shall not advance more than 15 per cent over the prices in effect at the time the contract started.

The Shephard Electric Crane & Hoist Company, Montour Falls, N. Y., announces that it has appointed A. J. Barnes as export manager with headquarters at the main office. Mr. Barnes will also continue to be director of publicity.

NEW YORK METAL MARKET PRICES

	Sept. 18	Oct. 3
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	29.25	28.75
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.85	9.35
Tin, Chinese*, cents per lb	.....	.....
Aluminum, 98 to 99 per cent., cents per lb	†33.10	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Sept. 18	Oct. 3
Heavy copper, cents per lb	23.50 to 24.50	23.50 to 24.50
Light copper, cents per lb	21.00 to 21.50	21.00 to 21.50
Red brass, cents per lb	23.00 to 24.00	22.00 to 23.00
Yellow brass, cents per lb	15.50 to 16.00	15.50 to 16.00
Lead, heavy, cents per lb	7.50 to 7.75	7.50 to 8.00
Zinc, cents per lb	7.50 to 7.75	7.50 to 8.00
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.25

ELECTRIC RAILWAY MATERIAL PRICES

	Sept. 13	Oct. 3
Rubber-covered wire base, New York, cents per lb	30 to 37	33 to 37
Weatherproof wire (100 lb. lots), cents per lb., New York	32.40 to 36.75	34.40 to 36.75
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 37.72
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4¼	4¼
Rails, girder (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35

	Sept. 18	Oct. 3
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	16 to 25	15 to 25
Waste cotton (100 lb. bale), cents per lb	12 to 13	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.90	$1.90
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.92	$1.92
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	66½	64

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

Franchises

Los Angeles, Cal.—The Pacific Electric Railway has received permission from the City Council to construct and operate a new line to connect its Ionia Avenue-Hawthorne system with the line extending from Delta Avenue to San Pedro, via Gardena.

Bridgeport, Conn.—The Board of Aldermen recently granted the Connecticut Company permission to lay tracks from North Avenue through Boston Avenue to East Main Street by request of the United States Housing Corporation. This grant was made to provide transportation for munition workers who will occupy houses under construction by the United States Housing Corporation near Old Mill Green. It will be a single track with a turnout near Noble Avenue.

Allentown., Pa.—The Public Service Commission of Pennsylvania has granted permission to the Lehigh Valley Transit Company to construct extensions to its lines in Bethlehem.

Track and Roadway

Municipal Railway of San Francisco, San Francisco, Cal.—Mayor James Rolph was authorized recently by the Board of Supervisors to enter into an agreement with the United States government accepting the offer of a loan of $450,000 for the construction of a municipal car line from Army Street to the Hunters Point drydock and repair yards. Priority orders to secure steel rails have been promised by A. Merritt Taylor, director of transportation of the Emergency Fleet Corporation. It is expected to have the entire line operating to Hunters Point within ninety days, according to the estimates of the City Engineer's office. Proceedings to permit the operation of municipal cars over the Army Street line of the United Railroads under the agreement whereby the city secures the use of the tracks by paying one-half of the construction charges will be instituted at once, it is said.

Northern Pacific Railroad, St. Paul, Minn.—To do away with the steam motive power in the Northern Pacific Railroad yards, the company is now electrifying the line within the city limits of Coeur d'Alene, Idaho.

St. Louis, Mo.—Two cars have been purchased by the Municipal Bridge Commission of St. Louis and it is as stated that operation of the street car line over the Free Bridge will be begun by the city about Nov. 1.

United Railways, St. Louis, Mo.—Operation has been begun by the United Railways on the Hamilton Avenue extension through the Hi-Pointe subdivision to the city limits at Wydown.

Moncton Tramways, Electricity & Gas Company, Ltd., Moncton, N. B.—The construction of an extension to Sunny Brae is being contemplated by the Moncton Tramways, Electricity & Gas Company, Ltd.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—In connection with a recent decision of the Board of Public Utility Commissioners of New Jersey granting the Trenton & Mercer County Traction Corporation a 6-cent fare on its lines, the company is required to make material improvements in its equipment and service. The changes recommended include the remodeling of the present carhouse by installing a repair pit for at least four cars at a time and the construction of track connections, turnouts and extensions to provide for more efficient routing of cars.

International Railway, Buffalo, N. Y.—Plans are under consideration by the International Railway for improvements to its system on Broadway, Buffalo.

Northampton, Easton & Washington Traction Company, Easton, Pa.—A United States Naval Base Hospital is to be established between Phillipsburg and Stewartsville, along the Delaware, Lackawanna & Western Railroad and the Northampton, Easton & Washington Traction Company. The construction of 16 miles of railroad will be required.

Virginia Railway & Power Company, Richmond, Va.—The War Industries Board has authorized a loan of $1,110,000 to the Virginia Railway & Power Company for improvements to its lines in Portsmouth and Norfolk. The board has also authorized an expenditure of $1,000,000 for electrical power and gas war-time facilities, to include high-tension power connections between Richmond, Petersburg, Suffolk, Portsmouth and Norfolk, additions to power plants in all cities and ultimate connection with hydro-electric developments on Roanoke River, upon which the government will expend several million dollars.

Power Houses, Shops and Buildings

Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind. — The power house of the Fort Wayne & Northern Indiana Traction Company at Fort Wayne was damaged by fire recently, causing a loss of about $80,000.

United Railways, St. Louis, Mo.—Repairs will be made by the United Railways to its carhouse at St. Louis at a cost of $9,000.

Southwest Missouri Railroad, Webb City, Mo.—A contract has been awarded by the Southwest Missouri Railroad to Willard Shults, Baxter Springs, Kan., for the construction of a new passenger station at Picher at a cost of $4,000.

Public Service Railway, Newark, N. J.—Plans are being made by the Public Service Railway for the construction of an administration building at the new terminal at Broadway and Morgan Street.

Hudson (N. Y.) Power Corporation.—Work has been nearly completed on the erection of an electric transmission line by the Hudson Power Corporation from Poughkeepsie to Athens, 37 miles. The corporation is a merger of the Albany Southern Railroad Company, Hudson; the Central Hudson Gas & Electric Company, Poughkeepsie, and the American Electric Company. It is proposed to develop power in the Wallkill Valley and transmit it over this line throughout the region in which the three companies operate.

Pennsylvania Railroad, Philadelphia, Pa.—In connection with extensive improvements and additions to the shop buildings at Altoona, the Pennsylvania Railroad plans to increase the capacity of its power plant at South Altoona for the furnishing of electric service for the operation of its Twelfth Street machine shops. It is planned to install two new 5,000-kw. generators in the proposed new addition, the entire work being estimated to cost more than $1,000,000.

Philadelphia Rapid Transit Company, Philadelphia, Pa.—Plans have been filed by the Philadelphia Rapid Transit Company for extensions to its repair shops at Forty-ninth Street and Woodland Avenue, to cost about $45,000.

Eastern Pennsylvania Railways, Pottsville, Pa.—Construction of a new carhouse has peen completed by the Eastern Pennsylvania Railways at Pottsville.

Northern Texas Traction Company, Fort Worth, Tex.—The dancing pavilion of the Northern Texas Traction Company at Lake Erie was recently destroyed by fire, causing a loss of $15,000.

Houston, Richmond & Western Traction Company, Houston, Tex.—The Houston, Richmond & Western Traction Company has leased dam and water power rights on the Guadalupe River in the vicinity of Gonzales and will build a large hydroelectric plant. Electrical energy will be used to operate the proposed interurban railway to be constructed between Houston and San Antonio, a distance of more than 200 miles. Considerable progress has been made in arranging the preliminary plans for building the line. The survey was finished some time ago and most of the right-of-way has been secured. Ed. Kennedy, Houston, president. [July 13, '18].

Puget Sound Traction, Light & Power Company, Seattle, Wash.—A new substation will be erected by the Puget Sound Traction, Light & Power Company, at 3773 Fourteenth Avenue, Northeast, at a cost of $3,500.

Monongahela Valley Traction Company, Fairmont, W. Va.—An addition will be built by the Monongahela Valley Traction Company to its power plant at Hutchinson.

Rolling Stock

American Railways Company, Philadelphia, Pa., is reported to have ordered twenty-two cars with pneumatic control from the J. G. Brill Company.

Philadelphia (Pa.) Rapid Transit Company has ordered thirty new cars from the J. G. Brill Company. These cars, which were originally purchased by the government for the Philadelphia Railways, have been transferred to the Rapid Transit. The Brill Company has been building them for some time.

San Francisco-Oakland Terminal Railways, Oakland, Cal., it was announced by one of the directors of the company, will receive a loan through the Emergency Fleet Corporation of $500,000 to purchase rolling stock for the Key Route System. The rolling stock requirements, mentioned in the Aug. 24 issue of twenty-five one-man cars, twenty-five center-entrance cars, ten rail cars, four dump cars and one electric locomotive, call for an expenditure of $516,212 or a little more than the loan mentioned above. As mentioned in these columns last week the rail cars are being built by the company.

Trenton & Mercer County Traction Corporation, Trenton, N. J., has been awarded a 6-cent fare by the New Jersey Board of Public Utility Commissioners. In its order the commission made the following suggestions: That the company replace its short cars with double-truck cars as rapidly as possible, the replacement to take place preferably by five new cars on or before March 15, 1919, and the remainder by Jan. 1, 1920; that short cars now out of commission be repaired; that city cars be equipped with wheel guards and surburban cars with pilots and that ten double-truck cars now operated with hand brakes be equipped with air brakes. Plans are now being drawn for the five additional cars, it has been announced.

Trade Notes

Horace N. Trumbull, advertising manager of the SKF Ball Bearing Company of Hartford, Conn., has entered the Reserve Officers Training Camp at New Haven, Conn.

Roller-Smith Company, New York City, has appointed as its agent W. G. Merowit, 716 Ellicott Square, Buffalo, N. Y. Mr. Merowit will handle the company's lines of instruments, meters and circuit breakers in the western part of New York State.

Under-Feed Stoker Company of America has moved its Detroit headquarters from 42 Alger Avenue to 307 Majestic Building, where large accommodations have been obtained which have been necessary on account of the steadily increasing business of the company.

National Conduit & Cable Company, Inc., and the **National Brass & Copper Tube Company, Inc.,** have announced the appointment on Sept. 1 of A. G. Chapin as New England manager of both the companies, with the headquarters at 200 Devonshire Street, Boston.

New Advertising Literature

Wilkins U. Greene, Ridgewood, N. J.: Circular telling of his "Force-Lute" insulating cement.

Taft-Peirce Manufacturing Company, Woonsocket, R. I.: Distributing a catalog of its toolroom specialties.

United States Graphite Company, Saginaw, Mich.: General catalog No. 20, which describes the company's graphite products.

R. H. Beaumont Company, Drexel Building, Philadelphia, Pa.: Catalog No. 38, describing and illustrating the Beaumont drag scraper system for the ground storage of coal.

General Electric Company, Schenectady, N. Y.: Circular No. 45,203, which describes type H circular-coil form KDD transformers, oil-insulated, self-cooled or water-cooled.

Pelton Water Wheel Company, San Francisco, Cal.: Pamphlet under the title "Improvements in Water Wheel Efficiency," based on studies made by C. E. Hutchinson, chief engineer of the company.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, October 12, 1918 *Number 15*

Railways Often Created Unprofitable Extra Traffic

THERE is a melancholy pleasure in delving through association transactions of a decade ago and seeing how little was really understood of traffic creation. The central idea seemed to be that of inducing extra travel for pleasure rather than for business. We read of how this park brought out the women and children, how the Elks were induced to ride to the trolley company's grounds at the rapacious price of 5 cents per head for 10 miles, how by a subscription of $500 the United Pretzel Benders convention was persuaded to go to Smithville and use the trolley touring cars, etc. All of these schemes and many more like them created traffic, but for a long time operators did not realize that it was often a mighty expensive kind of traffic; that park overhead went on for twelve months and the business for only three and that excessive Sunday and holiday traffic was rich in accidents and tiring to men who also wanted a little holiday of their own. It is strange that so few realized that the most profitable traffic created is that which fills in the valley between the peaks and which can be obtained almost entirely on business grounds. And through what the modern one-man car has taught us, the formula is absurdly simple: Service and speed. The American has proved the best rider in the world, regardless of price, when service and speed are at his command. Therein lies the open secret of creating the short-haul, between-the-peaks traffic that costs less instead of more than normal riding.

Have Staggered Hours Come to Stay?

FOR years staggered hours for business have been the day dream of most electric railway managers. They have realized that any way of spreading the rush hour would be of benefit to both company and public because is would permit more and better car service with no additional cars. On routes where traffic is already congested, and this is the condition in most of our large cities, the addition of cars would reduce the speed of those on the street and give no additional seats per hour past a given point. Hence, from a theoretical point of view, the plan of staggered hours is an excellent one from every view point. It has not been adopted because it ran counter to one of the most serious obstacles by which any reform can be opposed, namely, established habit.

People are accustomed to leaving their homes in the morning and returning in the evening at certain hours, and the conduct of their households has been established on that basis. This habit is not affected by the daylight-saving plan, first, because the hours for rising and other events are not changed, and, second, because everybody in the community is affected by the rule. But with the staggered hours the greater part of the working community has to begin work earlier or later than usual. In consequence, practically the only progress made in the establishment of staggered hours, up to within recently, has been where a large factory or group of factories has depended for its transportation upon an electric line of limited capacity. Here, changes of opening and closing hours of from fifteen to thirty minutes in individual factories or factory departments have sometimes been established, often grudgingly, by the factory managers. This reluctance to make changes, we believe, has been due not to any lack of willingness by the employers to co-operate, so far as they were concerned, but because they have not seen a strong demand for such changes from the employees for whose benefit the changes were primarily to be made.

Under the stress of conditions brought about by the present epidemic of influenza, however, there has been a marked change. The connection between the avoidance of crowds and the elimination of the rush hour is obvious. Washington was the first city to introduce the staggered hour system, but New York followed on Oct. 7. In some respects the change could be made more easily in Washington than in any other city because of the fact that so many of the people there work for one employer, namely, the government, which through its police powers can easily set the working hours of the rest of the population. When the plan of staggered hours was first suggested in Washington nine months or a year ago to relieve traffic congestion, much of the same inertia was encountered there as had been experienced elsewhere, but when its advantages as a precaution against the influenza epidemic were realized by the health authorities, action quickly followed.

The gain in Washington in the spread of openings of different government departments and business houses is marked. Formerly, with the exception of the Bureau of Engraving and Printing, which opened at 8 o'clock, all of the government departments as well as the business offices and stores began work within fifteen minutes, or between 8.45 and 9 a. m. Now, the opening hours extend from 8 a. m. to 10 a. m. or for two hours, exclusive of the Bureau of Engraving and Printing, and from 7.30 a. m. to 10 a. m. or for two and one-half hours, including that bureau.

In New York City the change can be considered little short of revolutionary, in view of the number of establishments involved. The situation in New York has an added complication because of the many commuters by steam railroad from New Jersey and other lines running into New York on which train schedules are much more rigid than on street railways. Nevertheless, the change in New York is working smoothly, and while the people have not yet become accustomed entirely to it, no serious difficulties have developed. It was introduced in New York solely, of course, because of the prevalent influenza, but with the advantages shown we believe that some differentiation of hours will continue, even after the subsidence of the epidemic. So far as New York is concerned, the Board of Health has now established two precedents. The first is that it may summarily prohibit overcrowding of cars by limiting the number of passengers to be carried, as it did two years ago, and second, that it may make such prohibition practicable by ordering changes in business and industrial working periods.

Staggered hours are such a benefit to transportation companies that the latter should aim to give good service in the hours which were formerly the slack hours so as to prove to the public that the plan is really worth while.

Equipment, Brains and Skill Are Needed in the Power Plant

THE power end of the electric railway business is getting an unusual share of attention at this time because it is the physical movement of the cars by means of electric power that consumes fuel. The critical shortage in coal makes the people and their representatives, the government, very lenient toward any measure which will produce fuel saving. Thus there is added to the usual reasons for economical generation and use of electrical energy, and there are plenty of them, a very unusual one which is due to the war. The result will be that after the war the power plant, substation and transmission systems will show the effects of the strenuous efforts that have been made to keep them operating at high efficiency.

Several recent issues of the ELECTRIC RAILWAY JOURNAL have contained notable articles depicting the ways in which engineers and managers are meeting the needs of the hour in the power field. In this issue there is a rather remarkable collection of such articles which, taken together, form a power symposium of great interest. Of a general nature is a presentation of the power features of the Central Argentine Railway electrification. Although the power plant in this case is a small one, as power plants go in the United States, it is replete with modern devices for reducing labor and saving fuel. The high price of coal in the Argentine is sufficient reason for the latter policy. The substations are provided with devices for preventing flashovers, which have proved to be very successful. An ingenious plan is used for permitting the equalizing of load among substations.

In the field of the substation Walter C. Slade, superintendent of power and lines of the Rhode Island Company, discusses the automatic substation, particularly from the economic side. Although a firm believer in the "automatic," Mr. Slade does not consider it a panacea for all distribution ills. At the same time he sees a big future for it; first as a labor saver, second as an energy saver and third as a copper saver, to say nothing of minor points in its favor. Supplementing Mr. Slade's article is a brief account of one of the latest automatic substations, on the lines of the Columbus Railway, Power & Light Company, in which some original remote control "stunts" are combined with the standard features. Other articles tend to round out the power phases of this issue.

Zone-System Experiments Have Been Postponed Too Long

DURING the last two years, when most electric railways have been brought nearly to the verge of bankruptcy because of rising cost of operation, nearly all of the pleas made to public service commissions for higher fares have been for relief in the form of an increase from 5 cents to 6 or 7 cents. The petitioners asserted either that a flat fare increase was intrinsically the best or that it was at least the most expedient, in that it would give immediately the necessary revenue and permit without hardship to the railways the long investigation that would be required before a zone system could possibly be adopted.

Sufficient time has now elapsed so that the results attained by some of these fare increases are known. Briefly they show that traffic has fallen off to a larger extent than most of the petitioners probably believed would be the case. There has usually been some gain in revenue but far lower in percentage than the increase in fare. Only the last week, for instance, we published the first month's figures for the 7-cent fare on the publicly controlled lines in Boston, where a 40-per cent increase in fare produced in August only a 12-per cent gain in revenue.

It is true that under the pinch of hard times pleasure riding has diminished, that army service has reduced the number of men at home who ride and that automobile competition is heavy. It is equally true that a zone system would not be immune to these influences, but a zone system at least would not add to these troubles a discrimination against the most profitable class of passengers carried by an electric railway and the class which can most easily walk—the short-haul riders. To sum up this phase of the situation, therefore, it must be admitted that while the increases in revenue which have been secured through higher unit fares have been better than no increases at all, they have not provided permanent relief or even established a method whereby such relief can readily be secured.

It is not surprising, therefore, that many electric railway companies are now turning to the zone system for relief; in fact, we believe that if half of the energy spent upon securing higher unit fares had been devoted to study and experiments with the zone system, the industry would be farther advanced. While not capable of curing all electric railway ills or probably applicable to all companies, the zone system presents promise for relief to many which should not be ignored. The difficulties of fare collection seem serious, but we believe that with the initiative and genius for overcoming obstacles which have characterized the industry in the past, they will be overcome. When traffic experts recently asked the superintendent of a large system about the practicability of collecting zone fares he answered: "You work out the zone limits and establish reasonable fares, and I'll guarantee to collect them." This is the spirit to win over obstacles.

The Call for Women by the Railway Mechanical Department

THE introduction of women into occupations previously filled by men was discouraged in many quarters during the first year that the United States was engaged in this war. Early in 1918 the Secretary of Labor of the United States was quoted as expressing the opinion that there was an ample supply of labor both for the army and for industry, and that the policy of the labor administration was to prevent the introduction of the women into new occupations as long as men were available. This attitude was reflected in the position taken by many state councils of defense, official bodies and private associations. To-day, however, the needs of industry are becoming extremely acute and it is evident that the supply of men is not equal to the demand for labor. The Amalgamated Association of Street & Electric Railway Employees of America has changed its policy somewhat by recognizing the necessity of the employment of women under certain conditions.

While most of the discussion up to this time on the employment of women in railway work has related to their use on the platform, there are many places on an electric railway system where their services can be used to advantage. Of course before the war much of the cleaning of cars and the winding of coils, as well as a considerable amount of the clerical work in the offices of all departments was done by women, but since the war began and the labor shortage has increased, the opportunities for women have vastly increased, particularly in the mechanical department. This is shown by the records of the Brooklyn Rapid Transit Company whose practice in considerable detail in this regard is described in an article in this issue.

In Brooklyn the women who have taken up service in the mechanical department appear to come from other industries where the pay is less and the hours longer more than from a supply of new laborers entering the field. Most of the tasks on which they have been used up to the present time are those which do not require a great amount of technical skill but depend rather upon woman's natural sense of cleanliness, as well as on deftness of touch and rapidity of operation. There are many tasks of this kind in a railway car shop in addition to those in which women have been used extensively in the past, such as general cleaning, clerical work and stock taking. Thus, women have been used to good advantage in the disassembling and cleaning of the electrical apparatus, with its reassembling and testing after the several parts have been examined and painted or shellacked as needed. Work of this kind, which includes the inspection of the braking and other pneumatic equipment, calls for no small degree of intelligence.

For light bench and machine tool operation, which is also included in the scope of women's work in Brooklyn, it is obvious that the operators must be trained, so that it is too early yet in Brooklyn to form a definite conclusion as to women's usefulness, as the force of women whose service is measured by weeks and months is necessarily at a disadvantage when compared with one made up of men who have had years of service. In this connection, however, it might be said that the National Industrial Conference Board, in its recent research report No. 8, reaches the general conclusion that the efficiency of women as machine-tool operators depends more on their length of service than on the nature of the work. This conclusion is based on assembled information obtained from a large number of manufacturers in the metal trades who are using women extensively. Some of these employers report women as performing certain operations less efficiently than men, while others report the same class of work as being done successfully.

Some changes in shop organization, of course, are necessary where women are employed, as they seldom have the skill to set up the machine they use and they are unable to perform operations involving heavy work or lifting unless male helpers are provided. Additional accommodations must also be provided, such as wash, rest and lunch rooms.

The mixing of the women with men at work is necessary in most inspection and overhauling work. This has certain advantages, as the men can do the lifting and handling of heavy parts. In some states the work that women may perform is restricted. For instance, in New York, the law provides that women shall not lift weights in excess of 25 lb. and the grinding of metal parts is forbidden to women.

As a matter of safety and comfort some form of protective dress is essential. In the usual railway shop bloomers or overalls with a close-fitting cap to prevent loose hair from being caught are most generally used. When the reasons for wearing protective uniforms are properly explained usually no opposition is encountered. Objections are more easily overcome if the clothing is well and neatly designed.

Regarding the matter of wages it may be noted that the United States Department of Labor has declared itself in favor of equal wages for women performing the same work as men on government contracts and that a similar position has been taken by the Director General of Railroads in ordering the recent wage increases. There is a period of instruction and training, however, when women first enter railway work where their usefulness is comparatively small, and in justice to more experienced workers they should not receive the same compensation. But for light operation their employment by railways may be considered permanent.

A ONE-DAY CONFERENCE *of the American Electric Railway Association will be held in the United Engineering Societies' Building, 29 West Thirty-ninth Street, New York, on Friday, November* 1, 1918. *It will begin at* 9.30 *a. m. There will be a report from the Electric Railway War Board, and the subject of wages, revenues and finances will be discussed.*

Power Supply for the Central Argentine Electrification

This Power System Supplies Traction, Lighting and Sundry Power Requirements in the Electrified Zone of the Central Argentine Railway in the Suburbs of Buenos Aires, Argentina—It Has Made a Remarkable Record for Continuity of Service

IN LAST WEEK'S issue of the ELECTRIC RAILWAY JOURNAL an article was published giving the salient features of the electrification of the Central Argentine Railway excepting the power supply system. The provision for power supply is very complete, and includes a 15,000-kw., three-phase power plant, traction and other substations, and a complete alternating-current transmission and direct-current distribution system. Power is produced at 2500 volts, 25 cycles; is stepped up to 20,000 volts for transmission and is transformed to 800 volts direct current for traction purposes or other form as needed for lighting, power, etc. Supplementing last week's article, the following account of the power side of this installation will serve to complete the story of this modern electrification.

PROVISION MADE IN THE BOILER ROOM FOR COAL SHORTAGE

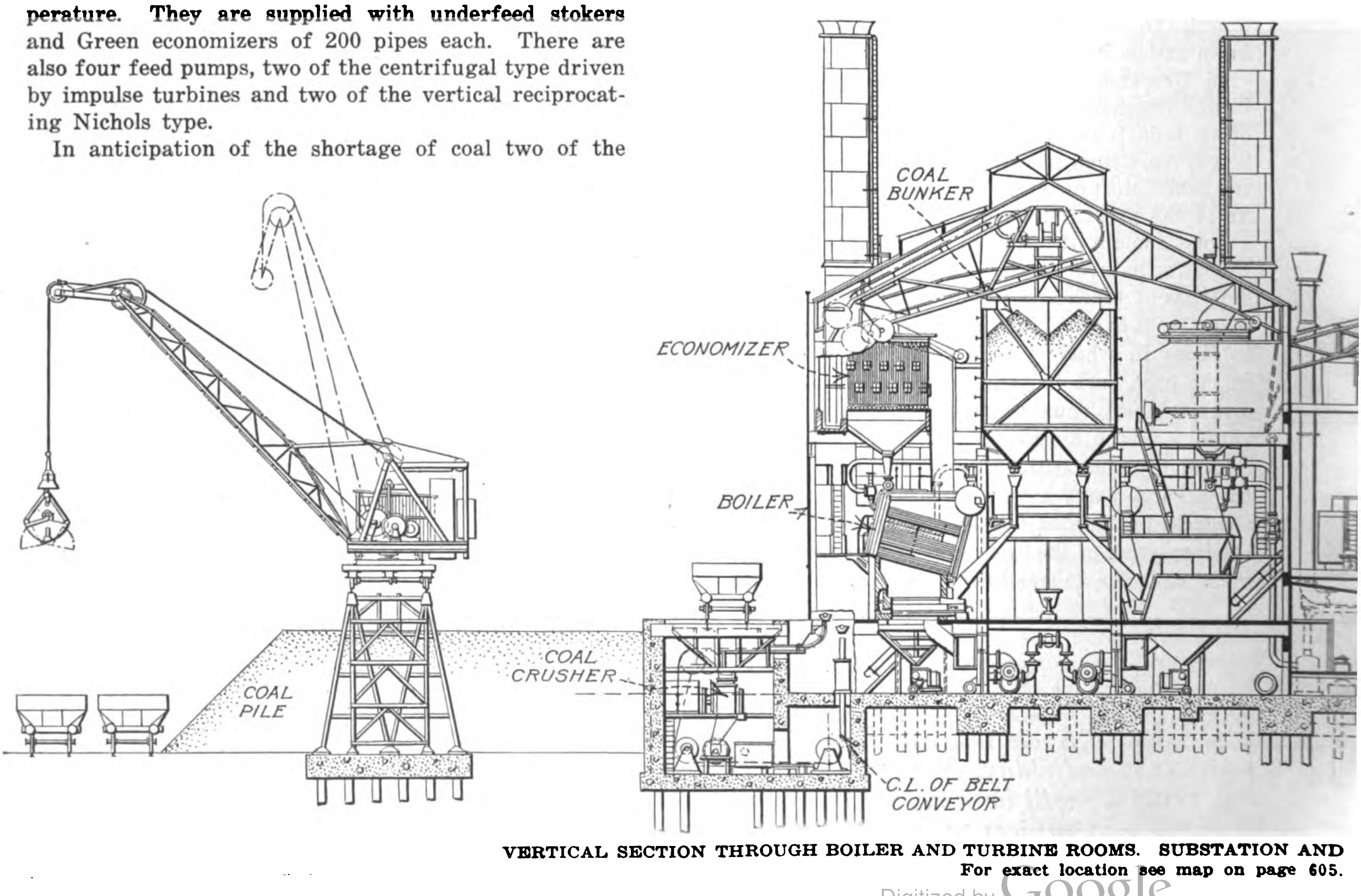
The boilers are designed for a working steam pressure of 210 lb. per square inch and 600 deg. Fahr. temperature. They are supplied with underfeed stokers and Green economizers of 200 pipes each. There are also four feed pumps, two of the centrifugal type driven by impulse turbines and two of the vertical reciprocating Nichols type.

In anticipation of the shortage of coal two of the boilers were arranged for oil firing and a complete equipment of the Wallsend-Howden system was provided, with the necessary storage tanks, filters and pumps. As the shortage of both coal and oil, due to war conditions, became more acute, other boilers were adapted for wood firing. The present situation will be understood by the statement that during a recent week the plant consumed 72½ tons of coal, 15½ tons of oil and 690 tons of wood. The calorific value of the wood is from a quarter to a third that of coal containing 15,000 B.t.u. per pound.

Water is pumped from the River Lujan to a reservoir, where it is treated with alumino-ferric to precipitate the sediment.

ALTERNATIVE ARRANGEMENT FOR COAL AND ASHES HANDLING

The storage and handling of coal is provided for by means of an elevated railway track running alongside the boiler house at firing floor level, a gantry running



VERTICAL SECTION THROUGH BOILER AND TURBINE ROOMS. SUBSTATION AND
For exact location see map on page 605.

parallel to the buildings and carrying a jib crane with a 2-ton bucket, and two sidings at ground level.

The coal can be lifted from the railway cars and filled either direct into two 15-ton receiving hoppers, or into bottom-discharge wagons which can be hauled along the elevated siding by a winch until they come over the receiving hoppers. In the latter case the coal passes through crushers to gravity bucket conveyors by means of which it is elevated to a distributing conveyor, which in turn discharges it into the coal bunkers located above and between the two rows of boilers. The coal bunkers are of 1000-tons capacity, and they are built of mild steel plates lined with reinforced concrete and with bottoms V-shaped in sections.

The stock coal is lifted from the trucks and stored below and around the gantry in a coal deposit floored with ties and constructed within range of the jib crane, which can work to a radius of 50 ft. The stock storage is 10,000 tons.

The ash-handling arrangements comprise a suction ash plant with two 38-hp. exhausters which take the ashes from the furnace ashpits through electrically operated crushers and specially heavy cast-iron pipes to an 80-ton steel ash bunker lined with reinforced concrete. This is erected at the end of the boiler house at such a height that railway trucks can pass underneath it to receive and remove the ashes. Alternatively the ashes can be taken from the ashpits by half-ton wagons along tracks laid on each side of the boiler house basement and deposited outside the site.

TURBINE ROOM ARRANGED FOR FLEXIBILITY

The generating plant is so arranged that provided one boiler is steaming any one of the turbo-alternators can be used to feed the main busbars and all station auxiliaries. The breakdown of any part of one generating unit will not prevent the operation of the remaining sets. Each of the four turbines has its own steam-driven oil pump for use in starting up, its own condenser with air and water extraction pumps, and an independent circulating-water pump. On the electrical side it has a self-excited exciter, direct coupled to the alternator shaft.

Leads from the alternator run direct to the "unit" transformer which supplies the unit distribution board at 440 volts. From this board are fed the motors which operate the auxiliaries definitely belonging to the generating set to which it is attached. The station auxiliaries common to the whole station, such as economizers and fan motors, are fed from a station distribution board made up in four sections.

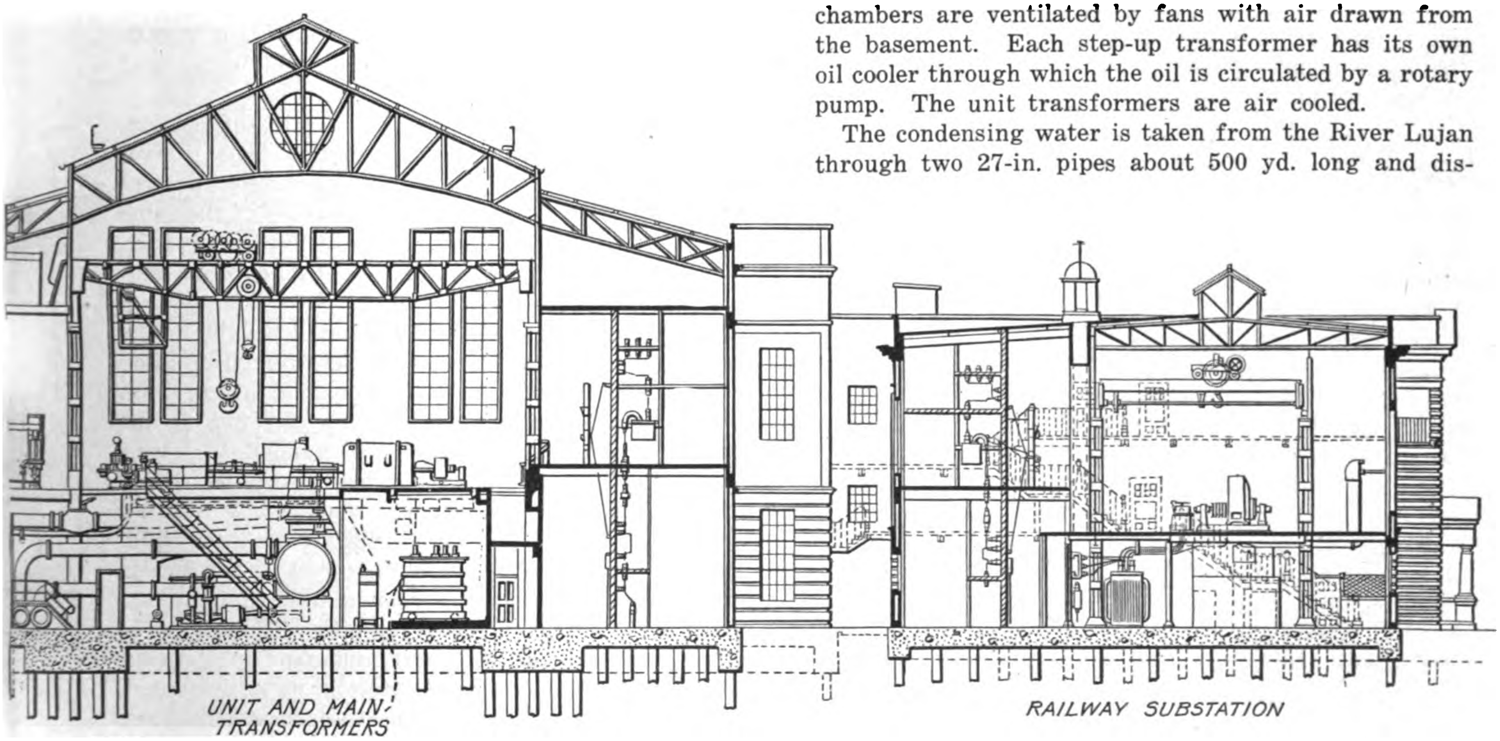
The main leads from the alternator run to a step-up transformer housed in the same compartment as the unit transformer, which raises the voltage from 2500 to 20,000. The station equipment as a whole is divided into two independent parts, and the main busbars are divided in the middle by a busbar sectionalizing switch.

The high and low-pressure portions of the turbines are in separate cylinders, the high-pressure cylinder being of cast steel. Each turbine is connected by an expansion pipe to the condenser situated below.

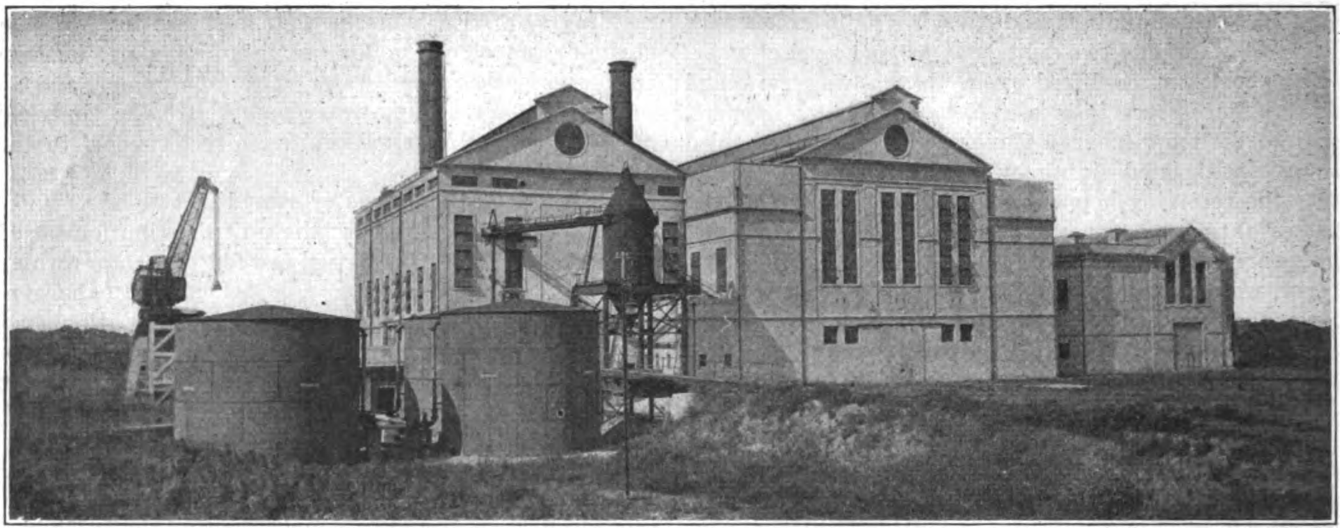
The alternators are totally inclosed and ventilated by fans on the rotors, which draw air from a basement through a dry-air filter and discharges it outside the turbine room. The combination of an alternator and a step-up transformer as one generating unit permitted the alternator voltage to be so selected as to give the simplest and most robust stator winding. The stator slots are completely closed and each contains but one conductor.

The step-up and unit transformers belonging to each generating set are housed in a separate chamber in the basement, with hatchways in the turbine-room floor through which they can be handled by the crane. These chambers are ventilated by fans with air drawn from the basement. Each step-up transformer has its own oil cooler through which the oil is circulated by a rotary pump. The unit transformers are air cooled.

The condensing water is taken from the River Lujan through two 27-in. pipes about 500 yd. long and dis-



COAL STORAGE OF THE CENTRAL ARGENTINE RAILWAYS POWER PLANT NEAR TIGRE
Electric Railway Journal for Oct. 5, 1918



A MODERN POWER PLANT NEAR BUENOS AIRES, ARGENTINA

charged into the Rio Rosquetes, a small creek. The condenser shells are of cast iron and the tube plates are of rolled brass 1⅛ in. thick. The tubes are ¾ in. external diameter and are of solid drawn copper No. 18 S. W. G. Aluminum blocks are fixed in the water chambers in metallic contact with the tube plates.

Centrifugal circulating pumps are used with bodies of cast iron and impellers of gunmetal. The circulating water pump motors are housed in a steel-frame, corrugated iron sheeted house erected on a wooden jetty projecting from the bank of the river. In addition to the main circulating-pump motors the jetty carries a centrifugal pump capable of delivering 300 gal. per minute against the head of 20 ft. or 95 ft. This supplies water through a 6-in. pipe either to the purified water reservoir or direct to the storage tanks in the pump house. Two motor-driven air exhausters are also located in the pump house, each capable of producing in three minutes a vacuum of 20 in. in any of the main pumps, including its suction pipe and discharge pipe up to the discharge valve.

SOME ELECTRICAL DETAILS OF THE POWER PLANT

All main switching in the plant is carried out at 20,000 volts, the main switch gear being located in a bay on the side of the turbine room opposite the pump house and boiler house. The operating gallery is about 4 ft. above the turbine room floor to give the operator a good view of the machines.

Each operating panel consists of two cast-iron plates built into a wall of molded concrete, 11 ft. high, faced with glazed tiles. This wall is set forward 3 ft. from the main panels and at the back carries the auxiliary wiring. On the generator panels the instruments are mounted on the wall above the upper cast-iron plates, and below them are the indicating lamps showing the oil switch positions. The operating levers, trip coils and time-limit fuses are carried on the plates, as are also the integrating wattmeters and several minor sets of switches. In front of the generator panels are pedestals carrying exciter equipment and the telegraph.

The main panels are formed of molded concrete cubicles 5 ft. wide, the main wall being 9 in. thick and the sides 4 in. These are separated each into five stories, occupied from the bottom up as follows: Potential transformers, cable isolating switches and current transformers, oil switches, busbar isolating switches and busbars. The compartments are protected by screens of standard metal interlocked with the main switch so that they can be opened only when the switch is opened.

Permanent testing busbars are provided in the generating panels, a water resistance being furnished to take the load of the generator under test.

The unit distribution boards are built up of enameled slate panels and have the busbars mounted in front. Porcelain-handled fuses connect the busbars to studs which pass through the slate to the motor leads at the back.

When the scheme was under consideration the split-conductor system of feeder protection had not been sufficiently tried out to justify its adoption in foreign work of such importance. Accordingly the high-tension transmission system was arranged to consist of 20,000-volt underground feeders with three simple cores, and pilot cables for the protective devices.

The high-tension cables are 1/10 sq.in. of section, and are of the three-core, paper-insulated, lead-covered, single-wire armored type. The pilot cables for the protective gear are 0.005 sq.in. in cross-section of the same general type, and the telephone cables are eight-pair, dry-core, air-spaced, paper-insulated, lead-covered, single-wire armored cables.

In general the three types of cables are laid in the same trench at a distance of about 1 in. from each other. Above the high-tension cable and about 4 in. from it is placed a creosoted plank. All joints in the high-tension cables were made in gunmetal sleeves, wiped to the lead of the cable, the sleeves themselves being surrounded by a creosoted wooden box with an iron cover. The sleeves were filled with compound. Wherever the armoring is interrupted the joint is spanned by a copper bond of 0.05 sq.in. section.

The direct-current feeders from the substations to the track and the jumpers spanning gaps in the conductor rail are of 1 sq.in. cross-section, paper insulated, vulcanized, bitumin sheathed, taped and braided. They are laid in fiber conduits filled with bitumen. They are supported in the conduits by fiber bridges, and a creosoted plank is laid over the conduits.

The line at present electrified is served by three traction substations and two general service substations. The former are located at San Fernando, about 1½ miles from the outer end of the line; at Olivos, about midway along the line, and at Palermo, about 2½ miles from the city terminus.

The traction substation buildings have steel frames and are walled with brick covered with reinforced cement plaster. The floors and roofs are of concrete reinforced with Clinton fabric, the roofs being flashed with ¾ in. of rock asphalt. Provision is made at the substation for housing the attendants.

Each traction substation building is divided into three main aisles; the center one containing the rotary converters, the side ones containing the high-tension and direct-current switch gears respectively. There is a loading bay at one end into which a siding comes, so that railway trucks can be brought under the overhead crane which traverses the whole building.

The basement contains the main transformer, the potential and current transformers, the high and low-tension feeders, the rotary field rheostats, the lightning arresters and the batteries. On the first floor are the rotaries, the 800-volt switch gear, a motor-generator and, on a raised gallery, the high-tension operating gear.

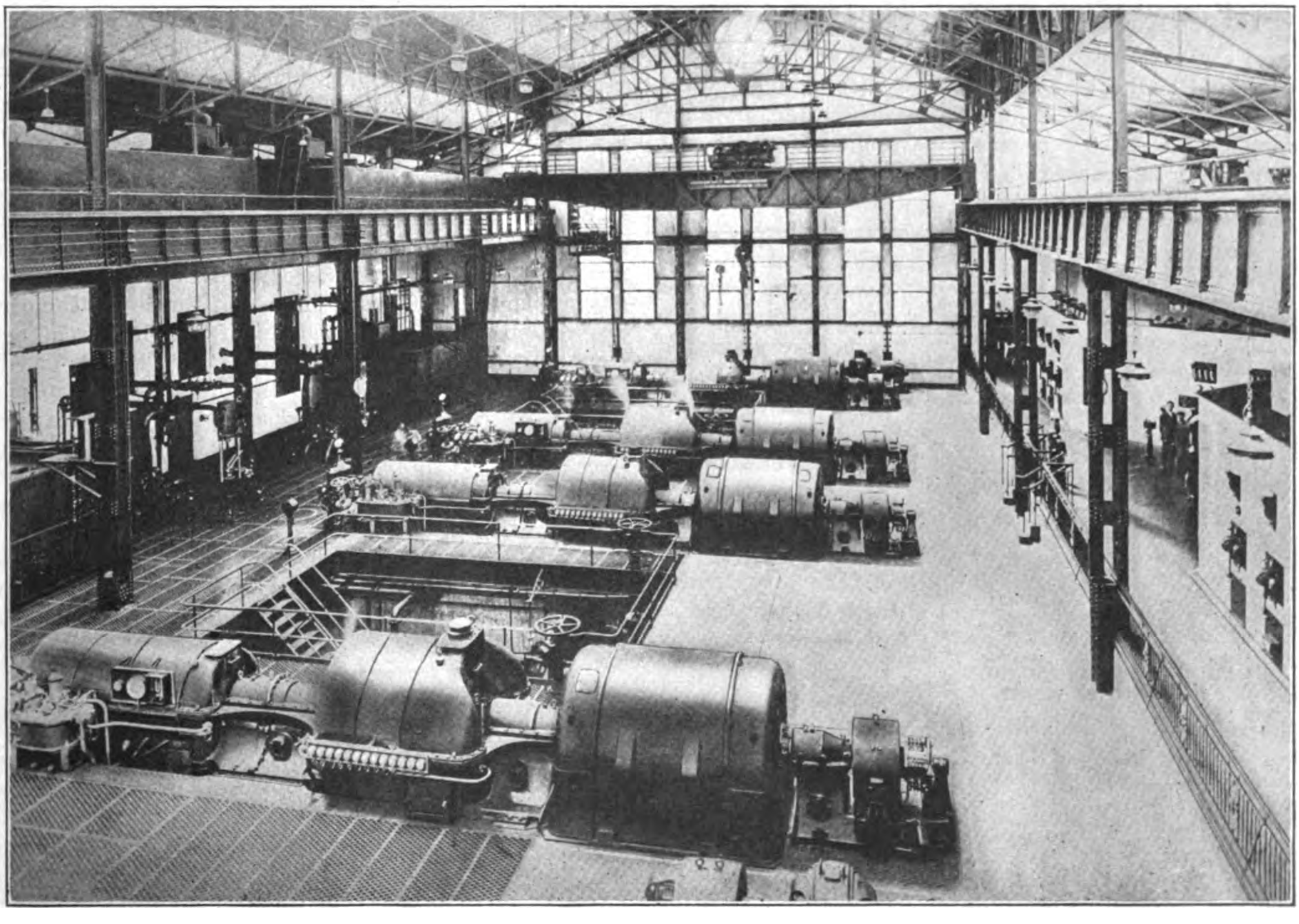
The high-tension gear is similar to that in the power station, the busbars being sectioned and interconnected by an oil switch. The two halves of the bars are fed by different cables.

Each traction substation contains three rotary converters of 1000-kw. normal rating. They are capable of carrying 1500 kw. for two hours, 2000 kw. for ten minutes and 3000 kw. momentarily. Each converter is served by three 375-kva. single-phase, oil-immersed, natural-cooled transformers. The substations also contain each a 10-kva. lighting transformer, a 5-kw. motor-generator set, an air compressor of a capacity of 39 cu.ft. of free air per minute at 60 lb. per square inch pressure, a ventilating fan of 25,000 cu.ft. per minute capacity and a 50-amp.-hr. storage battery.

PRECAUTIONS AGAINST FLASHOVERS

Special precautions have been taken to reduce flashover on the rotaries. For this purpose the commutator cones have been covered with projecting fiber sleeves, and all earthed metal near the commutators is painted with a composition made up of one-half gold size and one-half linseed oil. In addition screens have been fixed between the brushholders to prevent flashing around the commutators. By these and other means the number of flashovers was reduced from an average of six per month during the first six months of operation to a rate of two per month.

In Olivos substation a panel is installed carrying two center-zero voltmeters, connected to pilot wires running to the negative busbars of all three substations. A permanent deflection of one of the pointers indicates to the substation attendant that there is a difference of potential betwen the busbars in two adjoining substations and that one substation is "motoring" the other. He can then instruct one of the substations to



TURBINE ROOM, CENTRAL ARGENTINA RAILWAY'S POWER PLANT raise or lower its voltage until it is taking its proper share of the load.

Two substations are provided in the electrified section to give a supply for general purposes, one at the Retiro terminus and the other at the Victoria workshops. The former is designed to deal with the power and lighting requirements of the terminal station, train-yard and offices, and to give a supply for pumping and for operating the compressors of the pneumatic signaling system. The latter substation supplies power and light for the workshops, locomotive sheds, car sheds and repair shops at Victoria Station.

In the Retiro substation the internal design is similar to that of the traction substations. Space is reserved for two rotary converters which will be installed when the freight traffic in the yard and at the docks is handled electrically.

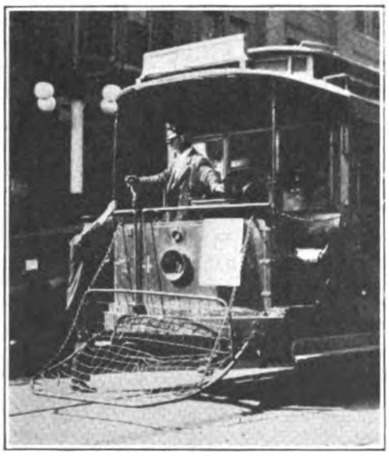
The Retiro substation contains motor-generator sets consisting of 440-volt induction motors, with output capacity of 400-kw. of direct-current power at 240 volts. With these are the necessary transformers and a 240-volt storage battery of 4000-amp.-hr. capacity. The Victoria substation contains only transformers.

The Victoria substation is a small building containing two banks of transformers with the necessary high-tension switch gear and low-tension panels.

The lighting of wayside stations along the electrified track is taken from the third-rail. The lifting circuits of these stations are arranged to take six 100-volt lamps in series.

Encouraging Short-Haul Traffic at Portland, Me.

ON THE Portland lines of the Cumberland County Power & Light Company cars operating on three routes with short runs carry passengers for a 5-cent fare, without transfer. Other cars operating in the city area are run on a 6-cent fare basis, and in some cases the routes overlap in part. To encourage riding on the shorter-haul lines and to reduce local travel on the longer or 6-cent lines, cars operated on routes covered in part by either class of fares are provided with dasher signs as illustrated, whereby the public is saved inconvenience and the railway service is the better maintained. Passengers are not kept off 6-cent cars, even for local riding, but the clear marking of both types of cars as respects fare unit throws the short-haul traffic on to the cars where it belongs. At the same time it enables a passenger who is in a hurry to take any car which he desires, provided he is willing to pay the extra cent for boarding the through car.



CAR WITH DASHER SIGN INDICATING FARE

Long Interburan Line Completed Near Barcelona

Part of the Extensive Electrical Development in Spain Which Was Initiated by the Late Dr. F. S. Pearson

THE longest interurban electric railway in Spain has recently been completed between Barcelona and Rubi by the Cataluna Railways, controlled by the Barcelona Traction, Light & Power Company. The road is a part of the extensive hydroelectric development in the neighborhood of Barcelona initiated under the direction of the late Dr. F. S. Pearson. This development includes the local railway, light and power system in Barcelona, the interurban railway mentioned, two different transmission lines at 110,000 volts between Barcelona and the Pyrenees, 125 miles away, and three hydroelectric plants in those mountains with a combined capacity at present of about 100,000 hp. A fourth plant with an additional 50,000 hp. is now under construction.

The largest of these plants develops 56,000 hp. The second and third plants were constructed at Tremp and Pobla and have an aggregate capacity of about 50,000 hp. The former, by the means of the Talarn dam (more than 250 meters in height), is one of the largest concrete dams in the world. Altogether the investment is about $60,000,000, and practically all the machinery, with the exception of the hydraulic turbines, which were made in Switzerland, was manufactured in the United States.

The first section of the electric interurban line was formerly operated by steam. This section has been extended so that the total length of the line when finished will be a little more than 20 miles. The line at present is running into Rubi and when completed will be operated as far as Tarassa, one of the most important textile manufacturing cities of Spain. The cars for the line were built in the United States, dismounted and shipped to Spain and there assembled. Ninety-pound rail is used with tie plates, creosoted ties and screw spikes with continuous joints. Catenary overhead construction is used. Six hundred volts is employed in the city proper and 1200 volts outside of the city. The cars are equipped with four motors of 125 hp. each, and bow collectors. There are five tunnels, all double tracked. The longest tunnel is a mile in length, and during its construction quicksands were encountered making the work exceedingly difficult. Some of the fills are more than 200 ft. high and ¼ mile in length.

The completion of the interurban railway, as well as the operation of the entire power and lighting system during the past three and one-half years, has been in the hands of H. P. Harrsen, who until 1915 was in charge of the Pearson railway and power interests in in the City of Mexico.

In a recent discussion of the cost of oxy-acetylene welding at a meeting of steam railroad mechanical men some data were given to show that the average cost of welding by this process is about $1 per cubic inch of weld. The data covered welds using from 1½ lb. to 2¾ lb. of welding metal, with acetylene at 3 cents per pound, oxygen at 14 cents per hundredweight, welding metal at 10 cents per pound and labor at 42 cents per hour.

The Automatic Substation Has Come to Stay

The Field for Automatic Control Is Almost Unlimited But It Must Be Used With Due Regard to Economic Considerations

By WALTER C. SLADE
Superintendent of Power and Lines, The Rhode Island Company, Providence, R. I.

WITH the price of copper about double that which prevailed before the World War; with an uncertain future to face as far as the re-establishment of normal prices is concerned, and with unparalleled advances in the wages of operating labor already allowed or of necessity to be granted, electrical engineers are confronted with serious distribution problems. They have been obliged and will be even more obliged to modify power distribution systems in a way that will, through conservation of construction material and operating labor, allow charges to be reduced sufficiently to offset in whole or in part the increased costs of construction, maintenance and operation.

It is perhaps the general belief that copper will never again be as cheap as it was prior to the war. Accordingly, new construction must be planned so as to save copper, and existing construction must be rearranged for the same purpose. This copper can be sold at a profit sufficient, in general, to compensate in part for the cost of the changes made. These remarks, of course, apply to the distribution copper necessary in any system of power distribution, and in particular to the great quantity of copper required for direct-current distribution feeders in the average railway system.

The use of additional substations is the one means of effecting these savings in material, provided that the capital, operating and maintenance charges combined are less with, than without, the additional substations. The substation, in the railway field at least, was never so important as at present.

AUTOMATIC CONTROL INVENTION WAS TIMELY

It is a strange but fortunate coincidence that almost at the commencement of the great war, E. W. Allen and Edward Taylor, with the co-operation of Bion J. Arnold, should have planned and applied successfully the first complete automatic control for railway substation equipment. When the automatic operation of the Union substation of the Elgin & Belvidere Street Railway was begun in December, 1914, the full importance of the achievement was incompletely realized. During less than four years this type of substation has come into prominence with surprising rapidity. It has supplied a demand in allowing marked reduction in operating cost and appreciable reduction in power consumption. It is now possible to save copper in distribution systems by the construction of an increased number of substations of reduced capacity previously found to be impracticable because of the cost of operating labor.

The use of the automatic substation is not confined to the railway industry alone, nor is it destined to occupy the whole field in any industry. The idea is, however, destined to find a place, in some cases a large one, in every field where substations are employed or where it is desirable to operate equipment automatically.

Remote control of equipment is in some cases more desirable than automatic control, especially where the requisite control circuits are short, or where the grouping of the stations to be controlled is advantageously related to a central point of control. This would also apply to those urban railway substations which contain several machines at present designed for manual operation and which stations are frequently grouped about a generating station symmetrically as regards load densities. Doubtless such station equipments, if automatically controlled, would not have occasion to shut down completely even for a few minutes, except possibly during the early morning hours.

FREQUENT STARTING AND STOPPING OF MACHINES UNDESIRABLE

On the other hand, it would not be desirable to have large machines stopping and starting frequently throughout the day, as might happen with load fluctuations where two or more machines were operating automatically in the same stations. Occasional functioning of an additional machine would, however, not be objectionable and it would doubtless be called upon to serve daily during the peak-load periods. Equipments in city substations can be run automatically, nevertheless, as is being demonstrated in Des Moines, Iowa. In that city the substations, although at present containing single units, are designed for an ultimate capacity of two 500-kw. units to run in parallel.

Three remote-control lighting substations are in use on the system of the Detroit Edison Company, one of which has been in operation since 1912. There is also a remote-control railway substation on the lines of the New South Wales Government Tramways at Sydney, Australia, which was put into operation in 1914. In Cedar Rapids, Iowa, the Iowa Railway & Light Company has made arrangements to operate either automatically or by remote control the three 500-kw. water-wheel generators in its new hydro-electric station.

This application of automatic control at Cedar Rapids is of interest because it was the first attempt to operate water-wheel generators in parallel automatically. There is also elsewhere a small 100-kw. d.c. water-wheel generator in automatic operation, and a 3000-kva. synchronous condenser with automatic control.

Substations for railway service have in the past been manually operated. Conditions may make it advisable to continue in service many of them under manual operation. The size and importance of the station, the character of the service furnished, the fact that the station may serve also as a switching center, the magnitude of the load to be handled and other factors will determine the matter. An attendant may be required for the performance of various duties aside from that of operating.

Aside from those stations now manually operated that could more advantageously be rearranged for operation by remote control, there are many others that should be rearranged for automatic operation, or at least reduced in capacity by removal of machines to more advantageous points. Thus some feeder copper could be removed and a higher potential could be maintained throughout the system.

Many substations of old construction, possibly located properly a decade or more ago, are inadvisedly located to-day. As traffic has grown the tendency has been to add equipment and feeder copper, but shifting load centers have often caused undesirable distribution losses. Increased operating cost proved a barrier to the addition of manually operated stations. This barrier does not exist to as great a degree with automatically operated stations. There are few distribution systems that could not be improved to-day by some use of automatic equipments.

THESE STATIONS ARE TYPICAL OF LATEST PRACTICE

The present status of automatic railway substation development shows remarkable progress. Aside from the installations previously referred to the following are of particular interest as being different from the substations in which single 600-volt converter or motor-generator units are controlled.

The 1200-volt automatic substation of the Milwaukee Electric Railway & Light Company at East Troy, Wis., contains four 300-kw. 600-volt converters, two of which are arranged to run in series. The two sets are, however, not arranged for parallel operation, one simply serving as a utility set.

The first installation of machines arranged to operate in parallel is in the substation of the Rhode Island Company at Oakland, R. I. This station, which will be described in a succeeding article, contains two 300-kw.. 600-volt, synchronous converters, taking energy from a 25-cycle, 13,200-volt transmission line. One machine operates about eighteen hours a day, while both machines operate generally over the morning and evening peak periods and on Saturday afternoons and Sundays when the car service is increased. Both machines operate entirely automatically, and by means of a transfer switch in the control circuits either machine can be made to act as the leading machine. The writer is advised that in the near future two 600-kw., 1500-volt, motor-generator sets are to be arranged for automatic operation.

PORTABLE SUBSTATIONS LEND THEMSELVES WELL TO AUTOMATIC CONTROL

Automatic control is not confined to permanent substation equipment. Two portable substation equipments are already in operation. One of these contains a 500-kw. synchronous converter. It serves as a utility station as well as its main purpose in the summer season, for it is equipped for operation either on the 4400-volt supply of the Des Moines city system or on the 23,000-volt supply of the Interurban Railway where it is used to supply power on a spur track which leads to a gravel pit. A third portable automatic station is in process of manufacture.

The portable substation, although primarily intended for emergency or seasonal use, has often been used in a fixed location for permanent use and has accordingly afforded quarters far too confined for sheltering the substation attendant day after day. It therefore furnishes an excellent field for the application of automatic control. Without the necessity of planning for the operator's comfort or discomfort, and of setting space aside for this purpose, it is entirely possible to construct portable substation equipments with necessary automatic control up to capacities of 1000 kw. to 1500 kw., limitations being set by the supply voltage and frequency.

Lightning protection equipment, at least that involving the electrolytic aluminum arrester, would probably have to be omitted from the car in case of the larger units mentioned. It could be easily supplied as a separate portable equipment where advisable.

Such portable equipment as that suggested would generally be serviceable in cities where the capacity of the portable automatically controlled unit would be comparable in magnitude with the capacities of the units in the permanent substations, and in some cases it might equal the total capacity of some of the smaller stations. Besides, a spare operator would not be required to operate the spare equipment which is an important consideration these days. Finally, it is interesting to observe that automatic control has not been confined to small units. In the near future it will be applied to units in capacities ranging from 1000 kw. to 2000 kw. These larger machines are in most cases interpole machines provided with motor mechanisms for raising and lowering the brushes automatically as required in starting. The human element in this important operation is therefore eliminated.

AUTOMATIC CONTROL ALREADY BECOMING STANDARDIZED

The type of automatic control developed by the General Electric Company was described in the A. I. E. E. *Proceedings* for September, 1915, by Messrs. Allen and Taylor, and also in the Sept. 18, 1915, issue of the ELECTRIC RAILWAY JOURNAL. This company has made a few minor changes in the control equipment originally described, and has applied the system of control to many types of machines, such as synchronous converters, synchronous condensers, motor-generators and waterwheel generators. The Westinghouse type of control differs from the General Electric mainly in that while in the latter a motor-driven controller and exciter are employed for determining the sequence of operations and at proper time fixing the polarity of the field of the machine to be started; in the former the sequence of operations is obtained through a suitable combination of interconnected relays and control circuits. In the Westinghouse control a pole on the machine to be started is automatically "slipped" in case the polarity should fail to remain established from the previous operation of the machine. In both systems relays of both the instantaneous and time-element type are employed, as well as thermostats for protection against overheating of bearings and resistor grids. The main difference lies in types of design and methods of operation. Both systems employ the resistors to limit the output of the machine on overload or on external short-circuit. The Westinghouse system was described in the ELECTRIC RAILWAY JOURNAL of April 13, 1918. The system has been developed particularly for the railway converter substation and has in a short time found application in a rapidly increasing number of installations, some of which are now in operation.

Through the courtesy of C. M. Davis of the General Electric Company and R. J. Wensley of the Westinghouse Electric & Manufacturing Company the writer can give some data as to the present status of the automatic substation. There are twenty-nine equipments in operation and thirty-six equipments are in process of manufacture, giving a combined total of sixty-five. Of the equipments now operating, three arranged to control brush-raising devices on interpole converters. Of the forthcoming equipments eleven will control interpole machines and five will control motor-generator sets. About one-fourth of the equipments for synchronous converters will control interpole machines. The tendency for railway engineers to rearrange existing substation equipments for automatic control is clearly shown by the fact that thirty-one equipments out of the total of sixty-five, nearly one-half, are operating or will be installed in stations previously operated manually. In most if not all of the manually-operated stations that have been arranged for automatic control the old wiring and switchbord panels have been retained so that the stations may be operated with the old manual equipment if desired. In the newer stations, however, the designers have assumed that the automatic equipment will function reliably, so that only the automatic contactors and relays have been included. The additional expense for manually-operated switchboards has been considered unnecessary or at least not commensurate with the additional flexibility or dependability of the stations.

> MR. SLADE has had exceptional opportunities for studying the automatic substation question from several angles, and he is applying the correct principles on the lines of the Rhode Island Company as rapidly as economic conditions will permit. In the preparation of this article, outlining the present status of the automatic substation, he has had the co-operation of the engineers of the manufacturing companies. In a later article he will show how the principles touched upon are illustrated in the latest substation on this property.

To furnish a perspective view of the increase in fixed and operating charges incidental to automization let it be assumed that it costs about $7,000 more to make an equipment entirely automatic than it does to install the necessary panels and switches for manual operation, not including machines of 1000-kw. capacity and larger. Taking interest, depreciation and taxes at 12 per cent, the annual charge is $840. Expense of inspection labor chargeable to any automatic installation will vary widely depending on local conditions and on the point of view of the individual who is responsible for the maintenance of the stations. Assuming a salary of $1,200 per annum and allowing the equivalent of a day only per week per equipment for inspection work, an ample allowance, the calculated cost of the inspection becomes $200. Maintenance expense for the automatic relays and contactors and other control equipment is difficult to estimate at this time, but for the sake of approximate calculation can be placed at $250. The total of $1,290 arrived at represents fixed and maintenance charges on the automatic part of the equipment and all of the inspection labor expense, applied only as above specified. Against these figures must be set the operator's wages for the manually-operated substation which to-day would amount per annum to hardly less than $1,500 for a one-man station and $2,600 for a two-man station.

From the point of view of the operator's wages, it would pay to automatize any two-man station but possibly not some isolated one-man stations. The majority of such stations are located on suburban or interurban lines where the schedule is either on the hourly or two-hour basis. It happens thus that the energy saving possible from the automatic shutdowns to be expected on such roads will permit automatization which would not be justified from reduction in the operating expense alone. The financial saving may, however, not be commensurate with the energy saving in those instances where electric energy is purchased on a basis of a service charge plus an energy charge. The present tendency of central stations to sell electric energy for power loads on this basis, combined with other unfavorable conditions, may preclude making the station automatic. It thus may be cheaper for the consumer to waste energy than to save it. In case of new installations in new substation locations it may be possible to remove sufficient feeder copper so that the added fixed charges created by the substation development are compensated for in part or in whole by the fixed charges saved in the copper removed from service. In one instance an automatic substation was built on a trolley line formerly supplied with power from a distant booster. Here the copper removed approximately offset the cost of the development, at war-time prices of metal. The voltage regulation is much better at the same time.

WHY THE AUTHOR FAVORS AUTOMATIC OPERATION

The writer is strongly in favor of automatic operation wherever possible. Dependable automatic equipment does not forget, whereas the "human element" is always present even in the experienced operator. To-day many companies are obliged to employ inexperienced men to operate important and valuable equipment, the temporary loss of which would paralyze a part of the power system. More automatically controlled substations can be operated within a given area than could ever be operated economically under manual control. With a system of automatic stations advantageously laid out, in case of unforeseen accident a single machine or even a single station could be eliminated during repairs without affecting the system as a whole seriously enough to interrupt service.

ACCIDENT HAZARD REDUCED TO MINIMUM

Accidents are possible in any substation. Those due to neglect by the operator would be eliminated in the automatic station; other accidents would happen in any case. The automatic protective equipment is designed to limit and localize the accident damage, which it does in some cases more efficiently than an operator could do. Protection is provided against reverse current, overloads, heated bearings, overspeed, and other abnormal conditions. Some of the protective features alone are sufficiently valuable to warrant installation in manually-operated stations. That the value of the load-limiting resistors for example, is appreciated by some engineers is shown by the equipping of seven manually-operated stations with them to supplement the circuit breakers. Lightning may do damage in any substation including automatic stations, but this can be prevented or limited by generous use of good lightning arrester equipment on both the direct-current and the alternating-current sides of the station, and delays to service will be short if the few instruments or relays mainly subject to damage are duplicated in stock. Besides, an automatic station can be run manually when necessary.

One disadvantage of the automatic substation must be admitted. If the oil switch that controls the station is tripped due to overload much beyond that which the converting or generating equipment is designed to handle the station shuts down until the inspector arrives. The cause of the shutdown may be in evidence and justifiable, but again it may not be so. The rule is that the oil switch is set not to trip unless necessary to protect the station. The real delay occurs because an inspector is not always present to determine immediately the cause of the trouble, to take steps immediately to correct it and to place the station once again in operation.

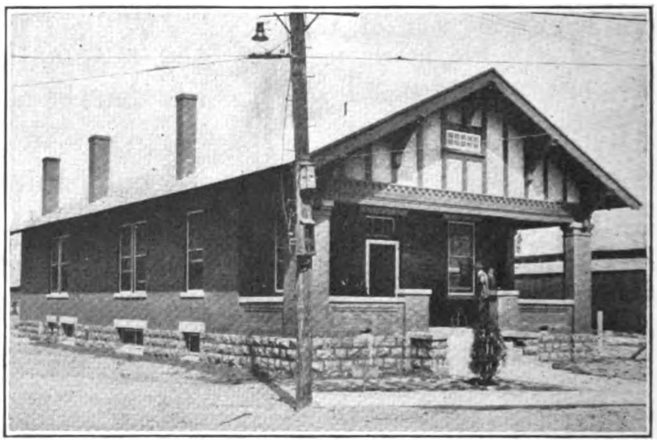
AUTOMATICS CAN BE USED IN AS WELL AS BETWEEN CITIES

In the past automatic substations have been talked of principally as a proposition for interurban lines or suburban lines having infrequent service. It is the writer's belief that they are useful in some city service. In some cities the best plan lies in automatizing all of the substation equipment, excepting possibly that which may be located in the generating station. In any city certain divisions of the power distribution system, if not handled advantageously by remotely controlled substations, can be handled entirely satisfactorily by automatically controlled substations. This will allow the removal of unsightly feeder lines, thus postponing the day when the generally increasing cry for underground construction on the part of municipalities may have to be answered. When underground construction must come it will be a more attractive proposition to build the few ducts required for the transmission service and the greatly reduced number of distribution feeders than it would be to accommodate the number of feeders that would have to be retained as well as future feeders for handling the output from the smaller number of large manually-operated stations. Another advantage in increasing the number of substations in many cities would lie in the fact that the negative track return would be divided into relative small subdivisions so that the over-all voltage drop from the outlying regions served by the individual stations would be reduced to maximum values much under the maximum values previously obtained. Negative feeder copper could consequently be removed in many instances.

Making It Pleasant for the Men at El Paso

FOR a property with only 166 trainmen, the El Paso (Tex.) Electric Railway has an unusually pleasant brick clubhouse to which a cost-price restaurant has been added. The bungalow style of the building is well shown in the accompanying illustration. Alongside the clubhouse the company maintains a fine lawn, a real luxury there, and also a tennis court. The clubhouse is for the use of all employees of the El Paso Electric Railway.

The main floor has the dispatcher's or trainmaster's office on one side of the lobby and the superintendent's on the other side. The remainder of the floor space is occupied by the general recreation room, except that one rear corner is used for the office of the night cashier.



PLEASANT CLUBHOUSE ERECTED FOR EL PASO MEN

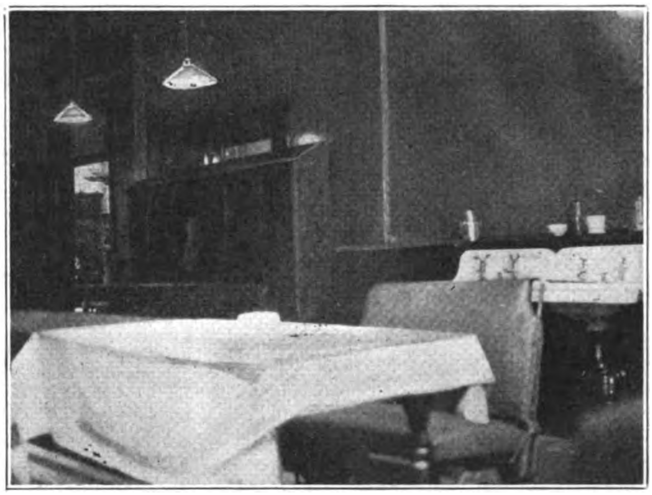
In one part of the basement are the toilet, shower baths and lockers. In another is the lunchroom. This is open from 7 p.m. to 7 a.m. and is in charge of one cook and one helper. The menu is printed on a blackboard. Simple food of the best sort is served; even individual bottles of milk are used.

The restaurant was opened on May 14 and is averaging $20 a night. Purchases may be made with tickets only. At the end of every month a public accounting is made, and the prices are adjusted accordingly. The first month showed about $100 surplus, or enough to pay for the help after caring for supplies and gas. Everything else is paid for by the company.

Women Help Relieve Labor Scarcity in B. R. T. Mechanical Department

To Help Win the War Women Operate Machines and Perform the Labor of Inspection and Overhauling of Car Equipment Which Was Previously Limited to Men

HE WHO RUNS and reads cannot fail to realize that women are assisting with all classes of work to help relieve the labor shortage and fill the breach in our man power left by the war. Electric roads were early to recognize the field they had for women workers as clerks, ticket sellers, station agents, conductors, car cleaners and the like. Now necessity has widened the field and women are found employed in the shops of the Brooklyn Rapid Transit Company on work that would not have been considered suitable for them a year ago. Up to Sept. 15 the mechanical department of the company had on its payrolls 120 women workers who were performing all classes of duties in the inspection, overhauling, maintenance and repair of electric car equipment. This enforced employment of women has brought new problems in shop arrangement and management. Sections have been partitioned off and screened from the sections where the men are employed to afford as much privacy as possible, and new locker rooms, rest rooms, wash rooms and lunch rooms have been built for the sole use of the women. The aptitude which these women have shown toward learning their new duties has surprised the shop foremen, and they have picked up the use of the necessary tools with remarkable quickness. The great majority of the women who have sought these new occupations are efficient, faithful workers who find the new lines of work very interesting. In assigning work to the various women applicants, great care has been taken to make certain that the duties do not require unusual physical effort and that the strength of the employees is not apt to be overtaxed. Some of the duties which these workers are performing are as follows: Inspection, cleaning, oiling and adjusting of controllers of both hand and multiple-unit types; replacement of excessively worn small parts, such as contacts, fingers, arc deflectors, insulation shields and the like which can be done without dismantling the heavier parts. On cars which are in the shops for overhauling, women assist in dismantling and reassembling the smaller parts, and they clean, shellac or paint the different pieces. On multiple-unit equipments they check the sequence of operation of the switches and relays; and make certain that reverser and line switches function properly and that overload trips and circuit breakers can be properly reset. In this inspection one woman operates the control from the motorman's cab while the other, underneath the car, checks its operation.



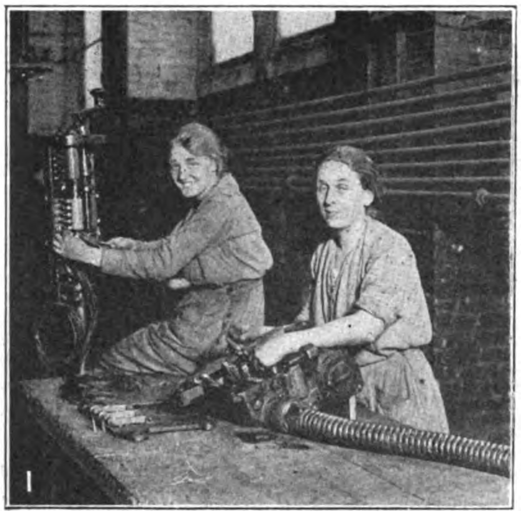
WOMEN'S LUNCH AND LOCKER ROOM AT SOUTHERN DIVISION INSPECTION AND OVERHAULING SHOP

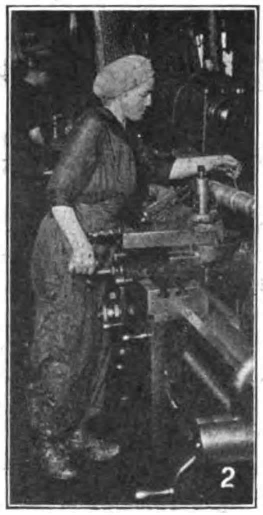
Air-brake parts, such as brake valves, feed valves, governors, whistles, etc., are also cleaned, oiled and tested on the cars in a manner similar to the treatment of controller parts. Women are also employed at the bench in cleaning, adjusting and resetting feed valves and governors. In cases where leaky valves are found, causing "creepage" of the air pressure, these are set aside to have valve seats reground or other repairs made by experienced workmen. After this work is finished the parts are again turned over to the women for testing and adjustment.

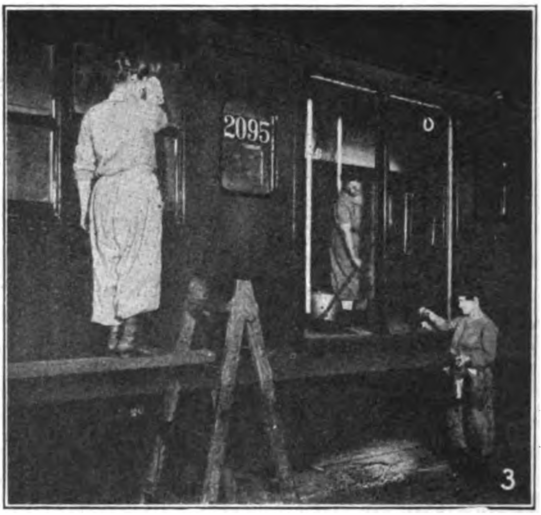
DOOR ENGINES ARE INSPECTED AND ADJUSTED

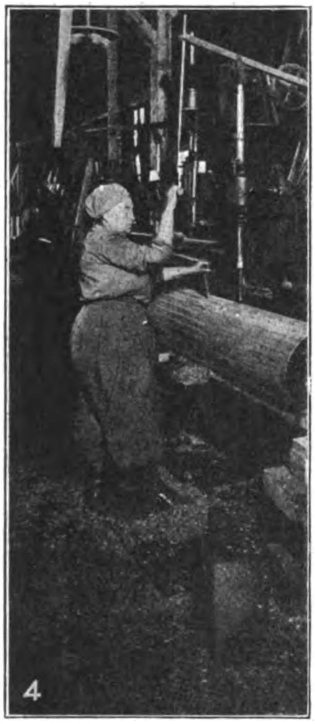
Another class of work on which the women are making good is in inspecting and overhauling electro-pneumatic door engines. Women inspectors test the operation of the doors, make adjustments, and oil moving parts and door races. Where trouble that requires the services of a skilled workman is found this fact is reported and a man makes the repairs. On cars which are in the shops for overhauling, women remove the inside panels at the engines, help dismantle the various parts, and clean, oil and put them in satisfactory operating condition. The inspection of lamps and signals is another class of work that has been taken up readily by the women. As most of this trouble is due to broken or burned-out lamps, the women can replace the lamps and "O.K" the cars again for service in most cases without calling in the aid of an electrician.

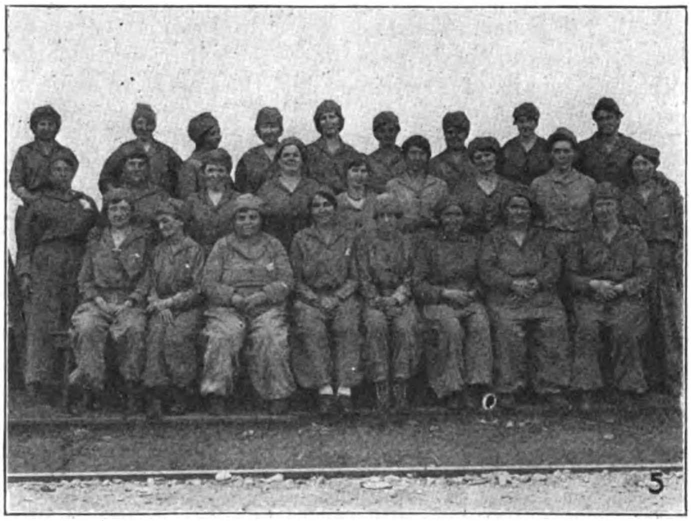
In the several general shops, where cars are brought for painting, varnishing and general repairs or overhauling, the women are used to good advantage on various classes of work. That which they have taken up most readily and which they perform in many cases better than men comprises the various cleaning operations. Before a car can be repainted all parts must be thoroughly cleaned inside and out. A great amount of this work is being done as piecework and this system is working out to good advantage both for the employees and the railway. Other duties performed by

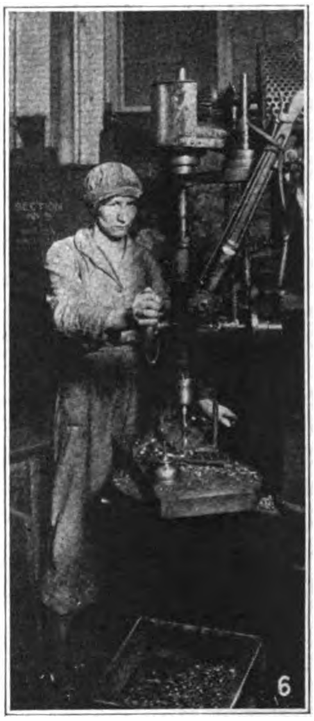


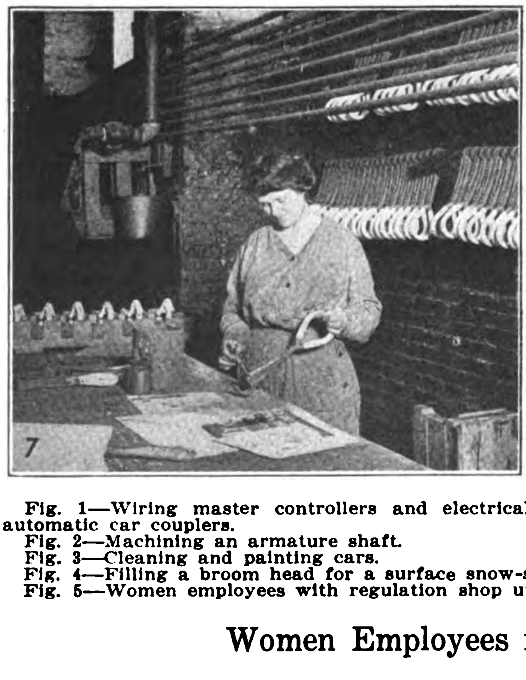


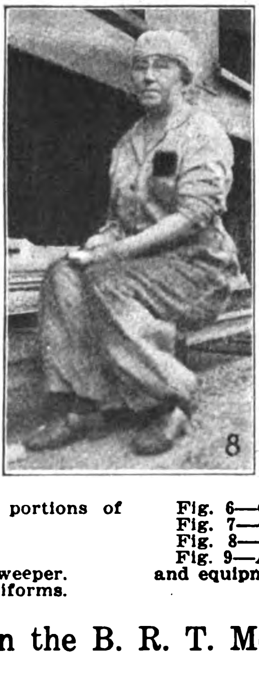












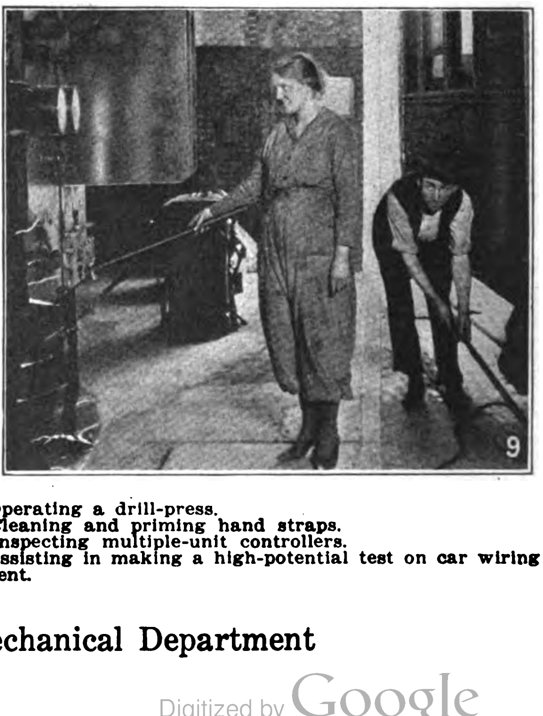


Fig. 1—Wiring master controllers and electrical portions of automatic car couplers.

Fig. 2—Machining an armature shaft.

Fig. 3—Cleaning and painting cars.

Fig. 4—Filling a broom head for a surface snow-sweeper.

Fig. 5—Women employees with regulation shop uniforms.

Fig. 6—Operating a drill-press.

Fig. 7—Cleaning and priming hand straps.

Fig. 8—Inspecting multiple-unit controllers.

Fig. 9—Assisting in making a high-potential test on car wiring and equipment.

Women Employees in the B. R. T. Mechanical Department

women in the paint shop consist in removing curtains, scraping and burning off paint, re-painting floors, touching up and varnishing various parts, blacking off pipes and equipment parts, cleaning seats, painting hand straps, etc.

In addition they operate milling machines, drill presses, punch presses and boring machines. At the bench they file, chip and rivet various parts and perform any class of work not requiring a skilled mechanic. Broom heads are filled, fenders repaired, trucks are stripped for overhauling and various light repairs are made.

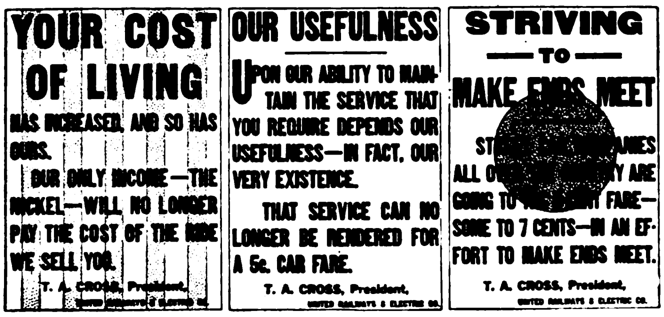
In order to comply with the recommendations of the Industrial Commission of the State of New York the railway requires that all women operatives doing shop work wear cap and overalls. These shop uniforms combine safety with comfort and are purchased by the employees at certain department stores upon order from the superintendent or foremen at a special price of $4 for the complete uniform. As a further measure to promote safety and comfort while working, the wearing of high-heeled shoes is prohibited. In order not to impose a hardship on those entering the service a period of ten days is allowed for the provision of the necessary uniform.

Free transportation over the lines of the system by use of the departmental badge is provided. One of the rules of the transportation department requires that the badge be displayed on the cap of the employee while riding on a car. In order to provide an attractive head dress for the women a trench cap has been designed for their use.

In general the class of women applying for this work is of very high grade. Many have male relatives in the employ of the railway and in one case mother and daughter are new working in the same shop.

To 800,000 Patrons in Baltimore

SINCE the United Railways & Electric Company, Baltimore, Md., filed a petition on July 19 for a reasonable increase in fare, the company in a sustained publicity campaign has been trying to drive home the fact that the public is squarely and fairly confronted with the alternative of a service which will not meet its needs or a fare increase which will be commensurate with the higher costs of doing business.



YOUR COST OF LIVING HAS INCREASED, AND SO HAS OURS.

OUR ONLY INCOME—THE NICKEL—WILL NO LONGER PAY THE COST OF THE RIDE WE SELL YOU.

T. A. CROSS, President, UNITED RAILWAYS & ELECTRIC CO.

OUR USEFULNESS

UPON OUR ABILITY TO MAINTAIN THE SERVICE THAT YOU REQUIRE DEPENDS OUR USEFULNESS—IN FACT, OUR VERY EXISTENCE.

THAT SERVICE CAN NO LONGER BE RENDERED FOR A 5c. CAR FARE.

T. A. CROSS, President, UNITED RAILWAYS & ELECTRIC CO.

STRIVING —TO— MAKE [illegible] MEET

ST[illegible]ANIES ALL O[illegible]Y ARE GOING TO [illegible] FARE—SOME TO 7 CENTS—IN AN EFFORT TO MAKE ENDS MEET.

T. A. CROSS, President, UNITED RAILWAYS & ELECTRIC CO.

POSTERS USED IN BALTIMORE IN CAMPAIGN TO SECURE RELIEF FROM EXCESSIVE OPERATING BURDENS

Some of the striking car posters used are shown in the accompanying illustration. The company also told about relief granted in other cities.

More Data on the Connecticut Company's Power-Saving Campaign

THE Connecticut Company has completed practically a year of its campaign for power savings, and data are now available showing the result. A preliminary note on this subject was printed in the issue of the ELECTRIC RAILWAY JOURNAL for June 15, 1918, page 1152.

The very substantial savings accomplished are the result of a number of factors. There has been excellent co-operation between the men and the management, not only with respect to the men on the cars but also those in the carhouses, bond maintenance men, and others. No small credit should be given to the work done to maintain the cars in the best possible condition. It will be remembered that the Arthur "power-saving recorder" is used on the entire Connecticut Company system, which totals approximately 1200 cars.

The accompanying table shows the result of the entire campaign, but some comment is necessary in order to explain the wide variation in results. On the New Haven and Hartford divisions the saving was increased by the introduction of skip stops, whereas other divisions at the time were not using the skip-stop plan. For instance, Bridgeport, which shows 22½ per cent saving, had no skip stops and was, in fact, operated practically the same as a year ago except for the power-saving campaign.

TABLE SHOWING ENERGY USED FOR TRACTION ONLY ON CARS OF CONNECTICUT COMPANY

Division	Kilowatt-Hours per Car-Mile 1917	Kilowatt-Hours per Car-Mile 1918	Per Cent Decrease
New Haven......	3.147	2.563	18.56
Waterbury	4.115	4.008	2.60
Hartford	3.630	2.867	21.02
New Britain	3.088	2.826	8.48
Bridgeport	3.698	2.862	22.61
Meriden	2.795	2.200	21.29
Middletown	4.332	3.134	27.65
Stamford	3.645	3.268	10.34
Norwalk	2.862	2.308	19.36
Torrington	1.793	1.124	37.31
Derby	3.721	3.444	10.13
Average for entire system	3.498	2.875	17.81

The poor showing which was made in Waterbury, relatively to the remainder of the division, is due to lateness in inaugurating the campaign. In fact, it is only now getting under way there, but it is expected soon to bring this division into line with the others. The data given in the table are of particular interest because the Connecticut Company's lines connect four large cities and serve territory embracing some seventy smaller towns and villages, thus comprising a diversity of operating conditions. These include congested city sections, high-speed interurban service and every kind of intermediate service.

The figures given are for the month of May, 1917 and 1918. During this month in 1918 the old braking-time recorders were still in use. All recorders are now being changed over to the type showing the length of time the power is on.

The monthly magazine *Concrete* is printing in its September and October issues the paper on "Effect on Concrete of Consistency and Mixing Time," read by Duff A. Abrams at the 1918 convention of the Concrete Institute.

Freight Transportation Without Rehandling

The Bonner Rail Wagon System Aims to Reduce Cost and Time of Freight Haulage by Using Containers on Wheels Which Do Not Require Warehouse Facilities

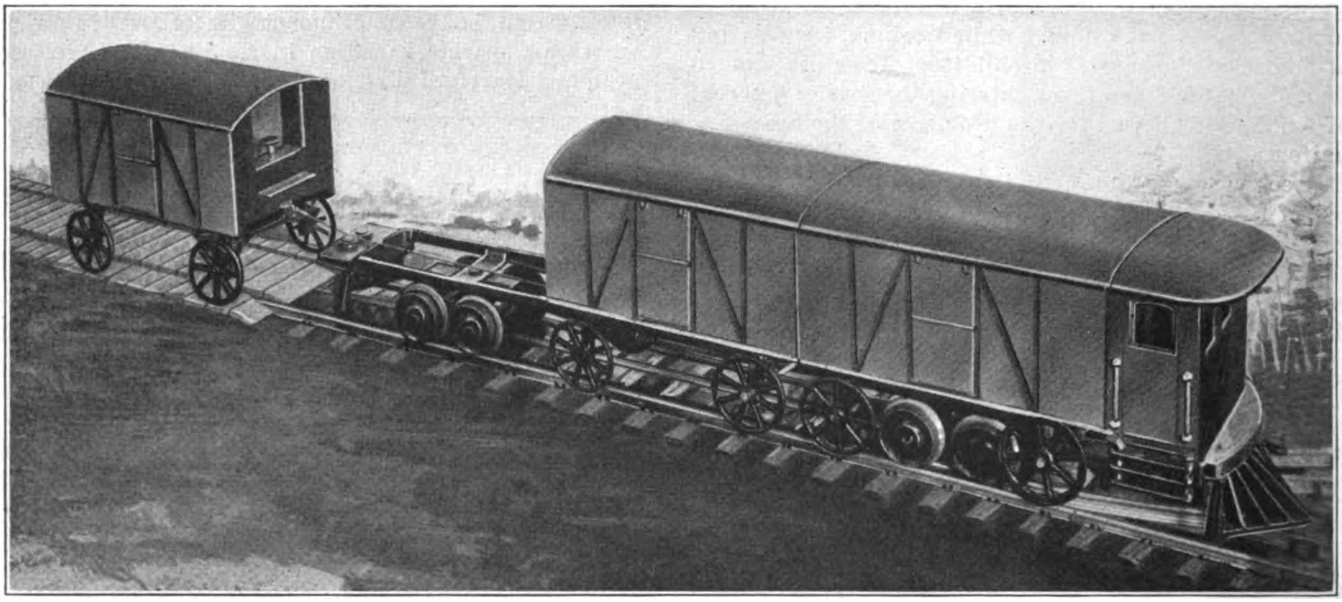
FOR the past three years much original research work has been conducted in the line of developing a new method of freight collection, rail haulage and delivery and of doing away with the rehandling of this freight while in transit. At the request of several railroad executives, a plan known as the "Bonner Rail-Wagon System" was submitted to a committee of manufacturing and operating engineers who have made a report as to the practicability of the system. This committee found the principles underlying the scheme to be sound, and recommended a full equipment and service test of the system on the lines of the Public Service Railway of New Jersey. The service recommended was for freight haulage over the Passaic line from Hoboken to Paterson, a service over the North Hudson County lines, particularly the Palisade line as far as Coytesville, with pick-up and delivery service by "auto hoss" in the various districts. In addition a service would be given from the Hoboken section to and from New York and Philadelphia.

The attention of the United States Railroad Administration was directed to this system, its co-operation solicited and after investigation and reports from engineers under its control it is now deciding the question of releasing steel and other material necessary for the carrying out of this service test. A syndicate has been organized and funds subscribed to defray the expenses of this test, and it is expected that a company to be known as the Bonner Rail Wagon Company will be incorporated later to develop the system.

The necessary transportation equipment consists of three parts. First there is the "rail wagon," a van or container for the goods to be shipped. Second there are the "carrier cars," used to transport the containers over the railroads. Finally there is the "auto hoss" for carrying containers over streets to their destination.

The "rail wagon" is constructed of steel and is mounted on four standard wheels. The body is approximately 16 ft. x 7 ft. x 7 ft. and of about 5 tons capacity. This can be either horse-drawn or motor-driven.

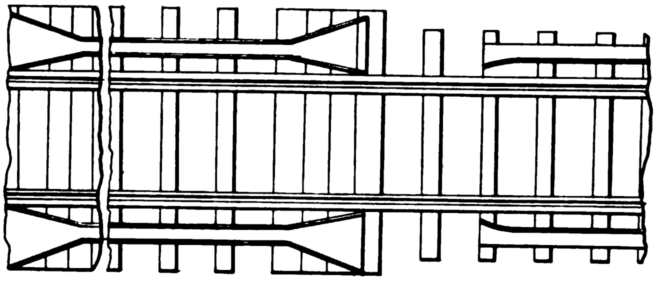
The carrier cars may be self-contained gasoline or electric motor cars, or trailers arranged for either electric or steam haulage. They will be built to master car builders standards and be capable of every needed interchangeability or service. One of these should be of dimensions such as to enable it to carry two to four rail wagons. The rail wagons are loaded astride this specially designed carrier car.


A CARRIER CAR PICKING UP A RAIL WAGON ALONG THE LINE

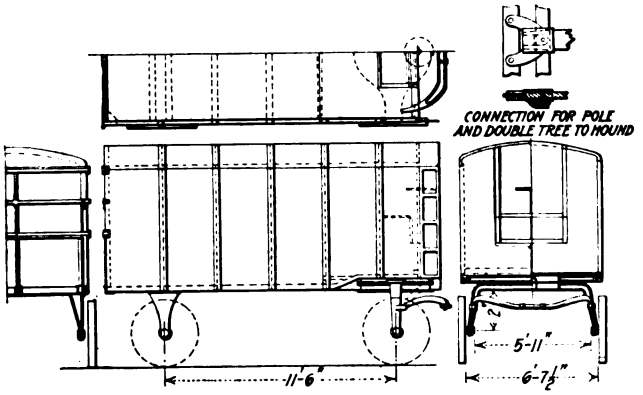
HOW THE SYSTEM OPERATES

The accompanying illustrations show the different classes of vehicles which enter into the Bonner plan for freight transportation. The procedure in using these consists first of loading the containers. This is done at the point where the material is manufactured or produced. They are loaded by people interested in careful handling quick and safe delivery of the material. The containers, fully equipped with wheels, can then be drawn to the nearest railroad siding or electric line by horses if desired. The weight of these loaded containers —being less than the ordinary van—can be easily handled. The "auto hoss" has been designed to provide a more rapid and efficient means of haulage where necessary. The rail wagon is left at the railway loading point to be picked up by the first carrier car available. No freight or warehouse is necessary and the handling from truck to warehouse and reloading on freight cars are avoided.

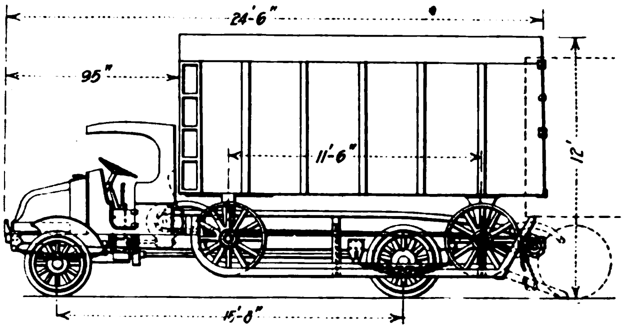
The loading of the containers for either single-car or train operation is accomplished by the motive power used for propulsion. The rail wagon has no cross axles. It is drawn astride the tracks and while resting on its wheels the carrier car is run underneath it. Air cylinders, connected to the regular source of air supply used for braking, are employed in raising the rail wagons and give the necessary clearance of the wheels from the ground for operation over the line. The containers are automatically clamped securely in place to prevent movement and are then ready for transporting. For delivery to their destination, the containers are dropped off the carrier cars either at the terminal yard or along the street or right-of-way, being lowered by the air equipment until the wheels rest on the street level, and the carrier car is withdrawn. After the carrier cars are pulled from underneath the rail wagons the latter are pulled to one side to clear the tracks. Here again no freight house is required and no additional handling of the freight is necessary. The material still in its container can then be hauled to its destination either by horses, motor tractors, or the "auto-hoss" as desired. When the "auto-hoss" is used this is, of course, available for independent work of any similar character when not used in carrying the rail wagons.



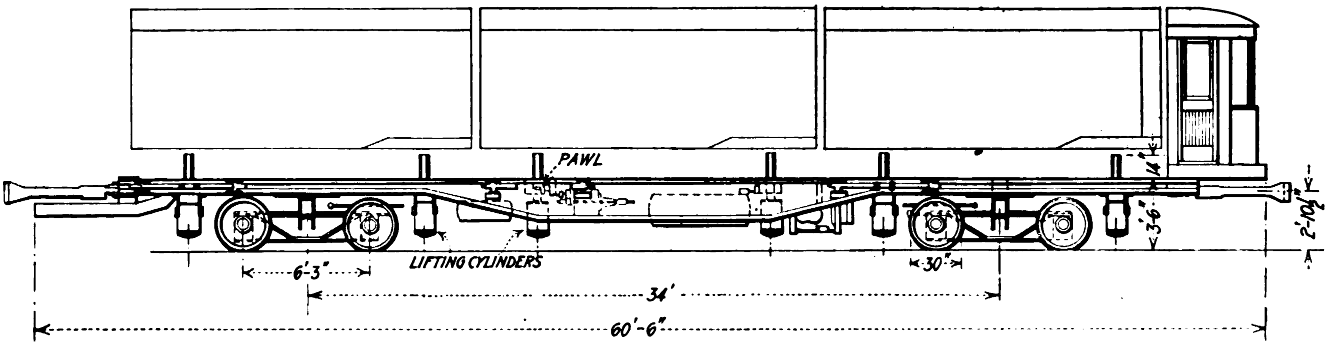
LINE-UP SWITCH FOR FACILITATING THE LOADING OF THE RAIL-WAGONS



THE "RAIL WAGON," A FREIGHT CONTAINER MOUNTED ON WHEELS



THE "AUTO HOSS" FOR RAPID PICK-UP AND DELIVERY OF THE CONTAINERS



THE "CARRIER CAR" FOR RAIL TRANSPORTATION OF THE CONTAINERS

The great advantage of this system will lie in its ability to give quick transportation without rehandling and without the necessity for freight terminals and warehouses. Congestion will be avoided and no carrier cars will be tied up waiting to be unloaded. An analysis of the present cost of freight transportation indicates that at least 50 per cent is due to the rehandling, reloading and warehouse checking necessary and that freight cars are idle twenty-two hours out of twenty-four. The rail wagon will provide for freight in less-than-carload lots and also provide a van that can be loaded anywhere in city, town or country and be delivered anywhere without disturbing the contents. Colonel Bonner's idea in this plan is to minimize cost, save time and labor, eliminate muscle power by substituting machine power and introduce system instead of confusion and disorder. Such a system ought to provide an easy means of utilizing the tracks of the electric railways for the collection and distribution of freight and as feeders to and from the steam railroads.

In the annual joint report of the express companies in the United States, just issued by the Interstate Commerce Commission, the total electric line mileage at the end of 1917 was given as 8801 as compared with 257,408 steam railroad mileage. During 1917 there was an increase of electric line mileage of 138. The Wells-Fargo & Company took over 200 more miles making its total 4431 and the Adams Express Company discontinued service over 64 miles. The other express companies reported practically no change.

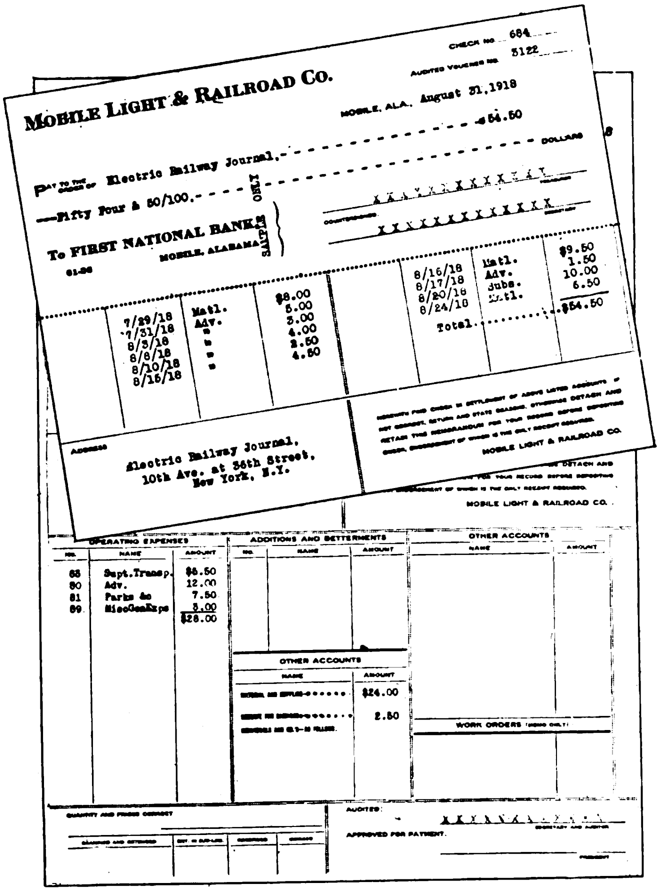
Saving Money Through Accounting

Without Impairing Efficiency, Accounting Departments Should Now Show "Productive" Power—Efficient Voucher Check Used in Mobile

By M. W. Glover
Secretary and Auditor Mobile Light & Railroad Company, Mobile, Ala.

THIS war has changed the order of many things. What was considered impossible a few years ago is now the natural order of business. Possibly before the war is over the accounting department may come into its own.

A few years ago it was the rule rather than the exception to treat the accounting department as one of the necessary evils connected with the operation of a railway. Sometimes the accountant was merely a clerk in the superintendent's office with no title and less authority. If he could persuade the superintendent that certain things should be done to enable him to obtain the proper records, and it did not entail too much work, perhaps he was allowed to get the reports needed. As for permitting him, however, to issue orders as to how records were to be kept and what reports should be made, that was unheard of.



MOBILE LIGHT & RAILROAD CO.

CHECK NO. 684
AUDITED VOUCHER NO. 5122
MOBILE, ALA., August 31,1918
$54.50

PAY TO THE ORDER OF Electric Railway Journal,
—Fifty Four & 50/100. DOLLARS
To FIRST NATIONAL BANK
MOBILE, ALABAMA
61-86
SAMPLE ONLY
COUNTERSIGNED

7/29/18	Matl.	$8.00
7/31/18	Adv.	5.00
8/3/18	"	3.00
8/8/18	"	4.00
8/10/18	"	2.50
8/15/18	"	4.50
8/16/18	Matl.	$9.50
8/17/18	Adv.	1.50
8/20/18	Subs.	10.00
8/24/18	Matl.	6.50
Total		$54.50

ADDRESS
Electric Railway Journal,
10th Ave. at 36th Street,
New York, N.Y.

MOBILE LIGHT & RAILROAD CO.

OPERATING EXPENSES

No.	Name	Amount
63	Supt.Transp.	$5.50
80	Adv.	12.00
81	Parks &c	7.50
89	MiscGenExps	3.00
		$28.00

ADDITIONS AND BETTERMENTS

No.	Name	Amount

OTHER ACCOUNTS

Name	Amount
[illegible]	$24.00
[illegible]	2.50

WORK ORDERS

AUDITED:
SECRETARY AND AUDITOR
APPROVED FOR PAYMENT.
PRESIDENT

VOUCHER CHECK AND RECORD VOUCHER USED BY MOBILE LIGHT & RAILROAD COMPANY'S ACCOUNTING DEPARTMENT

The evolution of the accounting department of steam railroads took place many years ago. The interstate commerce act had more to do with the proper recognition of the importance of railway accounting than any other one agency. Steam railway executives soon saw that their "unproductive" department was of more importance than they had imagined, and now the accounting departments of steam railroads usually have vice-presidents at their head and have no difficulty in enforcing their instructions. On the electric lines, too, the evolution of the accounting department has been progressing, and it is the exception rather than the rule for the accountant to be required to report to the head of the operating department, although this condition does exist on some lines.

ECONOMY AND EFFICIENCY THE WATCHWORDS

With the increase in authority and responsibility of the accountant, there should come a realization of the importance of practical economy and increased efficiency. The war has necessitated many changes, and every line, no matter how its earnings have increased, finds it necessary to do something to "stem the tide of rising costs" that we hear about in every line of business.

The difficulty in obtaining competent clerical help, even at increased salaries, makes it more necessary than ever to use every means of reducing the work of the accounting department. A certain amount of statistical information is absolutely necessary in every business to handle intelligently the conditions which arise, but there are many reports, not essential, which might be eliminated without any material loss. The use of mechanical devices for percentages, addition, multiplication, division, payrolls, addressing, etc., will save man-power, or rather woman-power, as man-power for clerical work is becoming a scarce article.

A TIME-SAVING VOUCHER CHECK

The voucher system is undoubtedly the best method of handling disbursements, but some voucher and check systems are so cumbersome that they cost more than they save. The accompanying illustration shows the voucher check and record voucher used by the Mobile Light & Railroad Company. It is a great time-saver. The invoices are listed below the check, the list being perforated so it may be detached before the check is banked. The address is shown in the lower left corner, and a "window" envelope is used for mailing.

The record or file voucher, made with a carbon sheet, shows the exact wording of the check and a list of the invoices together with the address. Below this duplicate section the record voucher shows the distribution of the payments and all necessary approvals. The invoices, if any, are attached to the record voucher. The making of the check and the record voucher at one operation is a great saving, and the use of the window envelopes is a measure of economy and prevents any error in addresses.

A loose-leaf or even a bound "operating expense" and "additions and betterments" ledger is better than a combination of these with the voucher record. This should contain columns for only the principal accounts. Subdivisions of certain accounts are necessary for even small roads, but sometimes this is overdone and unnecessary work results.

Statements furnished departments to enable them to know their financial results should contain all necessary information. If made too elaborate, however, they lose their efficiency, as they will probably be thrown aside or filed after a cursory glance.

Information furnished the accounting department should contain all that is necessary, but it is possible that some reports required may be eliminated without reducing the efficiency of the office.

A careful study of the work of individual clerks often results in the finding of more economical methods for routine work and in a saving of time. But efficiency must not be sacrificed to economy, and before radical changes are made results must be considered.

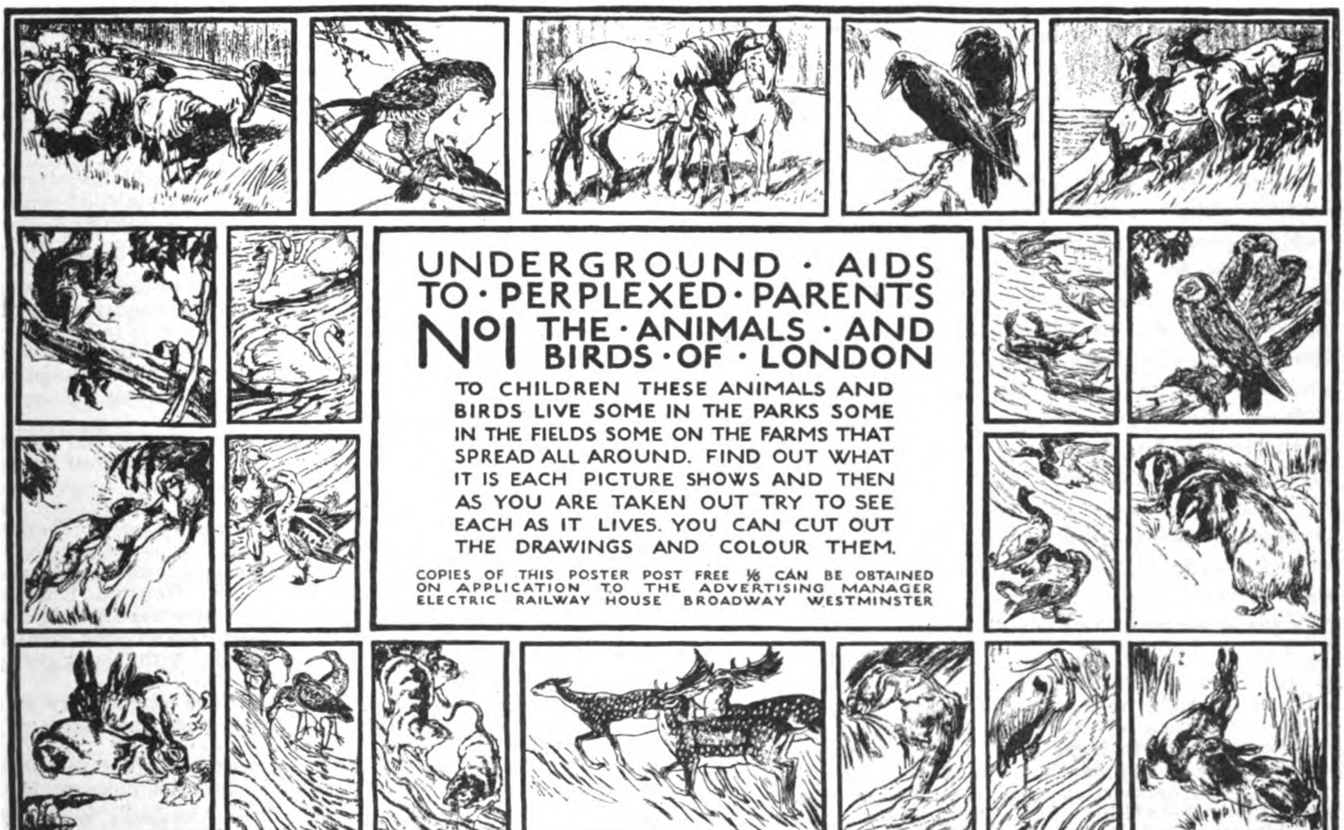
Money can be saved through the economical operation of the accounting department, but the fact should not be overlooked that money can be lost as readily if essential work is cut out in an endeavor to economize. Economy is a word very much overworked at this time. It is heard faintly in the halls of Congress and in directors' meetings, and yet often it is not thoroughly understood. It has been a well-known fact for years that municipal, state and even the national governments are run on principles far removed from economy and efficiency. Waste can be found on every hand, and electric railways must see to it that efficiency and economy are practiced as never before, but they must not sacrifice the former for the latter.

Accountants can aid materially in the program of the country for the conservation of resources, and by studying closely local conditions can institute methods of economy which will not impair efficiency and which will result in a material saving in expense. This is now absolutely necessary for the salvation of electric railways. Economical practices instituted as a war measure need not be discontinued after the war. "A dollar saved is a dollar made" should be the slogan of the accounting department, and it will not be then considered the "unproductive" department.

Only two cities of Burma—Rangoon and Mandalay—have electric tramways. The Rangoon Electric Tramway & Supply Company carried 10,860,629 passengers in 1916-1917, as compared to 10,811,406 in 1915-1916. The car mileage was 1,435,286 and 1,446,512 in the two years, and the total receipts amounted to $276,727 and $279,435. The Mandalay tramway is operated by the Burma Electric Tramway & Lighting Company. During 1916-1917 it carried 2,676,900 passengers, as compared to 2,559,101 in 1915-1916. The total mileage run was 508,960 in 1916-1917 and 502,507 in 1915-1916, while the receipts were $69,753 and $65,860 respectively.

Reduction from Large Traffic Poster, Underground Electric Railways of London

(The company also issues a leaflet, giving the names and something about the habits of these animals and where they may be seen in and around London).



UNDERGROUND · AIDS
TO · PERPLEXED · PARENTS
Nº I THE · ANIMALS · AND
BIRDS · OF · LONDON

TO CHILDREN THESE ANIMALS AND BIRDS LIVE SOME IN THE PARKS SOME IN THE FIELDS SOME ON THE FARMS THAT SPREAD ALL AROUND. FIND OUT WHAT IT IS EACH PICTURE SHOWS AND THEN AS YOU ARE TAKEN OUT TRY TO SEE EACH AS IT LIVES. YOU CAN CUT OUT THE DRAWINGS AND COLOUR THEM.

COPIES OF THIS POSTER POST FREE 1/6 CAN BE OBTAINED ON APPLICATION TO THE ADVERTISING MANAGER ELECTRIC RAILWAY HOUSE BROADWAY WESTMINSTER

LETTERS TO THE EDITORS

Public, If Informed, Is Fair

MILWAUKEE, WIS., Oct. 4, 1918.

To the Editors:

Houston, Tex., as this is written, seems to be getting ready to repeat Buffalo's disastrous folly with regard to electric railway fares. The Buffalo chapter is not yet all written, but it is safe to say that the community's financial loss due to several days stoppage of street-car service was many times larger than an entire year's payment of the proposed extra penny of car fare.

Houston's city commission a short time ago passed an ordinance authorizing the Houston Electric Company to raise car fares from 5 to 6 cents for adults, and from 2½ to 3 cents for children. The ordinance was passed after the city's expert investigators had reported that a fare increase was indispensable in order to permit the company to increase the wages of its employees. The Mayor and all four commissioners voted for the ordinance and signed a report to the public justifying their action.

Officers of the Houston Central Labor Council promptly began circulating petitions for a popular referendum on the ordinance. They have procured the necessary signatures, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 5, and a referendum appears to be assured. The statement that the Labor Council's hostility to the fare increase is due chiefly to the fact that the electric railway men are not members of the Amalgamated Association may or may not be correct. It is a fact that in Houston, as in Buffalo, certain political and journalistic factors which make a business of fighting public service companies have done all they could to procure the referendum.

The Houston situation is noteworthy for having brought to the front a powerful newspaper advocate of fair play for electric railway employees and investors. The Houston *Post* has published several editorials which are models of honorable and intelligent journalism.

These editorials are worthy, did space permit, to be reprinted here in full. The electric railway industry might well collect them and give them country-wide distribution in pamphlet form, as a means of arousing newspaper editors generally to their plain duty with respect to the maintenance of electric railway service under trying war conditions. The following excerpts give the essence of the *Post's* arguments:

RATES AND EFFICIENCY

Houston's welfare is wrapped up in the welfare of the street car system of the city. And the future welfare of this city depends in large part on the ability of the street car interests to supply the expanding needs of the city's growth. Furthermore, this city's financial reputation depends upon the ability of the street car company to meet the obligations which the city in the past has allowed it to assume.

Should the street car company fail to meet those obligations, the ability to sell such securities of a Houston public service corporation would be seriously impaired. Capital does not easily forget; and the record for failure to meet obligations once made becomes history.

Houston cannot get along without the street car lines, and they must be extended to meet the necessities of future growth. Already such extensions are imperative if the workers along the ship channel are to be served as they should be. No such extension can be made under present circumstances, nor will funds for them be available until the earning capacity of Houston street cars increase to the point of profits above operating expenses. Whether the increase now asked in street car fares will bring the income of the company to that point is extremely doubtful.

The company bases this request mainly upon the actual increases in operating expenses under war conditions.

No plea is made for profits.

Operators of the lines would offset the trebled costs of operation by adding 20 per cent to the fares paid them; and, so considered, the raise to a 6-cent fare is no advance worthy of the name.

Every material used in the street car lines either in repairs or extensions has increased from 200 to 400 per cent in cost. It is no mere matter of 20 per cent to them. And the company has paid the bill so far without aid from the people whom it serves.

Practically every wage earner in Houston is paid more than 20 per cent above his earnings three years ago. The street car company has been obliged to increase wages in every branch of the service. No fault was found with that necessary step. But it is not fair to ask that such increases be borne and the public not bear its proportion of the increased cost. The street car lines are asking no more than justice.

THE PROPOSED REFERENDUM

The proposed referendum may have value of an educational character, in the matter of indicating just how popular the electric railway corporation is, but it is worth absolutely nothing in so far as the real issue is concerned.

A unanimous vote of the people against an increase of rate would not settle the question of fair dealing or justice that is involved.

The matter of increasing the rate from 5 to 6 cents is one of simple justice based on ascertainable facts.

Not one voter who will vote against the ordinance granting a temporary increase will know or care a straw about the real issues. Some will vote against the increase because their living expenses are high enough already, some because they think the service is poor, some because they hate the corporations, some because they actually think the company is coining too much money, some because the electric railway service is not unionized, some for this reason or that.

How many of those signing the petition will investigate such facts as increased cost of labor, of materials, of operation? How many will care whether the company goes bankrupt or not? How many really hope it does go bankrupt?

The voter is not concerned about anything except the extra cent. Whether it be for car fare, railroad fare, beef, haircut, shave, wheat or anything else, leave it to the voter and he will say living expenses are too high now. He will vote against any and all raises with the single exception of a raise of pay for himself. That's the human nature of it. And the fare referendum will prove it.

The people did not want to pay heavier railroad fares, but the operatives of the railroads had to have more wages and it required more revenue to pay higher wages and other increased costs of operation. So the government investigated, ascertained the facts, and up went freight tariffs and passenger fares.

And the government investigated living conditions and other circumstances and now tells the Houston Electric Company to pay its men more wages—and the Lord knows they need more pay—and the company replies that it must have more revenue in order to comply with the government's request.

The City of Houston has fixed the fare temporarily at 6 cents and 3 cents in order that these wage increases may be granted.

One of the leaders of the movement to defeat the ordinance says that labor will not object to the increase if it finds that such increase is just. But who is to determine the justness of the increase?

The matter has already been investigated to the satisfaction of the Mayor and four commissioners, who have considered the real questions involved. Now it is proposed to determine the matter by those who have not investigated at all and who are not going to investigate but will vote against the company for reasons that are totally foreign to the controversy.

As a matter of fact, federal agencies ought to take over all public utilities during the war period and operate them so as to prevent injustice or bankruptcy. There is no such thing as charges that will be agreeable to the public. High or low, such charges are never satisfactory. It is seldom that service is satisfactory.

The electric railways of the whole country have been in trouble for a year; many systems are threatened with bankruptcy, and many private investors in the securities resting upon such properties are in danger of losing their holdings. There ought to be some tribunal to investigate and decide all these cases on their merits, give full justice to public and corporations alike, and obviate such absurd proceedings as attempting to decide a matter of justice, growing out of intricate conditions of which the electorate has no intelligent comprehension, through the instrumentality of the ballot box.

The *Post* may be correct in predicting the defeat of the 6-cent fare by the voters of Houston. The *Post* is curiously indifferent to the most outstanding fact of American business when it suggests the inability or unwillingness of the people to deal fairly with public service companies, after being put in possession of the controlling facts.

If the masses of the American people had become so mentally and morally incompetent as that, the whole structure of American industry and government would long since have fallen into ruins. To the contrary, the American public is on the square, and it is the most intelligent public on earth.

That the American public in the war emergency fails to deal justly with public service companies—fails even in many instances to perceive the identity of its own pocket interests with those of such companies—is in my opinion wholly and solely the fault of the companies themselvse. They have tried to do business without advertising, and the professional agitators have done their advertising for them.

My seven months advertising campaign in behalf of the United Railway of St. Louis between August, 1917, and February, 1918, provided convincing proof that even a very unpopular electric railway system, if it will come clean to the public with all of the facts concerning its rights as a business and its needs as a public service, and if it will repeat the publication of those facts often enough to make them a part of the community's common knowledge, cannot fail to get a fair and even a generous deal from the American public.

The electric railway business in the United States is getting exactly what it has coming to it, on its record of indifference to public opinion, expressed in its failure to try to win public favor as all other merchants win it. The business will get what public welfare requires that it shall get—revenues ample to pay for good service keeping pace with community growth—just as soon as it learns how to advertise as intelligently and persistently and liberally as other commercial institutions with comparable capital and volume of business.

A public service company that asks a state commission or a city council to grant it higher rates, however necessary to its solvency and to the public welfare, must be prepared to sell the rate increase to its public in advance of the order. Such a company asks more than human nature is ordinarily willing to grant when it asks public rate authorities to raise its rates and to assume the burden of public displeasure without any help on the company's part in making known the facts justifying such increase. The company that takes such an attitude is comparable to the husky beggar lying by the roadside who begs the traveler on horseback for alms, and then asks him to get down and put the gift into his hand. FRANK PUTNAM.

The Woman Conductor Should Keep Her Job After the War

CLEVELAND, OHIO, Oct. 7, 1918.

To the Editors:

A number of electric railway companies have begun the employment of women conductors and others will have to do so. Biologically, there is of course a difference between man and woman. It makes man in a physical sense woman's superior. Exclude the difference so made and equality follows, not as a figure of speech in stating a conclusion, but rather as a demonstrated fact established by woman's work in every occupation she has essayed to enter as man's competitor.

There is nothing new in this. It has been going on for a long while. On account of its slowness and yet ever-steadiness, it attracted no more than passing notice. Too often when woman has been discovered doing an exceptional job, the entire subject has been dismissed with the remark, "Oh, yes, she is a wonder, she does her work exceedingly well, but it only proves she is an exception to the rule."

Through the shortage of man-power, coming as a result of the lunacy of Germany, women in large numbers have entered fields which until now have been denied to them. The movement being one out of the ordinary has therefore not only attracted but challenged attention. It has caused talk and discussion and made for investigation with the result that woman has more than proved her right to be considered man's equal, for in all work where order, neatness and accuracy are the essentials of success she has established the fact that in many instances she is man's superior.

Woman is not taking man's place during the war but rather, through the war, is taking her own place. None will appreciate this more fully than will Sammy, Tommy, Jacques and Fritz when they return. They will find that they have been displaced—that the jobs they once held by reason of sex are gone, and gone forever.

From what I have thus far stated, you will see that I am in favor not simply of women entering these new fields as a war necessity, but permanently holding many of the jobs she is now filling. But that is not all. I am for a further displacement of man, not as a war necessity, but as a matter of plain justice to woman.

To make clear what I am driving at, let me direct your attention to what you can observe each and every day: women driving taxicabs, while men watch fare boxes; women in dirty overalls wiping dirty locomotives—men in white shirts calling streets; women changing heavy material on machines—men with machines making small change; women doing dirty jobs in clean ways—men in dirty ways doing jobs that are clean.

When the pay-enter car made its appearance, the man conductor should have made his exit. The time for the cashier was at hand. The job should have been given to her. Had this been done the chances are that the subject to-day would not have been that which it is, but in all probability would have been "the dispensing with cashiers on street cars as a war necessity."

Though the jitney was an economic waste and a transportation curse, it nevertheless proved to be a blessing in disguise, for it gave us the one-man car. So the shortage of man-power is another blessing. It is giving the operator a new field to pick from and giving to woman the job which is justly hers.

To all operators who have not yet made the change which must be made, let me say, don't discharge the man at the fare box. Let him keep the job which by loyal service he rightly owns, but let all future jobs go to women. As motormen quit or are dismissed, put him on the front end. If through the change he loses his seniority, make up the difference in pay. Recognize the justice of equal pay for equal work, whether performed by man or woman. At the same time, do not fail to recognize the inequality between the front and rear end jobs. Fix the pay accordingly.

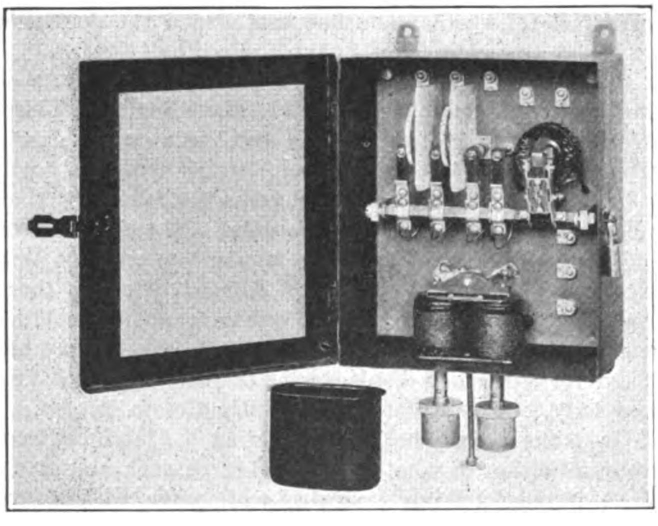
PETER WITT.

New Remote-Control Starter for Small Induction Motors

A DEVICE for starting small induction motors from remote points by throwing them directly across the line has recently been placed on the market by the General Electric Company.

The device consists of a 25-amp., three-pole contactor with two inverse-time-limit gravity-reset overload relays mounted on a slate base totally inclosed in a strong sheet-iron case.

A small "start and stop" push-button station is used as a remote-control switch. Completion of the starting circuit, by pressing the "start" button energizes the coil of the magnetically operated switch, closing the contacts, which throw the motor directly on the line. Interruption of the circuit or a radical decrease in voltage permits the contacts to reopen by gravity, thus stopping the motor which cannot start again until the "start" button is pressed.



ENCLOSED REMOTE CONTROL STARTER FOR SMALL SQUIRREL-CAGE INDUCTION MOTORS

The overload relays can be adjusted for various values ranging from normal up to 50 per cent above normal. They can also be adjusted over a wide range of time values. The relay trips automatically and resets by gravity.

The starter is known as the CR-7006 remote control switch, aranged for push-button control, and is applicable for use with motors up to and including 5 hp. 110 volts, and 7½ hp., 220, 440 and 550 volts.

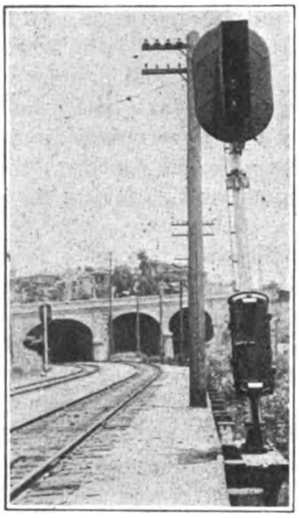
Block Signal System Improvement on Pasadena Short Line

Installation of "Follow-Up" or "Permissive" Signal Facilitates Rush-Hour Movement of Trains on Congested Sections

BY CLIFFORD A. ELLIOTT

Cost Engineer Maintenance of Way Department, Pacific Electric Railway.

AN ADDITIONAL indicating lamp has been recently installed beneath the three-position automatic block signals on a portion of the Pasadena Short Line of the Pacific Electric Railway. This lamp, which has a yellow lens, is connected in series with the lamp giving the red or danger indication. With both lights burning, the train is permitted to proceed under proper control into a block already occupied by a preceding train. Previously, when a train received a red indication it was required to stop and wait one minute before proceeding.



THREE-POSITION AUTOMATIC BLOCK SIGNAL.
Small indication lamp installed underneath to allow permissive operation.

The three different indications now provided are: Green, indicating that the track is clear for two blocks ahead; yellow, indicating that the second block ahead is occupied; and red and yellow, permissive signal, incating that the first block ahead is occupied but allowing the train to proceed at reduced speed. The blocks for this section are from 200 ft. to 500 ft. in length, and many delays previously occurred, due to congested traffic conditions. Five signals on the outbound track and four signals on the inbound have been changed to the latest form.

This line uses a 2200-volt transmission system centrally fed, a substation being located 1.8 miles from the point of the beginning of the block signal system on the line. At junctions, crossovers, etc., additional signals are used to provide full protection to short cars or trains while taking crossovers.

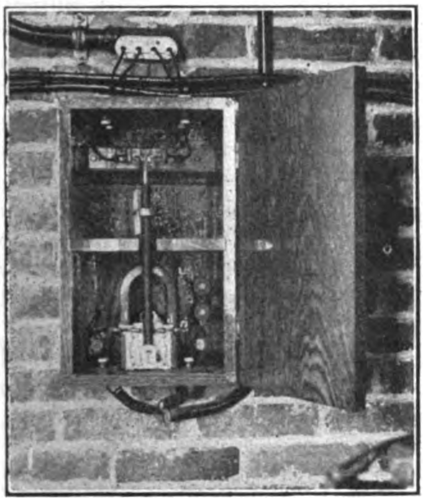
This same method of signaling is also used by the Pacific Electric Railway on its new viaduct entering and leaving its main terminal passenger station in Los Angeles. This terminal was described in the issue of the ELECTRIC RAILWAY JOURNAL of Aug. 25, 1917, page 307. On the viaduct the permissive yellow signal is controlled from a signal tower. Normally, with a train in the block ahead the signal will show red to a following train. If conditions are such as to warrant the closing up of trains, the towerman can give the permissive indication by lighting the yellow lamp. This is so interlocked that it cannot be given except when the red light is burning.

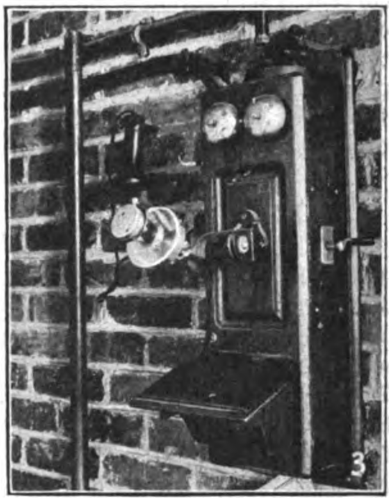
United States Bureau of Mines, Washington, D. C., has prepared a resuscitation chart which is in poster form, 11 in. x 16 in. Copies can be secured from the Director of the Bureau of Mines, Washington, D. C.

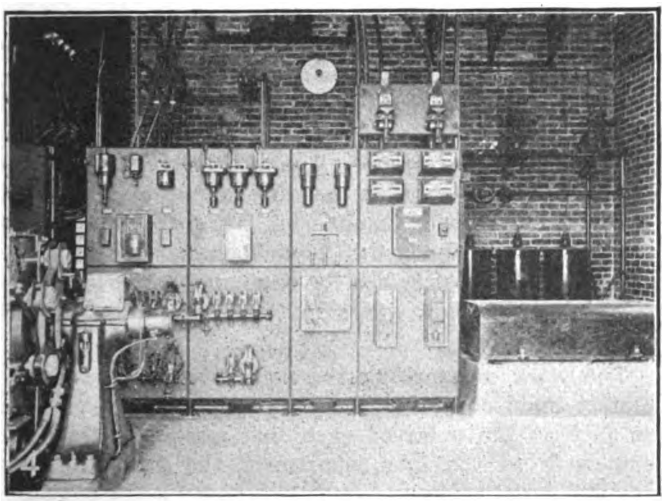
Columbus (O.) Remote Control Substation Has Several Novel Features

Connections for Starting and Stopping Station Over Telephone Line and Device for Advising Dispatcher of Load Condition Included

ONE of the latest automatic substations on electric railway lines is that recently put into commission by the Columbus Railway, Power & Light Company at Columbus, Ohio. This is the substation mentioned by Messrs. Linebaugh and Burnham in their paper on "Protection from Flashing" delivered before the 1918 convention of the American Institute of Electrical Engineers, which was abstracted in the issue of the ELECTRIC RAILWAY JOURNAL for July 6, page 9.







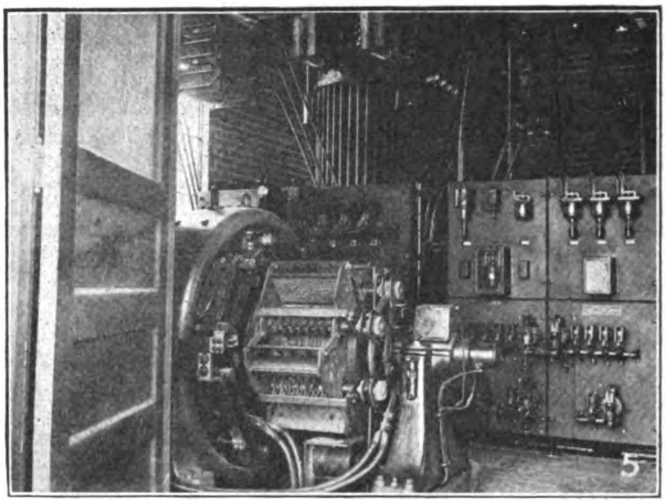


Fig. 1—Relay for use in remotely controlling the substation.
Fig. 2—Exterior view of Columbus automatic substation building.
Fig. 3—Buzzer mounted over telephone transmitter for use in indicating load on substation.
Fig. 4—Interior view of automatic substation (at left, commutator end of rotary converter and transformers; in center, switchboard and meter panels; at right, in rear, electrolytic lightning arrester; in foreground, drum controller on concrete base).
Fig. 5—Brush barriers on rotary converter.

VIEWS IN AND ABOUT THE AUTOMATIC SUBSTATION OF THE COLUMBUS RAILWAY, POWER & LIGHT COMPANY

The substation contains one 500-kw. 60-cycle General Electric rotary converter and the standard auxiliary automatic control apparatus. The commutator of the rotary is surrounded by a new device for extinguishing the arc, consisting of barriers between the brushes which nearly touch the commutator surface, arc chutes to carry off any flashes that may occur and wire screens to assist in extinguishing the arcs. Details of this equipment will be found in the earlier article referred to.

When this equipment was first installed a flashover test was made by short-circuiting the trolley wire and ground feeders at a distance of about 1000 ft. from the substation by means of a pole switch. This was down several times and the rotary showed no signs of distress, the arc chutes performing their functions perfectly.

The pictures show the general arrangement of rotary, control switchboard panels, transformer, drum controller, electrolytic lightning arrester cells, etc. Another photograph, showing the exterior of the building, indicates the extreme simplicity in housing which is possible with the automatic substation.

All substations on this property are under the control of the load dispatcher, who is located in the central part of the city. (See ELECTRIC RAILWAY JOURNAL, July 18, 1914, page 129). The dispatcher also has control of the automatic substation which, by arrangement with the telephone company, is effected over the telephone line. For this purpose a special relay was constructed by the power department, the actuating element of which is a magneto generator.

The relay is shown in one of the illustrations. It consists of the permanent field magnet and armature of the generator with a long rod of insulating material projecting upward from the latter. This rod carries a "damping" vane. At the upper end of the rod is a contact device which when in one direction permits the energizing of the substation control circuit in such a way as to start the substation and similarly causes it to be shut down when the arm is in the opposite position. Direct current for the purpose of actuating the relay is sent over the telephone line from the load dispatcher's office.

When the substation has been started by the load dispatcher it operates entirely automatically.

A very ingenious plan is used to indicate to the load dispatcher the approximate magnitude of the load on the substation at any time. This consists of a buzzer hung directly over the mouthpiece of the telephone transmitter and connected in a circuit containing a battery and a contact connection on the rotating element of the station watt-hour meter. Every time that the rotating element makes a revolution an impulse of current is sent through the buzzer, so that the frequency of rotation is clearly indicated. By listening through the telephone line, from time to time, the load dispatcher has a gage of the load upon the substation by the frequency of the "buzzes" and thus can keep himself in touch with conditions therein.

An Opportunity for Engineers

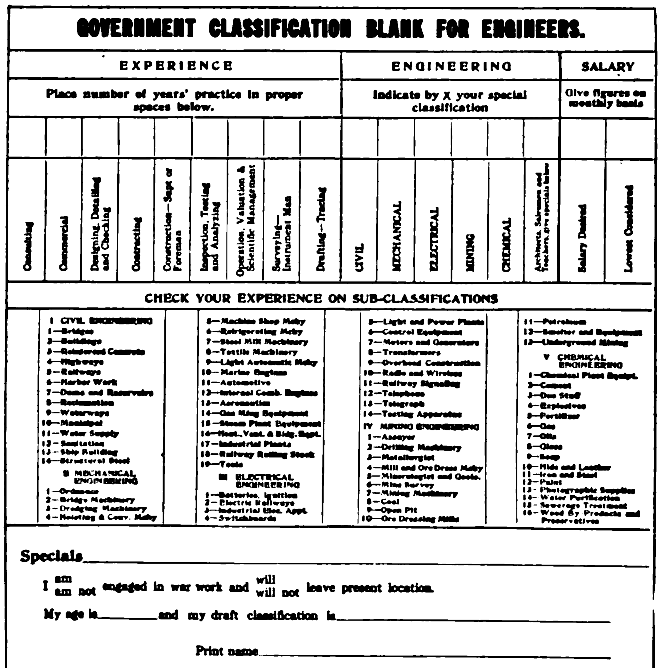
IN A RECENT issue of the ELECTRIC RAILWAY JOURNAL brief mention was made of a government classification blank for engineers, prepared a short time ago by the Division of Engineering of the United States Employment Service, Chicago, Ill. This blank has met with such universal favor that it is reproduced for the benefit of those in the railway field who are not already familiar with it.

The blank accomplishes several purposes. One is to offer a means whereby engineers may place themselves on record with the government regardless of whether they now desire employment with the government elsewhere or not at all. Instead of being obliged to make application through an employment agency at considerable expense, it can be done in this way through the newly organized Division of Engineering, free of charge. The blank remains on file, and if at any future date the engineer desires employment, no further application or expense is necessary.

Second, the blank serves as a means of classification of the engineers of the country. The arrangement is clear and concise and has so definitely divided the various branches of engineering that it tells at a glance the qualifications of the registrant. If either the government or private employer is in need of a man of certain qualifications and training, this file of records shows just where he can be obtained. Thus at one and the same time the engineer has an opportunity to render himself a service by placing himself in a position to secure employment at desire and to perform a patriotic service to the government by placing his qualifications on record with the Division of Engineering.

In the light of the recent draft it might be wise for engineers subject to call to consider this blank seriously. Although it is not reported that any arrangements have been made to use this classification as an aid to induction into service, it is only logical to assume that the government might use such a valuable record to assist in placing men where they are best fitted to serve the country.

Application for the blank can be made at any local United States Employment Service office or direct to to the Director of Engineering, 29 S. La Salle St., Chicago, Ill.



GOVERNMENT CLASSIFICATION BLANK FOR ENGINEERS.

EXPERIENCE									ENGINEERING						SALARY	
Place number of years' practice in proper spaces below.									Indicate by X your special classification						Give figures on monthly basis	
Consulting	Commercial	Designing, Detailing and Checking	Contracting	Construction—Supt or Foreman	Inspection, Testing and Analyzing	Operation, Valuation & Scientific Management	Surveying—Instrument Man	Drafting—Tracing	CIVIL	MECHANICAL	ELECTRICAL	MINING	CHEMICAL	Architects, Salesmen and Teachers, give specials below	Salary Desired	Lowest Considered

CHECK YOUR EXPERIENCE ON SUB-CLASSIFICATIONS

I CIVIL ENGINEERING
1—Bridges
2—Buildings
3—Reinforced Concrete
4—Highways
5—Railways
6—Harbor Work
7—Dams and Reservoirs
8—Reclamation
9—Waterways
10—Municipal
11—Water Supply
12—Sanitation
13—Ship Building
14—Structural Steel

II MECHANICAL ENGINEERING
1—Ordnance
2—Bridge Machinery
3—Dredging Machinery
4—Hoisting & Conv. Mchy
5—Machine Shop Mchy
6—Refrigerating Mchy
7—Steel Mill Machinery
8—Textile Machinery
9—Light Automatic Mchy
10—Marine Engines
11—Automotive
12—Internal Comb. Engines
13—Aeronautics
14—Gas Mfg Equipment
15—Steam Plant Equipment
16—Heat., Vent. & Bldg. Eqpt.
17—Industrial Plants
18—Railway Rolling Stock
19—Tools

III ELECTRICAL ENGINEERING
1—Batteries, Ignition
2—Electric Railways
3—Industrial Elec. Appt.
4—Switchboards
5—Light and Power Plants
6—Control Equipment
7—Motors and Generators
8—Transformers
9—Overhead Construction
10—Radio and Wireless
11—Railway Signaling
12—Telephone
13—Telegraph
14—Testing Apparatus

IV MINING ENGINEERING
1—Assayer
2—Drilling Machinery
3—Metallurgist
4—Mill and Ore Dress Mchy
5—Mineralogist and Geolo.
6—Mine Survey
7—Mining Machinery
8—Coal
9—Open Pit
10—Ore Dressing Mills
11—Petroleum
12—Smelter and Equipment
13—Underground Mining

V CHEMICAL ENGINEERING
1—Chemical Plant Equipt.
2—Cement
3—Dye Stuff
4—Explosives
5—Fertilizer
6—Gas
7—Oils
8—Glass
9—Soap
10—Hide and Leather
11—Iron and Steel
12—Paint
13—Photographic Supplies
14—Water Purification
15—Sewerage Treatment
16—Wood By-Products and Preservatives

Specials__________

I am / am not engaged in war work and will / will not leave present location.

My age is______and my draft classification is__________

Print name__________

Print address__________

PLEASE FILL OUT AND MAIL AT ONCE TO DIRECTOR OF ENGINEERING

GOVERNMENT CLASSIFICATION BLANK FOR ENGINEERS

Skip-Stop Signs in Brooklyn

IN ACCORDANCE with the request of the Fuel Administration Brooklyn has adopted the skip-stop plan, and the new method of operation will be put into effect as soon as a sufficient number of stopping places can be marked. The company submitted its proposal for establishing skip stops on the various lines of the system to the Public Service Commission last spring, but it was not until almost the last of September that approval was given. The plan provides for marking the various locations at which cars will stop by signs painted on the poles of the line.

The work of marking the poles was started immediately upon obtaining the commission's sanction, and as fast as the poles of each line are marked by the employees of the line department the plan has been adopted on that line.

The poles are marked with a white band 12 in. wide and painted just under the lowest joint of the pole. Upon this band is stencilled one of the words, either "stop" or "station," depending respectively upon whether the cars are to stop at that point without signal or only upon signal by intending passengers. As pure white paint will not show up so clearly or last so long on black poles as will some other colors, the color is blended with a slight amount of yellow. The words "stop" and "station" are stencilled vertically on the poles and placed on the two sides at right angles with the curb line so as to be seen easily by persons walking on the sidewalk and approaching the pole.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Labor Jurisdiction Denied

War Labor Board Holds Men Have Not Exhausted Means of Settlement Provided in Their Contract

Messrs. Taft and Walsh, joint chairmen of the National War Labor Board, on Oct. 2 denied jurisdiction in the case of the Birmingham Railway, Light & Power Company, Birmingham, Ala. In this case the employees sought increased wages and the company contended that the National War Labor Board did not have jurisdiction, because the agreement between the company and the Amalgamated Association specifically provided a means of settlement which the employees had not invoked. The decision of the joint chairmen sustains the contention of the company. It is of importance to all companies having agreements with their employees which provide for a method of settlement. Chairman Taft said:

CHAIRMAN TAFT QUOTED

"The section has come to a conclusion with respect to the case of the Amalgamated Association against the Birmingham Railway, Light & Power Company. We have concluded that it is our duty, under the principles applying to the board as set out in the proclamation of the President, to hold that the plea to the jurisdiction here is good—without going into other grounds or without discussing the merits of the other grounds—upon the ground that the contract offers an opportunity to either party to invoke a conventional tribunal, and that the complainant party has not invoked that tribunal. That comes within the letter of the rules excluding our jurisdiction. For that reason the complaint will be dismissed.

A TRIBUNAL OF CONCILIATION AND MEDIATION

"Our view in respect to the jurisdiction of this tribunal has been expressed once or twice. This is primarily a tribunal of conciliation and mediation. The power to intervene by mediation is one that is not limited exactly by the attitude of the persons with whom the mediation is undertaken. If we approach them, their attitude of resistance to our solicitations or suggestions or advice may not prevent our going on and looking into the merits of the question so far as we may, and making recommendations or suggestions. A mediator may visit a man in his office, and may continue his mediation until he is shown the door.

"But where we proceed to arbitration, the question is a different one. Here we are asked to go ahead and act in this matter as a section of the board which may proceed to arbitration, and here we find the facts to fit exactly the clause of our jurisdiction which excludes it.

COMPLAINT DISMISSED

"Therefore, the order will be that the complaint be dismissed, on the ground that the parties have not taken the course set forth in the contract."

New York Staggers Hours

Railways, Business Men and Merchants Quick to Comply With Health Board Order

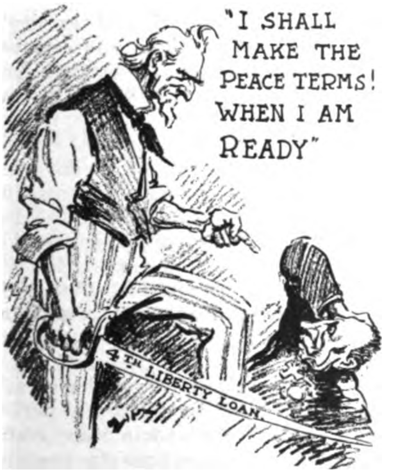
In order to lessen crowding during the prevalence of the influenza in New York City, the Health Commissioner issued an order during the latter part of the week ended Oct. 5, in which he proposed staggered hours for business.

CONGESTION DIMINISHED

Reports received on Oct. 8 by the Public Service Commission showed that the order regulating the opening and closing of offices, factories, and theaters had diminished congestion on the traffic lines in the late afternoon and night, but had shown no apparent effect upon morning travel. Both on the Interborough and the so-called New York Consolidated systems, the latter including Brooklyn lines, only slight changes were noticeable in the morning of the first day's tryout, but in the afternoon both companies experienced unusually heavy riding between 4.30 and 5 o'clock.

Full rush-hour service was begun on the afternoon of Oct. 7 on the lines of both the Brooklyn and the New York City systems at 4.30 o'clock. The opinion of the Health Commissioner on Oct. 7 was that the order was being pretty generally observed, but to insure that it should be carried out he asked the active co-operation of the Police Department.

More Liberty Bonds Mean Permanent Peace


"I SHALL MAKE THE PEACE TERMS! WHEN I AM READY"
4TH LIBERTY LOAN

SUPPOSE you had a small farm, a nice little wife and perhaps a growing family, and you wanted nothing in this world more than to be let alone and to live your life out just as God had ordained.

And then suppose that some armed force, which you had never had occasion to consider, suddenly invaded your land, killed your stock and then demanded that you get out. And then suppose that your young son resented this foreign intrusion and that the helmeted brutes, just to show their militaristic power, jabbed a bayonet through his chest. Then suppose the murderers took away for their own purpose the little maid whom you begot!

Would you spend a nickel for a cartridge to kill one of those despoilers? Or, if these things had come to you, would you not rather forget the price of a single cartridge, which might kill only one, and save until you could buy a bond that would kill fifty?

If you lend your country a hundred dollars, you are approaching one hundred dollars nearer world democracy, which means the equality of men.

The Hun is beginning to whine, but this is no time to stop fighting if permanent peace is to be secured.

Then act at once! Buy More bonds of the Fourth Liberty Loan!

Buffalo Strike Still Unsettled

All Efforts Fail to End Controversy in Which Wages and Fares Are Involved

Platform men employed by the International Railway, Buffalo, N. Y., who went on strike at 4 a. m. on Oct. 3, say they will not return to work unless they receive the wage award of the War Labor Board. This provides for a sliding scale of 43 to 50 cents an hour. In addition the men demand back pay based on this schedule dating from June 1, last.

All of the local and interurban lines of the company in Buffalo, Niagara Falls and Olcott are tied up by the strike. The company has been operating about a dozen cars on some of the downtown lines so as to comply with its franchise. They are being run by traffic supervisors. The strikers have not sought to prevent the operation of these cars. There has been no disorder.

RAILWAY WILLING BUT IMPOTENT

The railway has agreed to pay the wage award of the War Labor Board and has also tentatively agreed to pay the men their back salaries based upon the award from June 1, last, but owing to the restrictions of a 5-cent fare E. G. Connette, president of the company, says that it is financially unable to give the men this wage increase which would amount to approximately $1,750,000 a year. The company asks the City Council to enact an emergency ordinance, allowing the collection of the 5-cent fare until a just and equitable rate is fixed by the Public Service Commission for the Second District. This emergency ordinance would not be subject to a referendum of the voters the same as the first 6-cent fare ordinance adopted by the Council and later rejected five to one by the voters.

Members of the Buffalo Retail Merchants' Association arranged a conference with the publishers of the city's newspapers and it was agreed at that conference that it is essential to the best interests of the city that the Council enact an emergency ordinance which would allow the railway to charge a 6-cent fare until a reasonable and just fare is fixed by the Public Service Commission. A special meeting of the Council was then held. Two members of the Council opposed the measure and one of these votes is needed to secure its enactment. As the railway has agreed to pay the wage award to its men if this ordinance is enacted, this would end the strike.

Newspapers which have been bitterly opposed to the International Railway now apparently see the folly of continuing the fight against a higher fare, especially in view of the fact that the company must have a higher fare if it is to pay the award of the War Labor Board and resume the operation of its cars. These newspapers are now assailing the two members of the City Council for not changing their attitude.

The two opposing members of the City Council, one of whom is the Mayor, who incidentally was elected on the platform of street railway reform and a 4-cent fare, have appealed to the Attorney General to bring an action against the railway to end the corporate existence of the company and apply to the courts for the appointment of a temporary receiver. This litigation is now pending.

After a long conference on the third day of the strike members of the City Council, representatives of the Chamber of Commerce, E. G. Connette president and other representatives of the International Railway, tentatively agreed upon a proposition which, it was believed, would bring an end to the strike, but the agreement was rejected by the board of directors of the railway. This agreement contained these conditions:

SETTLEMENT BASIS STATED

The Council to nominate a managing director, also a treasurer of the International Railway, subject to the approval of the board of directors.

The Council to have the right to nominate a majority of the board of directors. By-laws to be so amended that on questions concerning the creation of bonded debt or the sale of property, two-thirds vote of board necessary.

The Council to submit to the Public Service Commission the question of a reasonable fare during the period of the war and six months after peace.

No dividends to be paid on the preferred stock or the common stock of the railway until the determination of a fair rate of return by the Public Service Commission.

Valuation to be as of June 30, 1915, and actual cost of betterments made since.

The agreement reached between the company and the City Council—which would end the strike if one more member of the City Council casts his vote in favor of it—provides that the Council pass an ordinance stating that it is "immediately necessary for the preservation of the public peace, health and safety," which would provide that pending the determination by the Public Service Commission, of a reasonable rate of fare, the Council consents to a rate of fare of 6-cents and to such action by the Public Service Commission as is necessary to put such temporary increased fare into effect.

Pending the determination of what is a reasonable rate of fare it is proposed that the company shall give to each passenger paying a 6-cent fare a rebate slip for 1 cent, to be redeemed if the Public Service Commission holds a 5-cent fare is reasonable and just. The railway is also to elect a majority of the board of directors of the company as named by the Council, who shall serve during the life of the agreement. The Milburn agreement, which covers the franchises between the city and the railway, is not to be changed or affected except as temporarily provided for.

Application has already been made by the municipal authorities before Justice Louis B. Marcus in the Supreme Court of Erie County for a writ of mandamus to compel the International to operate its cars on the city lines. Members of the City Council say that if the writ is issued, the court may appoint a receiver or officer to see that the provisions of the writ are carried into effect.

The strike resolution of the company's employees demanded an increase in wages of all platform employees to the scale recommended by the War Labor Board, which is from 43 cents to 50 cents an hour. Wages of other employees, including shopmen, electrical workers, women car cleaners, etc., would be increased by the same percentage, provided, however, that if this percentage increase does not bring the minimum wage up to 42½ cents an hour, these employees are to be paid this minimum scale per hour. This scale would continue in effect until Feb. 1, 1919, and under the award of the War Labor Board the men could apply to the board for a readjustment in wages every six months thereafter if conditions warrant such a move. The men also demand back pay amounting to a total of approximately $300,000 based upon the award of the War Labor Board dating back to June 1, last.

Government representatives who were sent to Buffalo brought word from the War Department and the War Industries Board that there would be no federal intervention in the Buffalo situation. The day before the strike was called, W. D. Mahon, international president of the Amalgamated Association, held a conference with federal authorities in Washington and the government agreed to pay the difference between the present wage scale of the men and the award of the War Labor Board for a period of one week so as to prevent a cessation of the city's transportation facilities and consequent crippling of the industries engaged on war work. Within a few hours after this offer was made, it was withdrawn by the government.

On the night that the strike was called all of the business interests of the city and representatives of the International Railway and representatives of the union conferred in the Chamber of Commerce. At that time the businessmen of the city offered to subscribe a total of $75,000 to loan the company so as to pay the difference between the men's pay and the award of the War Labor Board for a period of one month so that some steps could be taken in the meantime to prevent a strike. The union delegates rejected the offer because no provision was made for receiving the back pay based on the award of the board.

Signal Corps Opportunities

Special Call for Graduate Electrical Engineers Experienced in Power or Communication Work

At the present moment there is a shortage of officer candidates having the required technical and personal qualifications available for signal corps officer training schools. While ordinarily officer candidates are taken from the enlisted personnel of the Signal Corps, a much smaller number having the necessary qualifications are available than are required. For this reason it is desired to secure by voluntary induction, for assignment to an officers' training school during the next two months, the services of a considerable number of electrical engineers who are available for full military duty, and who are between the ages of twenty years and nine months and forty-five years.

SIGNAL CORP SEPARATE

The United States Army maintains a signal corps as a separate organization. At present its duties are twofold; first, it is charged with the duty of developing and producing signal apparatus for the mobile army, for the air service, and for the coast artillery corps. Its second and principal duty is that of maintaining communication within the mobile army and along lines of communication. For this purpose two kinds of signal troops are employed; first, the so-called telegraph battalions which install and operate telephone and telegraph lines in the rear of the army. Second, the field signal battalions are organizations for service with combatant troops.

In view of the technical nature of the duties of signal officers, the most suitable candidates for commission as such are electrical and radio engineers who have had experience in power or communication work. Graduates of four-year courses in electrical engineering, are regarded by military authorities as ideal candidates for commissions in the signal corps.

COMMISSIONS FOR THOSE WHO QUALIFY AS LIEUTENANTS

It is desired by the signal corps to receive applications for service from men who are qualified as outlined in the preceding paragraph. Such men will be individually inducted into the army and assigned as enlisted men to an officer candidates' training school, which is now being maintained by the signal corps. Those who have shown by their record that they are officer material will either be commissioned in the grade of second lieutenant at once or assigned to a course of further military instruction as officer candidates at a signal corps camp. Those who do not qualify as officer candidates will remain in the army in an enlisted grade and will be assigned to an organization of the signal corps.

Promotions in the army are now made by selection rather than by seniority and the well qualified engineer need have no fear that his claims to promotion will not be recognized because some younger and less competent man outranks him with respect to the matter of length of service.

APPLY TO THE CHIEF SIGNAL OFFICER

Electrical and radio engineers who desire active service in the army with an opportunity to secure a commission should fill out an application for service blank which may be secured from the office of the Chief Signal Officer, Training Section, setting forth completely their military status, together with their experience and training. On being accepted for service, they will be inducted into the army in the grade of private and sent to an officers' training school with such prospects as herein outlined.

May Reject St. Louis Settlement

The United Railways, St. Louis, Mo., through its president and general manager, Richard McCulloch, will reject the thirty-one-year franchise settlement bill recently passed by the Board of Aldermen. Mr. McCulloch on Oct. 4 notified Mayor Kiel that the company would formally decline to accept the bill following a meeting of the directors on Oct. 8. Mr. McCulloch was quoted by the newspapers in part as follows:

"I was never enthusiastic about the ordinance. In the negotiations with the city we were traded out of about everything we really wanted. The company never had any great interest in the bill as finally passed.

"Negotiations with the city for the framing of a franchise ordinance were begun about two years ago. Since then conditions have changed greatly. We feel now that it would be no use for us to accept any ordinance which fixes a flat rate of fare. The rate of fare should automatically go up or down according to the increase or decrease in the earning power of the company. It has been demonstrated that under present conditions the company cannot pay its operating expenses, fixed charges and the salaries demanded by its employees at the flat 5-cent fare fixed in the ordinance.

"The ordinance named certain conditions in which the company was to be refinanced and gave the company a year in which to comply with these conditions. Under present circumstances it would be impossible for the company to do this financing.

"We suppose the next step after our rejection would be for Mayor Kiel to ask the Board of Aldermen to repeal the bill. That would open the way for new negotiations between the city and the company for the framing of an ordinance providing for a sliding scale of fares and giving the city the right to acquire the company's property under certain conditions."

The rejection of the bill would, of course, do away with the necessity of holding a referendum election on the ordinance.

New York Lines Need Money

Commissioner Whitney Suggests Surrender of Private Control—Mayor Wants Franchises Investigated

In a statement issued on Sept. 29 Travis H. Whitney, of the Public Service Commission for the First District of New York, discussed the surface railway transportation situation in that city. He expressed the belief that the increased costs of operation must be met either from increased fares or from taxes. In his opinion a change must speedily come if the service is to be even fairly adequate, and it should be radical enough to give the city greater control of the lines. He offered this suggestion:

"The free grant of the right to charge an increased fare should have public consideration. There should be a surrender by the companies of at least some of their rights as private companies—that is, a greater participation by the public in the direct management of the properties and not merely regulation, with all the legal refinements and delays that may be thrown around an order that a company does not wish to obey.

"Such public participation may take the form of municipal ownership and either municipal operation or operation by lease from the city; or by boards of directors made up in part of men appointed by public authorities; or by payment to the city of a share of the revenue arising from increased fares after necessary expenses are met, including increased wages necessary to procure adequate service, and with a joint board to administer the revenue.

OWNERS ANXIOUS TO SELL

"The owners of utilities in this city no longer oppose municipal ownership. The city faces the dangerous possibility that under the pressure of war necessities the advocates of municipal ownership and the needy owners of utilities will unite to burden the city with utilities, good, bad and insolvent, useful and useless, under agreements that will gratify public officials by promoting their political success and will bring the owners prices for which they will be duly grateful.

"This dangerous possibility should not stand in the way, however, of the city's acquiring upon sound terms surface lines that can properly be made integral parts of the city's rapid transit systems, either to collect and distribute passengers in outlying districts to and from rapid transit terminals or in handling short-haul passengers in central districts by transfer."

Mayor Hylan on Sept. 30 directed Corporation Counsel Burr to investigate all of the electric railways in New York City in order to discover whether they are living up to their franchise obligations.

Theodore P. Shonts, president New York Railways, operating surface railway lines, has offered to assist the investigation.

Boston and Providence Wage Findings

The War Labor Board announced on Oct. 3 that wage increases had been granted the employees of the Boston Elevated Railway and the Rhode Island Company, Providence, and also that recommendations had been made that these companies be permitted to increase their fares in order to meet the wage increases.

The award in the case of the Boston company becomes effective as from June 15 last and gives surface line motormen and conductors a wage from 43 to 48 cents an hour, while those on elevated lines will receive 45 to 50 cents.

On the Rhode Island Company lines the motormen and conductors will receive from 43 to 48 cents an hour, with a minimum wage of 42½ cents for other employees, effective from July 19 last. The wage increase on this line also affects women employees.

News Notes

Wages Advanced In Bridgeton.—The Bridgeton & Millville Traction Company, Bridgeton, N. J., has granted an increase of pay to its car crews, beginning on Oct. 1, the maximum being set at 33 cents an hour.

Wilmington Wage Dispute to Board.—Both the Wilmington & Philadelphia Traction Company and its employees have agreed that the matter of wages in dispute between them shall be submitted to the War Labor Board for settlement.

Strike at Springfield.—Employees of the Springfield (Ohio) Railway struck on Sept. 23, because the company refused to recognize Organizer Al. Jones of Cincinnati as a member of the employees' conference committee. People were compelled to walk back and forth to work and business. It is said that the employees will also ask a material advance in the wage schedule.

San Francisco-Oakland Resettlement.—The City Council of Berkeley, Cal., has been asked in a formal application from the San Francisco-Oakland Terminal Railways to adopt the resettlement franchise as agreed upon by the resettlement franchise commission. The request is in accordance with the terms of an amendment to the city charter adopted at an election a year ago authorizing the Council to adopt such an ordinance. After adoption by the Council the ordinance will have to be ratified by a vote of the people before it becomes effective.

Accident in New York.—A train of empty cars southbound on the elevated extension of the subway on Oct. 3 halted not far from Brook Avenue, the Bronx, to allow for switching, about 5 a.m. The passenger-filled train following stopped behind it at the Jackson Avenue station. While the two trains were stopped a local train which left 180th Street bound for South Ferry, ran by the signal at the north end of the Jackson Avenue station and crashed into the train ahead. Two persons were killed and about twenty-eight were injured.

Higher Wages in Houston.—The new wage scale of the Houston Electric Company, granted at the time the increased fare was permitted, went into effect on Sept. 26. Motormen and conductors are now paid 38 cents an hour for the first three months, 40 cents an hour for the next nine months, and 42 cents an hour after one year's service. For the operation of one-man safety cars, the scale will be: First three months, 42 cents an hour; for three months' service or more, but less than one year, 44 cents an hour; for one year or more, 46 cents an hour. The increase in wages will amount to $109,000 a year.

New Officers for Oklahoma Association.—New officers have been elected for the Gas, Electric & Street Railway Association of Oklahoma as follows: J. F. Owens, president; C. S. Thompson, first vice-president; J. W. Shartel, second vice-president; F. G. Tappan, assistant secretary; F. D. Insull, C. H. Kretz, J. F. Owens, J. C. Resler, F. D. Shaffer, J. W. Shartel and C. S. Thompson, directors. The Oklahoma Public Utilities Bureau, which is affiliated with the association, has as its chairman J. W. Shartel and its secretary H. A. Lane. In view of the problems now confronting the utilities it is proposed to make the association much more active than it has been in the past.

Columbus to Have Memorial Building.—The Columbus (Ohio) Exposition Company, which had planned to erect an exposition building in connection with the Columbus Depot Company's interurban station at the corner of High and Rich Streets, has decided instead to erect a magnificent structure which will stand as a memorial to the American boys who gave their lives in France and in grateful remembrance of those other thousands who fought there for the freedom of the world. A full square has been secured for the buildings. The depot company had already sold $324,000 in stock, but the declaration of war delayed the construction of the building. The money paid on the stock has been invested in Liberty Bonds.

Aiding Selective Service Men.—For the purpose of assisting the employees of the United Railroads of San Francisco in filling out their questionnaires under the selective service act, W. M. Abbott, general attorney of the company, has organized a bureau which is open from 9 a.m. to 9 p.m. (Sundays excluded). All of the assistants and attendants have been sworn in as associate members of the Legal Advisory Board and are therefore authorized to administer the oath to the men and their dependents, and likewise to the foremen or executive heads. If any department collects its men and their dependents at the place of work, the bureau sends out an assistant, thus avoiding the loss of time by the men. This does not apply to the platform men, who must come to the central bureau. The men leave their questionnaires with the bureau, which sees that they are delivered to the respective draft boards within the required time. This saves the men the time and trouble of making the extra trip to file the questionnaires.

Case Against Cincinnati Commission Dismissed.—By sustaining the demurrer of City Solicitor Saul Zielonka, Judge A. K. Nippert on Oct. 2 dismissed the case brought against the Cincinnati (Ohio) Rapid Transit Commission by Attorneys John C. Rogers and Eli Frankenstein to prevent the issue of $80,000 of bonds to pay for preliminary work on the proposed municipal rapid transit line. The court held he had no authority to inquire into the manner of spending the money, that being within the discretion of the commission. He also ruled that promises made for campaign purposes are not binding, as the resolution carrying them may be rescinded at any time. This referred to the understanding that no money would be spent until the plans for the loop had been completed and passed upon by the voters. Attorney Rogers has now asked the city solicitor to bring suit to enjoin the amended franchise to the Cincinnati Traction Company, which went into operation recently. It is contended that the ordinance contains many illegal features, among which is the sliding scale of fares. Mr. Rogers declares that the features attacked are in contravention of the terms of the Rogers law, under which the revised ordinance was passed.

Programs of Meetings

Central Electric Railway Association

The fall meeting of the Central Electric Railway Association will be held in Indianapolis, Ind., on Nov. 21 and 22. The program has not yet been arranged.

New England Street Railway Club

The October meeting of the New England Street Railway Club, which was planned for Oct. 10 at the Relay House, Nahant, Mass., has been indefinitely postponed.

National Association of Railway Commissioners

The thirtieth annual convention of the National Association of Railway & Utilities Commissioners is to be held in Washington beginning Nov. 12. In the call for the convention attention is directed to the importance of a study of the condition of the railroads under government control. It is expected that the various state bodies, as well as the national association, will observe this matter closely and be prepared to make recommendation as to advisable courses after the war.

Financial and Corporate

82 Per Cent Decline

Nearly Four Hundred Lines Report Loss of $12,700,000 in Net for First Half of 1918

During the first half of 1918 the electric railway industry showed a most serious falling off in earning power. According to reports received by the American Electric Railway War Board from 388 railways throughout the country, the net income in this period decreased $12,773,036 or 82.16 per cent as compared to the result for the first half of 1917. The companies included operate approximately 30,500 miles of line, or about 63 per cent of the total mileage in the United States. The distribution of the companies is shown in the accompanying table.

The detailed comparative income statement of the reporting companies is presented herewith. In this connection it will be recalled that the ELECTRIC RAILWAY JOURNAL of Sept. 28, page 590, contained a similar tabulation for 293 companies. The loss in net income for these during the first half of 1918 was $8,926,929 or 74.4 per cent.

These loss figures are indeed startling, but even they do not reflect the increases in operating expenses that are resulting and will continue to result from the wage awards of the National War Labor Board. It is now estimated conservatively that the operating expenses of the industry will be increased $100,000,000 annually by the wage awards. The outlook is hardly rosy.

COMPARATIVE INCOME STATEMENT OF 388 ELECTRIC RAILWAYS FOR SIX MONTHS ENDED JUNE 30, 1917 AND 1918

	1918	1917	Increase	
			Amount	Per cent
Operating revenues	$243,372,700	$236,014,436	+ $7,358,264	+ 3.12
Operating expenses	171,792,760	154,496,687	+ 17,296,073	+ 11.20
Net operating revenue	$71,579,940	$81,517,749	—$9,937,809	—12.19
Net revenue from auxiliary operations	7,490,047	7,248,316	+ 241,731	+ 3.33
Taxes	18,189,852	16,745,577	+ 1,444,275	+ 8.62
Non-operating income	3,767,470	3,336,074	+ 431,396	+ 12.93
Gross income	$64,647,605	$75,356,562	—$10,708,957	—14.21
Reductions from gross income	61,874,248	59,810,169	+ 2,064,079	+ 3.45
Net income	$2,773,357	$15,546,393	—$12,773,036	—82.16

DISTRIBUTION OF REPORTING COMPANIES BY STATES

	No. of Companies	Mileage
Alabama	1	60
Arizona	3	47
Arkansas	1	39
California	18	2,791
Colorado	3	269
Connecticut	4	1,072
Delaware	1	136
Florida	4	157
Georgia	6	387
Illinois	50	3,157
Indiana	16	1,840
Iowa	10	239
Kansas	5	228
Kentucky	5	366
Louisiana	3	255
Maine	7	433
Maryland	4	525
Massachusetts	16	2,681
Michigan	6	404
Minnesota	4	578
Mississippi	4	59
Missouri	9	947
Montana	2	34
Nebraska	5	250
Nevada	1	7
N. Hampshire	6	117
New Jersey	12	1,204
New Mexico	1	3
New York	37	3,117
N. Carolina	4	78
Ohio	32	2,719
Oklahoma	3	158
Oregon	2	55
Pennsylvania	44	2,621
Rhode Island	1	400
S. Carolina	1	37
South Dakota	1	15
Tennessee	6	357
Texas	14	593
Utah	2	215
Vermont	1	10
Virginia	5	361
Washington	15	837
W. Virginia	4	116
Wisconsin	8	555
Wyoming	1	5
Total	388	30,534

Financial News Notes

Receivership Lifted.—The receivership of the Cleveland & Chagrin Falls Railway, Cleveland, Ohio, has been lifted and Robert D. Beatty, who formerly acted as receiver and general manager, continues with the company as general manager.

Plan Reorganization of Ohio Road.—Bondholders have arranged to reorganize the Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio, which has been in the hands of a receiver for some time. The new company will probably be known as the Cincinnati, Milford & Blanchester Traction Company. The capital stock will be placed at $400,000 and bonds will be issued to take care of the remainder of the cost of the property, purchased recently by the bondholders.

Binghamton Joins Receiverships.—It is reported that Federal Judge Ray has appointed William G. Phelps, president First National Bank, Binghamton, N. Y., receiver for the Binghamton Railway. The application was made on behalf of the Westinghouse Electric & Manufacturing Company. The Binghamton Common Council refused to suspend the company's franchise, which provides for a 5-cent fare. The Binghamton Railway operates 49.74 miles of line and does a general light and power business in Endicott.

Call for Redemption for Sinking Fund.—The Equitable Trust Company, New York, as one of the trustees under the mortgage of the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., dated Sept. 1, 1911, is inviting proposals for the sale to it under the provisions of the mortgage of as many bonds secured thereby as will exhaust the sum of $47,025, at a price not to exceed 105 per cent and accrued interest.

Would Sell Three-Mile Line.—The First National Bank, New Bremen, Ohio, of which Julius Bosell is president, is desirous of selling the Minster & Loramie Railway, Fort Loramie, Ohio, a 3-mile road. The railway was sold in May of last year for $23,000 at receiver's sale to C. P. Gress, representing the bank, which acted for creditors of the company. The road was at one time operated by the Western Ohio Railway and was supplied with energy by that company.

Second Avenue Interest to Be Paid.—Pursuant to an order of the Supreme Court of New York, dated Sept. 26, the receiver of the Second Avenue Railroad, New York City, will pay the interest on $3,140,000 of outstanding receiver's certificates at the rate of 6 per cent per annum for the six months period ended Oct. 1, 1918. Such interest will be payable at the Guaranty Trust Company. In this same order the receiver is authorized to issue new certificates to such holders of the old certificates as desire to receive the new ones in exchange. New certificates will be dated Oct. 1, 1918, and will be due Oct. 1, 1919, but will be redeemable at the option of the receiver on April 1, 1919, at par and accrued interest.

Tiffin Abandonment Postponed.—The Tiffin, Fostoria & Eastern Railway proposes to resume service in Tiffin, Ohio, after the passage of the ordinance by the City Council in which the city agrees to the terms by which the fare is raised from a 5-cent straight fare to a 10-cent cash fare, or six tickets for 40 cents, for a trial period of ninety days. Unable previously to come to terms on the fare matter the company had announced its purpose to remove all the rails in the city. The company proposed at first to maintain a cash fare of 10 cents and sell six tickets for 45 cents. The Council would not agree to this, but had an ordinance drawn up providing for a cash fare of 8 cents and six tickets for 40 cents. The compromise of a 10-cent cash fare with six tickets for 40 cents was then arranged.

Abandonment Hearing Oct. 17.—The Railroad Commission of the State of California has set a hearing for Oct. 17 on the application of the Los Angeles & San Diego Beach Railway, Los Angeles, Cal., for permission to discontinue service, dismantle the property, take advantage of the present high price of material to dispose of all the holdings of the company and effect a retirement from the field. The decision of the company to this end was brought about by high wages, the advance in the cost of supplies and materials, competition of the privately-owned automobile and the present existing tendency of people generally to abstain from travel. The hearing on the application will be held in San Diego. Opposition is expected from the citizens of La Jolla.

Receiver for Massachusetts Road.—Eliot S. Emerson, Cambridge, has been appointed receiver of the Plymouth & Sandwich Street Railway, Plymouth, Mass., by Judge Carroll of the Supreme Court on the motion of H. P. Converse Company, Boston, a firm of contractors, which is a creditor of the railway to the amount of $88,771. The company has a suit pending before the full bench of the Supreme Court to compel the town of Plymouth to buy $50,000 of the capital stock of the company, and if on Nov. 1 next it shall have completed a 4-mile extension of its tracks along the borders of the Cape Cod Canal in Bourne, it will receive $35,000 from the canal company. This extension relieved the canal company from building a bridge or tunnel or operating a ferry to provide for travel across the canal, and will furnish direct connection with New York and other points.

Receiver for Connecticut Line.—Harrison B. Freeman, Hartford, Conn., was appointed temporary receiver of the Hartford & Springfield Street Railway, Warehouse Point, Conn., by Judge William S. Case of the Superior Court at Hartford on Sept. 30. The appointment was on the application of W. C. Mason & Company, Inc., a creditor in the sum of $2,500. Mr. Freeman was the unanimous choice for receiver of those representing bondholders and creditors. Judge Case fixed the receiver's bond at $50,000, and under the order of appointment Mr. Freeman has authority to operate the road for a period of four months. The hearing on the confirmation of Mr. Freeman as receiver, and for the appointment of appraisers, will come before Judge Case on Oct. 14. The affairs of the railway were reviewed briefly in this paper for Sept. 28, page 591.

New York Central Control Denied.—Denying reports that the control of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., would soon be taken over by the New York Central interests, W. W. Foster, secretary-treasurer and general manager of the company's interurban properties, has issued a public statement in which he says: "The Buffalo, Lockport & Rochester is the only electric interurban line operating out of Rochester that is independent of the New York Central. Numerous attempts to obtain control of the Rochester & Syracuse line were made by the New York Central, but it was only recently, when the interurban line became involved financially, that control is reported to have passed to New York Central interests. Canadian capital is interested to a considerable extent in the Buffalo, Lockport & Rochester Railway and Canadian capitalists constitute a majority of the board of directors. There is no truth to the report."

Bay State Bonds and Notes.—According to information furnished by the receiver of the Bay State Street Railway, Boston, Mass., $240,000 of mortgage bonds of the Newport & Fall River Street Railway, due on Aug. 1, 1918, have been purchased for the account of the receiver, and $120,000 of 5 per cent plain bonds of the East Middlesex Street Railway, due on Sept. 1, 1918, have been paid and cancelled. The $131,000 of equipment notes due on Aug. 1 were purchased by the receiver, and the interest on equipment notes due in August was paid. No receiver's certificates are outstanding. The $150,000 of first mortgage bonds of the Providence & Taunton Street Railway, which matured on Sept. 1, 1918, have not been paid, and the $57,000 of serial notes of the Bay State Street Railway were not retired on Aug. 15. Judge Martin in the United States District Court on Oct. 4 issued an order for Receiver Donham to pay certain coupons representing interest on the bonds of the Brockton Street Railway and bonds of the Newport Illuminating Company and also to pay dividends at the rate of 6 per cent on the stock of the Chelsea & Boston Railroad.

Receiver for Cumberland Railway.—It was announced at Carlisle, Pa., on Sept. 20 that an agreement had been reached between attorneys for the Cumberland Railway of that place and the attorneys for security holders petitioning for a receiver for the company. The taking of evidence in the proceeding before the court had been almost completed when the announcement was made. Conditions were presented to the court that had been framed by the attorneys for both sides. It has been agreed with other things that the Cumberland Railway be declared insolvent; that C. H. Bishop, president of the Valley Railways; Walter Stuart, vice-president of the Farmers' Trust Company, Carlisle, and J. Harvey Line, an attorney of Carlisle, be appointed receivers; that the present officials of the company be restrained from interfering with the operation of the road by the receivers; that the receivers be permitted to continue the operation of the road and that all creditors, except the Farmers' Trust Company, trustee under the mortgage, be restrained from interfering with the operation of the road. The Cumberland Railway defaulted in the payment of interest due in July.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$21,577	*$12,163	$9,414	$4,023	$5,391
1m., July, '17	19,992	*10,426	9,566	3,548	6,018
12m., July, '18	247,094	*127,966	119,128	44,782	74,346
12m., July, '17	224,722	*109,727	114,995	42,354	72,641

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$11,966	*$10,738	$1,228	$1,439	†$211
1m., July, '17	15,560	*11,067	4,493	1,239	3,254
12m., July, '18	114,955	*121,726	†6,771	16,069	†22,840
12m., July, '17	125,866	*120,294	5,572	13,926	†8,354

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$44,532	*$34,835	$9,697	$6,535	$3,162
1m., July, '17	40,500	*25,293	15,207	6,552	8,655
12m., July, '18	490,079	*348,958	141,121	78,399	62,722
12m., July, '17	433,185	*259,179	174,006	78,734	95,272

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$97,806	*$45,226	$52,580	$32,806	$19,774
1m., July, '17	87,491	*35,953	51,538	31,075	20,463
12m., July, '18	1,188,710	*474,938	713,772	385,372	328,400
12m., July, '17	1,005,468	*381,253	624,215	344,726	279,489

EASTERN TEXAS ELECTRIC COMPANY, BEAUMONT, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$105,878	*$56,484	$49,394	$12,847	$36,547
1m., July, '17	84,332	*45,682	38,650	11,760	‡28,622
12m., July, '18	1,039,675	*573,041	466,634	151,787	‡334,218
12m., July, '17	907,336	*491,431	415,905	121,803	‡300,799

EL PASO (TEX.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$99,957	*$70,955	$29,002	$7,048	$21,954
1m., July, '17	103,171	*66,712	36,459	4,940	31,519
12m., July, '18	1,268,850	*836,912	431,938	79,253	352,685
12m., July, '17	1,243,515	*767,016	476,499	60,494	416,005

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$29,509	*$18,730	$10,779	$5,006	$5,773
1m., July, '17	31,927	*17,127	14,800	5,098	9,702
12m., July, '18	335,059	*220,931	114,128	60,499	53,629
12m., July, '17	340,201	*200,597	139,604	62,095	77,509

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$71,731	*$57,864	$13,867	$16,540	†$2,673
1m., July, '17	54,322	*36,387	17,935	15,730	2,205
12m., July, '18	798,960	*562,000	236,960	193,855	43,105
12m., July, '17	659,770	*442,501	217,269	187,078	30,191

NORTHERN TEXAS ELECTRIC COMPANY, FORT. WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$251,534	*$158,630	$92,904	$28,172	‡$74,315
1m., July, '17	190,881	*116,601	74,280	29,148	45,131
12m., July, '18	3,139,472	*1,789,296	1,350,176	342,654	‡1,103,355
12m., July, '17	2,123,306	*1,245,755	877,551	349,706	527,845

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$26,548	*$21,088	$5,460	$8,263	†$2,803
1m., July, '17	25,180	*19,240	5,940	7,545	†1,605
12m., July, '18	307,239	*229,984	77,255	95,435	†18,180
12m., July, '17	308,693	*226,846	81,847	87,504	†5,657

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$44,388	*$31,720	$12,668	$8,252	$4,416
1m., July, '17	32,947	*18,274	14,673	7,805	6,867
12m., July, '18	428,959	*273,035	155,924	95,795	60,129
12m., July, '17	309,397	*178,785	130,612	93,102	37,510

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$86,826	*$52,486	$34,340	$5,087	$29,253
1m., July, '17	78,623	*45,136	33,487	4,369	29,118
12m., July, '18	1,011,844	*590,439	421,405	61,416	359,989
12m., July, '17	1,001,735	*546,826	454,909	52,228	40,268

* Includes taxes. † Deficit. ‡ Includes non-operating income.

Traffic and Transportation

W. F. C. Impatient

Rebukes New Orleans Mayor for Not Carrying Out Promises Upon Which It Advanced $1,000,000

A telegram was received by Martin Behrman, Mayor of New Orleans, La., from the War Finance Corporation on Sept. 30, requesting the city authorities to take immediate action looking toward an increase of fares and new rates for gas and electricity by the New Orleans Railway & Light Company.

COUNCIL MET ON OCT. 1

In view of the above telegram a meeting was called on Oct. 1 by the Commission Council at the request of the Mayor and an ordinance was introduced by Mr. Glenny, member of the Commission Council, allowing the company to increase fares to 6 cents and its rates for gas and electricity by 30 per cent.

Under the law the ordinance must lie over for a week before being taken up for final passage. The measure provides that the bondholders shall receive their interest, but that stockholders shall not receive any dividends until the loan of $1,000,000 made to the company some time ago by the War Finance Corporation is paid. The ordinance specifically states that all of the increased net revenue derived shall be set aside and dedicated to the payment of this loan, and that the increased rates shall be permitted to remain in effect only until such time as this loan shall have been liquidated.

The matter dates back several months when the Mayor and other city officials urgently and repeatedly requested the War Finance Corporation to make a large advance to the company, representing that such advance was necessary to prevent interruption of war activities and to avert receivership. Many leading citizens joined in this request.

APPEAL REFUSED AT FIRST

The War Finance Corporation decided absolutely to refuse to lend the amount first requested or any amount unless the city agreed immediately to put into effect increases in fares and light rates that would produce adequate net earnings. Following this the Mayor furnished the War Finance Corporation with a copy of minutes of the meeting of the Commission Council at which the Mayor was authorized to carry into effect an agreement between the city and the company under which adequate net revenue would be assured to the company. Furthermore the Mayor telegraphed the War Finance Corporation on June 24 that the city had agreed to readjust rates immediately so as to enable the company to earn 6 per cent net on a valuation of $43,000,000. Upon receipt of this telegram, and in the firm belief that the city intended to put the necessary increased rates into effect immediately, the War Finance Corporation agreed to advance and did advance the company $1,000,000.

After reciting these facts the War Finance Corporation, through W. P. G. Harding, managing director, in its letter of Sept. 30 said:

"Two months have elapsed since the loan was made but no increases in rates have been put into effect and the company has been operating at a heavy deficit. We cannot understand why you have failed to put these increased rates into effect and must insist upon your doing so without further delay.

"If you do not immediately put such rates into effect the company will be unable to continue to pay the increased wages awarded by the National War Labor Board and by your action you will jeopardize the security for the War Finance Corporation's loan made at your request. Your failure to make good your representation will be an exhibition of bad faith on the part of the city of New Orleans that will seriously injure your credit and standing.

"The honor of New Orleans is therefore involved and unless sufficiently increased fares and lighting rates are established by the city to insure reasonable wages to employees, adequate service, protection of your local financial situation, and the War Finance Corporation's loan the public will inevitably conclude that the city of New Orleans has repudiated a moral obligation incurred by its Mayor and other duly authorized officials.

EXPERT EXAMINATION MADE BY CORPORATION

"Our expert, Mr. Proutt, is in New Orleans making a thorough examination of the property, accounts and management of the New Orleans Railway & Light Company and is thoroughly qualified to estimate the extent of such absolutely necessary advances as will accomplish the desired object. He will place at your disposal all information so obtained.

"You should have no difficulty in making it plain to your citizens that the New Orleans Railway & Light Company cannot render services at war costs for the same rates and fares that prevailed prior to the war and that the moderate increases proposed are essential to the maintenance of railway and lighting services, the protection of the local financial situation, to the continuance of proper service to your war industries and to the compliance with the promises and obligations of the city of New Orelans upon the faith of which the War Finance Corporation extended aid."

Six Cents in Baltimore

New Rate Has Gone Into Effect There With Minimum of Discomfort Through Use of Tickets

The United Railways & Electric Company, Baltimore, Md., put the 6-cent fare rate into effect on Oct. 1. The schedule calls for a fare of 6 cents for adults; 4 cents for children between four and twelve years of age, and an increase in the charge for commutation tickets of 1 cent for each fare zone.

PUBLICITY'S PERSUASIVE POWER

A great deal of publicity had been given to the fare increase and patrons had been urged in the press, by car cards and otherwise to help start the new plan smoothly by presenting the exact change or car tickets when they boarded cars. T. A. Cross, president of the company, voiced his appreciation of the public's hearty co-operation in the following statement given to the newspapers:

"I certainly appreciate the manner in which the Baltimore public co-operated with our conductors to-day. Our reports indicate that most patrons had the exact fare or a ticket ready, and there were practically no delays.

"With this splendid spirit of help we can hasten the solution of many of our service problems. My observations and reports made to me speak well for the courtesy of our conductors, and I wish to thank them.

"The use of tickets is apparently a popular move. We have had many requests to increase the number of places where tickets may be bought, and we are now securing the co-operation of merchants to this end."

It might be mentioned that the demand for tickets was so great that the supplies furnished to the places that originally sold tickets were exhausted several times the first day.

To that original list of sales places have been added others until now tickets may be bought in any section of the city and in counties near by.

TICKET SALES HELP IMMENSELY

The sales places include newspaper offices, banks, cigar stores, drug stores, department stores, factories, etc.

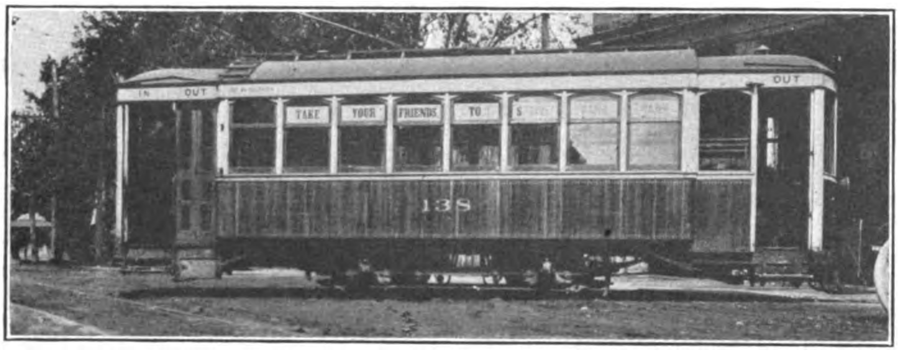
At all of these points the tickets are handled without fee or commission, and solely through the desire of the proprietors to accommodate the public.

The tickets are also on sale, of course, at all the carhouses of the railway, at the Howard and Franklin Street waiting room, and at the cashier's office in the Continental Building.

The change in fare is in accordance with the tariff filed by the company with the commission on Aug. 28. The new schedule, of course, is subject to any action the commission may take on the petition for relief filed previously. A hearing on this application will be held by the commission in November. The necessity for raising the fares prior to action by the commission arose from the fact that before such a decision could be had an increase in wages went into effect on Sept. 1.

Park Advertised in Fall

The London (Ont.) Street Railway has made effective use of advertising in the promotion of traffic to Springbank Park during the past summer and has succeeded in prolonging the season substantially. Usually the park is dead by the second week of September, when the annual exhibition of the Western Fair Association is held. Assuming that advertisements published in the newspapers during the summer had been read by many in the rural districts and near-by towns, and that thus a large amount of missionary work had been done, the company made a big bid for business with fair visitors. One advertising stunt was the utilization of the placards illustrated.



SASHES USED FOR ADVERTISING

Printed in bold type on newsprint, they were posted on the inside of the upper sashes of the cars. The cost was small, but the effect was striking and their appearance neat. Every line in the city carried the message and, though the weather was most unfavorable, good results were secured. The photograph shows one of the cars in daytime. With the lights on inside they were quite as easily read at night. The first window, used for the route sign, was not covered.

Portland Interurban Rate Hearing

The Public Service Commission of Oregon recently undertook a hearing in Portland, with the view of determining if the application of the Portland Railway, Light & Power Company for an increase in its interurban passenger fares should be granted. Business men of Oregon City testified that a fair increase in rates would be favorably considered by the business people of that city. An increase of 10 cents over the present one-way fare of 20 cents was suggested. R. A. Leiter, attorney for the company, said that the company was entitled to a 6 per cent return on its investment. Such a return would approximate $299,128. The return during the year ended June 30, 1917, was only $71,503. It would be still smaller for this year.

Franklin T. Griffith, president of the company, at the hearing, recommended that the cent as the unit of currency receive official recognition. The present interurban fares are based on the nickel as unit. They were set in November, 1911, by the commission. Frank Miller, chairman of the commission, approved the suggestion, indicating that the commission may use the cent basis in settling the new fares.

The hearing was continued to Sept. 24 to allow city representatives time to introduce evidence showing why the increases should not be allowed.

The hearing is also under way on the company's petition for an increase of 25 per cent in freight rates on its interurban lines, and on the Willamette Valley & Southern Railway, operated by the Portland Railway, Light & Power Company. The proposed freight rate increase would parallel that of federal railroads, but basic rates are lower.

Atlanta Fare Appeal Denied

Judge George L. Bell, of the Fulton Superior Court has handed down a decision denying the petition of the Georgia Railway & Power Company, Atlanta, Ga., for a writ of mandamus against the State Railroad Commission, to compel that body to assume jurisdiction in the matter of street car fare increases. The company desires to secure authority to charge a 6-cent fare with 2 cents extra for each transfer.

Several weeks ago the Railroad Commission handed down a decision granting electric light, power and gas rate increases to the company, but refused to consider the petition for an increase in car fares. The commission held that under the law it had no authority to alter the schedule of car fares in the city of Atlanta for the reason that those fares were fixed by a contract between the municipality and the power company which had been consummated some years before the organization of the commission on its present basis.

The company then filed with Judge Bell a petition for a writ of mandamus to compel the Railroad Commission to assume jurisdiction in the fare matter.

Luther Z. Rosser, Sr., one of the chief counsel for the company, stated that the case would be appealed to the Supreme Court of the State for a final construction of the law governing the situation. This appeal must be taken within twenty days.

Judge Bell handed down no formal opinion in explanation of his action, but merely issued the order denying the appeal.

Wants Government to Act

Mayor George J. Karb of Columbus, Ohio, has forwarded a communication to President Wilson, advising that the government assume control of the operation of the railway lines of the Columbus Railway, Power & Light Company in the city. This step came as a surprise to the local officials and members of the City Council who have been endeavoring to handle the matter and prevent an increase in the rate of fare. Among other things Mayor Karb says:

MAYOR SEES NEED

"At the present time, and since the company made this change (change in fare) thousands of people are riding the cars without paying fares. The company claims that the final step taken was made necessary by the action of the War Labor Board in increasing the wages of its men. It has also pointed out the increased cost of all materials used by it in the service. Last winter, due to transportation troubles, the coal supply obtainable by the company was so limited that service had to be greatly reduced. The company had trouble, too, with its power plants with like results. The result is that much feeling was created against the company.

"Our city charter provides for referendum. If the Council should enact legislation to relieve the company, a referendum would undoubtedly be demanded and a campaign would but add to the opportunity for trouble.

"As I have said, it seems to me that a situation has been reached when settlement of this question is not within the power of local officials and that preservation of peace, the question of justice as between non-paying and paying passengers, the maintenance of service and conservation of the property of the company, require the matter to be taken under control by the government during the existence of the war."

CITY ATTORNEY OBJECTS

City Attorney Henry L. Scarlett characterized the step as ill-advised. He contends that the company desires the government to take control of the road, since the rate of fare would then probably be increased. The trouble, he said, is that government representatives do not always understand the situation and a rate they would make might be unjust to the public.

Mayor Karb has advised all along that Columbus follow the lead of other cities and establish a temporary rate of fare to take care of increased expenses, but the City Council opposed this, apparently with the idea that the company could be forced, no matter what the ultimate result, to continue at eight tickets for a quarter.

The recent step of the City Council in considering a resolution calling for an investigation of the company's financial affairs is mentioned by Mayor Karb, but he feels that any result from this would cause too great delay. As the Mayor sees it, the situation needs immediate attention.

Transportation News Notes

Galesburg Wants One-Man Cars.—The Galesburg Railway, Lighting & Power Company, Galesburg, Ill., has petitioned the Public Utilities Commission of Illinois for permission to operate one-man cars on certain lines in that city.

Amended Schenectady Petition.—The Schenectady (N. Y.) Railway has filed with the Public Service Commission for the Second District a proposed schedule of increased rates, which it seeks permission to put into effect on Nov. 1. The hearing on the original application of the company, set for Oct. 8, has been postponed until Oct. 23.

Skip Stops in Effect in Dallas.—The locations for skip stops have been made for all street car lines of the Dallas (Tex.) Railway, and the skip-stop system of operation was to be put into effect on Oct. 1. The system had been put into effect on several Dallas lines long before the request from the federal government, and the plan met with instant approval.

Six Cents in Mattoon.—The Central Illinois Utilities Compay, Mattoon, Ill., has been granted a 6-cent fare in the cities of Taylorville, Mattoon and Charleston. The company is also allowed by the Public Utilities Commission of Illinois to withdraw from sale the twenty-five tickets which have been selling for $1 and to place on sale twenty-two tickets for $1.

Again Threatens Suspension.—The New York & North Shore Traction Company, Roslyn, N. Y., again threatens to suspend all service. Officials of the company say that unless the promise of a 7-cent fare is made very shortly by the city of New York all service will be stopped immediately. The plea of the company for an increase in fare has been before the city for some time. The period of grace set originally by the company expired on Sept. 30.

Penalty for Dare-Devil Riders.—The City Council of Camden, N. J., has adopted an ordinance placing in the disorderly class all persons found riding on the top of electric railway cars or in any part except the space designed for passengers. A fine of $10 will be imposed in each case. The ordinance aims to prevent shipworkers and other industrial employees from climbing to the roof of cars and hanging on the bumpers and fenders.

War Increase for Springfield, Ill.—The Springfield (Ill.) Consolidated Railway has been authorized by the Public Utilities Commission of Illinois to increase local fares from 5 cents to 6 cents. The company is required to sell nine tickets for 50 cents, this increased ticket rate comparing with six tickets for 25 cents and twenty-five tickets for $1. The increase is to remain effective until six months after the close of the war.

Holyoke Wants Five-Cent Central Zone.—The Holyoke (Mass.) Street Railway on Oct. 2 filed with the Public Service Commission of Massachusetts a petition for the right to substitute for the present zone-fare system one based on mileage, calling for 2 cents a mile by the use of tickets and 2½ cents a mile cash fare, with a minimum charge of 5 cents. The zone system has been in operation less than six months. The proposed change would take effect on Nov. 1.

Chicago & West Towns Wants Seven-Cent Fare.—The Chicago & West Towns Railway, Chicago, Ill., on Sept. 28, asked an increase in interurban fare from 5 cents to 7 cents before Walter A. Shaw, Public Utilities Commissioner. Charles N. Hebner, auditor of the company, testified that during the last eight months the increase in wages was $66,000, the increased cost of materials $40,000, and the loss, through decrease in the number of passengers, $45,000. He testified that even the 7-cent rate asked will not allow the company to pay dividends.

Traffic Suspended Following Explosion.—The Mayor and the Public Service Commission of the city of New York fearing the effects on submarine and bridge structures of the munition plant explosions in New Jersey on Oct. 5, shut off the traffic over and under the rivers. They had no opportunity to inform the public in advance of the curtailment of transportation facilities, and consequently considerable confusion resulted. Nearly 100 persons are reported to have been killed in the explosion and millions of dollars of damage was done to property in suburban New Jersey and in lower New York.

Trenton to Continue Tickets.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., will after Oct. 14 sell strip tickets at the rate of five for 30 cents instead of the six for 25 cents. The plan to sell tickets was decided upon because the public was accustomed to tickets. This will also relieve the conductors of making change for the extra cent. The tickets will be sold only at the office of the company. The company will have its large cars equipped with fare boxes. The tickets now in use will not be honored after Oct. 14, when the new 6-cent rate becomes effective under the order of the Board of Public Utility Commissioners.

Fare Increase Probable in Pittsburgh.—In commenting on the settlement of the matter of wages for the employees of the Pittsburgh (Pa.) Railways, the Pittsburgh *Dispatch* said in its issue of Oct. 3: "While no announcement has been made by the receivers of what effect the increase granted the men will have upon fares, all three receivers of the railway have said it will mean an increase in fares, to make which an application will shortly be made to the State Public Service Commission. The increase most talked of is a straight 7-cent fare for Pittsburgh, replacing the 5 and 7-cent fare which is now in effect."

Miscellaneous Freight Increases Asked.—The Western New York & Pennsylvania Traction Company, Olean, N. Y., has applied to the Interstate Commerce Commission for increases varying from 5 cents to 15 cents in rates on merchandise package freight carried on passenger cars; an increase of half a cent a gallon on milk; an increase from $1 to $1.15 a month on newspapers tied in bundles, maximum weight 360 lb. a month, weight in excess to be charged 35 cents a 100 lb. and an increase of 5 cents each on baby carriages, go-carts, bicycles and tricycles.

Another Increase Needed Now.—A hearing will be held on Oct. 22 on the application of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., for a 7-cent zone fare between Trenton and Princeton. The Board of Public Utility Commissioners of New Jersey has ordered the company to suspend the increase until Dec. 10 unless prior to this date the board should approve of the new rate. The company, which recently received an increase from 5 to 6 cents, announced that 7 cents would be charged in each zone on and after Sept. 26. The company is also asking for a 7-cent fare on its divisions in the State of Pennsylvania.

Smoking Stopped on Boston Elevated.—Special smoking cars and smoking compartments on the rapid transit system of the Boston Elevated Railway have been discontinued. While the public trustees have ordered the elimination of special facilities for smokers "temporarily," in response to an emergency request by the health authorities, it is unofficially reported that they may never be restored. This action of the trustees follows the recent recommendation of the Massachusetts Public Service Commission that the smokers be abolished entirely on the trains operating upon the elevated railway lines of the company and through the Cambridge subway.

Receiver Wants Seven-Cent Fare.—On Sept. 24, C. I. Cole, receiver of the Atlantic City & Shore Railroad, Atlantic City, N. J., again asked the Board of Public Utility Commissioners of New Jersey to grant an increase in fare. The present request is for a 7-cent fare. Last July the company asked for an increase from 5 to 6 cents to go into effect in August, but the board suspended the application. The company now asserts that its income is not sufficient to keep the road in operation, and that it is carrying fewer passengers because of the close of the summer season. The board has requested additional information regarding the need for more revenue.

Pennsylvania Line Wants Seven-Cent Zones.—The Public Utility Commission of Pennsylvania will hold a hearing on Nov. 12 on the application of the Northampton, Easton & Washington Traction Company, Easton, Pa., for another increase in fares. The company is asking for a 7-cent fare for each of the seven zones between Phillipsburg and Port Murray. The company claims that the expenses have increased and that there has been a falling off in traffic, 377,000 fewer fares being collected last year than in 1910, 1911 or 1912. A few months ago the commission granted the company permission to advance the zone fare from 5 cents to 6 cents.

Zone Fares for Government Line.—The Virginia Railway & Power Company, Richmond, Va., has issued a statement in regard to its plan to operate the Richmond-Seven Pines Railway for the government. The statement says: "Under the arrangement made with the United States Housing Corporation, the fares for transportation on this property will be under the zone system; one zone to be from Twenty-ninth and P Streets to Stop 23, and one zone to be from Stop 23 to Seven Pines. A single cash fare of 5 cents will be charged from any point in one zone to any point in the same zone, and an additional cash fare of 5 cents from a point in one zone to any point in the other zone."

Councilmen Undergo Change of Heart.—At the regular meeting of the City Council of Columbus, Ohio, during the week ended Oct. 5 Councilman Giffin submitted a resolution, requesting the Columbus Railway, Power & Light Company to furnish full information of its income and operating expense for the last two and one-half years. It is supposed this information is desired for the purpose of investigating the claims of the company for a higher rate of fare. The resolution, it is said, will have the support of Councilmen Westlake, Zimpfer and Alcott, all of whom have in the past opposed any change from the present rate of fare. The appeal of the Mayor to President Wilson in this matter is referred to on page 674 of this issue.

New Jersey Officials on Fare Study.—Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., with H. C. Donecker, assistant general manager, M. R. Boylan, general auditor, and Dr. Thomas Conway, Jr., have returned from Pittsburgh, St. Louis, Milwaukee, Cleveland and other cities where they studied fare systems and methods of fare collection. Data were secured on the zone system in accordance with the recommendation for a study of this method made by the Board of Public Utility Commissioners of New Jersey. Mr. McCarter is chairman of the company's special committee on fares. The company has completed the work of taking a census of car riders on all the lines. Clerks are now classifying the data so obtained.

Exempt from Prosecution.—The Kentucky Court of Appeals on Oct. 1 rendered a decision to the effect that the South Covington & Cincinnati Street Railway, Covington, Ky., cannot be tried and convicted for maintaining a nuisance under an indictment found against it in the Kento Circuit Court, where it was accused of having failed to furnish a sufficient number of cars on the Rosedale line. In the absence of statutes and ordinances on the subject, the court held that a street railway, operating wholly within the State, is exempt from prosecution on this allegation. The claim was made that cars were overcrowded and the service was detrimental to the health and comfort of the passengers.

Michigan State Fare Case Begun.—Trial of the injunction case brought by the Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich., against the State of Michigan to prevent the enforcement of the state 2-cent fare law was opened recently before United States Judge Sessions. Attorney Chamberlain, for the railroad, said that when the steam roads were taken over by the government, passenger rates were increased to 3 cents a mile. Interurban roads asked for increases. They were refused on the ground that the State law governed fares. As noted in the ELECTRIC RAILWAY JOURNAL for July 27, page 173, the company filed suit to "test the validity and enjoin the enforcement of the statute of the State of Michigan fixing the maximum fare for railroads at 2 cents a mile."

Boston Fare Grades Established.—In order to meet the requirements of the statute providing for the public operation of the Boston (Mass.) Elevated Railway, which calls upon the trustees within sixty days after the establishment of the original rate of fare under the act to adopt and publish a schedule of eight grades of fare containing four rates above and four rates below the existing rate, the trustees have established the following schedule of grades of fare, but wish the public clearly to understand that the action involves merely a literal compliance with the provisions of the statute and does not change the present 7-cent fare: first grade below, 6 cents; second grade below, 5 cents; third grade below, 4 cents; fourth grade below, 3 cents; first grade above, 8 cents; second grade above, 9 cents; third grade above, 10 cents; fourth grade above, 11 cents.

Elevated and Surface Line Papers.—Each of the affiliated subway elevated and surface lines in New York City has a little paper of its own now. Some time ago *The Subway Sun* was established for posting in the windows of the cars of the Interborough Rapid Transit Company. Now that company has followed with *The Elevated Express* for posting in the elevated cars, while the New York Railways is using the *Green Car Traveler* as a means of carrying messages to its patrons. All these publications are issued over the signature of Theodore P. Shonts, president of the companies. The two new papers are fashioned after *The Subway Sun*, a description of the contents and the purpose of which have been the subject of comment in the ELECTRIC RAILWAY JOURNAL previously.

Johnstown Wants More.—The Johnstown (Pa.) Traction Company is preparing a new tariff to be filed with the Public Service Commission, which will place fares on the 5-cent zone system and will become operative about Oct. 15. Main street will be a dividing line and two 5-cent fares will be charged from Morrellville and Coopersdale to Franklin or Moxham. Ferndale is included in the single zone to Main Street, but the 5-cent rate will not apply on Windber cars. There will be three zones, as usual, between Johnstown and Windber, but they will be increased to 10-cent zones, instead of 5, making the fare to Windber 30 cents and to Ferndale 10 cents on a Windber car. By using the city cars and the transfer privilege to the special Ferndale car, the fare to Ferndale will be only 5 cents. Evan M. du Pont, the president and general manager, explained that this step was necessary because of the increased cost of operating and the failure of the 6-cent fare to produce sufficient revenue. Those who are now paying 6 cents fare and are not exceeding one of the newly-created zones will save 1 cent on each fare hereafter.

A Disadvantage Turned to Account.—Justice Louis W. Marcus in the Supreme Court of Erie County, granted the petition of the International Railway, Buffalo, N. Y., discontinuing the injunction proceedings brought by agreement with the city to determine if the Public Service Commission for the Second District has the authority to consider the complaint by which the Council sought to have fares reduced from 5 cents to 4 cents. The company is now willing to have the municipal authorities proceed with its 4-cent fare case filed with the commission two years ago. The municipal authorities have always maintained that the International Railway could give good and efficient service with a 4-cent fare and therefore proceedings were started by the Mayor to bring the matter before the State utilities board. The railway questioned the board's jurisdiction in municipal rate cases where franchises are involved and an injunction was secured by the company which prevented the city from proceeding with its case. The present attitude of the company is that by discontinuing the injunction the city will be forced to go on with its case and then the company will have an opportunity to present its evidence as to the needs of a 6-cent fare before the commission. The municipal authorities will now undoubtedly withdraw the complaint. Henry W. Killeen, of counsel for the International Railway, is preparing to oppose any such move on the part of the representatives of the city.

Legal Notes

KANSAS—*Where Defect in Floor Could Have Been Seen, Injury Caused by It Not Prima Facie Evidence of Company's Neglect.*

The doctrine of *res ipsa loquitur* is properly applied in case of injuries to a passenger caused by the collision with another train, the breaking of a rail, or by some defect in the equipment of the train about which the passenger is presumed to know nothing, because he has no way of anticipating it. It has no application to a case where a passenger is injured by some defect in the floor of the car which is visible to the passenger and which causes the passenger to fall while attempting to alight from the train at a station. Hence, where a passenger of an interurban railway was injured because of a defect in the floor of the vestibule of the car in which her foot caught while she was alighting, it is error to charge that the injury is *prima facie* evidence of negligence on the part of the carrier. (Cloud *vs.* Kansas-Oklahoma Traction Company, 173 Pacific Rep., 338.)

MICHIGAN—*Parol Evidence of Meaning of "Reasonable Dispatch."*

Where bill of lading provides for transportation of goods "with reasonable dispatch," parol evidence of a conversation wherein carrier assured shipper before signing of bill of lading that goods would reach destination before certain time is admissible as bearing on carrier's understanding of what was a reasonable time, and is not objectionable as varying terms of bill of lading. (Harmon *vs.* Michigan United Traction Company, 168 Northwestern Rep., 522.)

MICHIGAN—*Injury from Temporary Road During Track Construction—Implied Invitee.*

Where an interurban railway in building a culvert temporarily leased a right-of-way over neighboring land to enable travelers to pass around the obstruction in the highway, a traveler injured by being thrown from his wagon on account of a hole in such temporary road was an implied invitee. (Brown *vs.* Michigan Railway, et al., 168 Northwestern Rep., 419.)

MISSOURI—*Newsboy Injured While Being Ejected.*

A newsboy who went on a car to sell papers was struck and injured by a conductor while being ejected and the company claimed that the conductor was acting without the scope of his authority, and evidence showed that there had previously been ill-will between the two. The court held that the railway was liable for injuries even in the case of such ill-will if it grew out of a former conflict which arose in the line of the conductor's duties. (204 Southwestern Rep., 826.)

MISSOURI—*Report of Accident by Conductor Excluded as Evidence.*

In a street car passenger's action for personal injuries due to a premature starting of the car, the conductor's report of the accident to the company was properly excluded, being a report of his own conduct to his superior. (Rogers *vs.* Kansas City Railways, 204 Southwestern Rep., 595.)

NEW YORK—*Injuries on Track of High Speed Railway.*

An interurban railway was not liable for death of a boy, who went upon the track in front of a car approaching at 30 to 50 miles an hour, in a light snow, at a point where the motorman had no reason to anticipate the act. (Benham *vs.* Schenectady Railway, 171 New York Sup., 260.)

NEW YORK—*Injury to Passenger While Conductor Turned Switch.*

It was not negligence as a matter of law for a street railway company to have its conductor leave the car to turn a switch at the end of the route, as respects a passenger boarding the car while the conductor was so engaged. (Clarke *vs.* New York Railways, 171 New York Sup., 248.)

NEW YORK—*Public Service Commission Has No Power to Order 20 Per Cent Amortization Fund.*

Under the public service commissions law, which provides that the commission may establish a system of accounts to be used by railroad corporations or other common carriers and prescribe the manner in which such accounts shall be kept, the commission had no authority to require the preservation of 20 per cent of the gross recipts to establish an amortization fund for the renewal of a street railway when the existing equipment should be no longer capable of use. (People *ex rel.* New York Railways, et al., *vs.* Public Service Commission of First District, et al., 119 Northeastern Rep., 848.)

NEW YORK.—*Employee Riding When Off Duty Is a Passenger.*

A guard employed by a transit company by the hour or trip, whose duties ceased on the arrival of his train at a certain station at 2.10 p.m., and who was not required to resume work until 4.58 p.m., but who remained on the train in uniform and in the passenger car to return on some personal business, though it did not appear that he had paid his fare, was a passenger, entitled to maintain an action for injury from a collision and to rest his case upon proof of the collision. In such a case, the guard was not entitled to any relief under the workmen's compensation act (Consol. Laws, chap. 67), which requires an applicant for relief to be in the service of the employer when injured, which requirement was not changed by the amendment by Laws 1916, chap. 622. (Pierson *vs.* Interborough Rapid Transit Company, 168 New York Sup., 426.)

New Publications

Directory of Engineers

Issued by the American Association of Engineers, Chicago, Ill., 6 in. x 9 in., cloth, 192 pages, price $2.

Contains a brief synopsis of the experience and training of all members of the association.

American Wood Preservers Association Proceedings

Published by the association, F. J. Angier, secretary, Mount Royal Station, Baltimore, Md.; 262 pages. Price in cloth, $3.50; in paper, $2.50.

The volume covers the proceedings of the 1918 meeting and includes a number of papers of interest to electric railway maintenance-of-way engineers.

Saving Coal in Boiler Plants

By Henry Kreisinger. Technical Paper 205, U. S. Bureau of Mines. One copy from bureau, free; extra copies from Superintendent of Documents, Government Printing Office, Washington, D. C., 5 cents each.

A practical treatment of the subject intended for the fireman, engineer or owner of small or medium-sized, hand-fired plant.

The Diesel Engine; Its Fuels and Its Uses

By Herbert Haas. Published by the United States Bureau of Mines as Bulletin 156—Petroleum Technology No. 44. 133 pages. One copy free from Bureau of Mines; extra copies 25 cents each from Superintendent of Documents, Government Printing Office, both Washington, D. C.

This is a very extended study of the Diesel engine from a practical standpoint. Details of construction of several commercial engines are given and a comparison is made of the advantages and disadvantages of Diesel engine plants as compared with steam turbine plants. Some data regarding costs are given also.

Handbook of Mechanical and Electrical Cost Data

By H. A. Gillette and Richard T. Dana, McGraw-Hill Book Company, New York; 1716 pages with index. Price $6.

This book is designed to be a companion volume to the "Handbook of Cost Data" by Gillette and the "Handbook of Construction Plant and Its Cost" by Dana. These three handbooks are written so as to overlap. In case the question should be raised, of what value are cost data when the prices of labor and material change so rapidly the authors have an answer ready. They show first that no printed prices are really "up to date," but if unit costs are given, old cost data can be serviceable if the present-day labor and material prices are substituted. The volume under review contains many figures from appraisals, operating records, etc., of steam plants, electrical distribution system and railways, with a discussion of general economic principles.

Personal Mention

Builds Road in Spain

After Completion of Improvements at Barcelona, Mr. Harrsen Returns to America—Formerly in Mexico

H. P. Harrsen, managing director since March, 1915, of the Ebro Power & Irrigation Company, the Sarria & Barcelona Railways and the Cataluna Railways, all of Barcelona, Spain, and all controlled by the Barcelona Traction, Light & Power Company, having resigned, has just returned to this country and will spend the coming winter at his home in Florida.

Mr. Harrsen was born in St. Louis, Mo., in 1875. After graduating from the public schools of that city he entered the employ of the Emerson Electric Manufacturing Company of St. Louis. His next position took him to Mexico as assistant superintendent of the Aguascalientes Electric Light Company at Aguascalientes, Mexico. Two years afterward, the tramway system in Mexico City, later incorporated under the name of the Mexico Tramways Company, Ltd., was acquired by an English syndicate and the company's first American general manager, Thomas H. McLean, appointed Mr. Harrsen his secretary.

H. P. HARRSEN

Mr. Harrsen remained in Mexico until his chief, Mr. McLean, left to accept the position of vice-president and general manager of the Toledo Traction Company. Mr. Harrsen accompanied Mr. McLean to Toledo where he spent seven years with the Toledo traction system in different capacities, from clerk to superintendent. He next received the appointment of general superintendent of the Mexico Tramways Company, in which the late Dr. F. S. Pearson, head of various international companies, had become financially interested and was then president. During the following eight years he became successively general superintendent, general manager and finally managing director of the Mexican Light & Power Company, president of the Pachuca Light & Power Company, and managing director of the Mexico Tramways Company.

In March, 1915, Dr. Pearson appointed Mr. Harrsen managing director of his Spanish company in Barcelona.

T. D. Moberg has been appointed chief accountant of the Rock Island (Ill.) Southern Railway to succeed George Homrig.

A. C. Colby has been appointed master mechanic of the Connecticut Company at Bridgeport and Norwalk, to succeed William F. McCoy.

L. F. Eberbach has been appointed secretary of the Fort Wayne & Decatur Traction Company, Decatur, Ind., to succeed Dick M. Vesey.

William Plaag has been appointed master mechanic of the Peoria Railway & Terminal Company, Peoria, Ill., to succeed William Hassman.

George F. Fisher has been appointed superintendent of the light and power department of the Cumberland County Power & Light Company, Portland, Maine, to succeed W. C. Billings.

V. H. Cos has been appointed chief engineer of power station of the Fort Wayne & Northern Indiana Traction Company with headquarters at La Fayette, Ind., to succeed J. Ross Sharp.

William L. Weldin has been appointed safety inspector and chief of guards for both the railway and lighting departments of the Wilmington & Philadelphia Traction Company, Wilmington, Del.

George Sprague, Jr., has been appointed assistant secretary and assistant treasurer of the Commonwealth Power, Railway & Light Company, with headquarters in New York, to succeed G. H. Bourne.

Fred H. Libby, superintendent of the commercial department of the Bangor Railway & Electric Company, Bangor, Maine, has also been appointed purchasing agent of the company to succeed Preston Mann.

L. E. Holderman has been appointed engineer of maintenance of way of the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, South Bend, Ind., to succeed W. F. Carr.

William Bellmar has been appointed western division superintendent of the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, with headquarters at Michigan City, Ind., to succeed W. C. Kambs.

I. L. Oppenheimer has retired from the presidency and active management of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio, but will retain his financial interest in the company and will likely remain a member of the board of directors. In 1899 Mr. Oppenheimer, together with the late U. S. Grant, both then of Pomeroy, conceived the idea of building an electric railway to connect the towns of Middleport, Pomeroy, Minersville, Syracuse and Racine. Actual work on construction of the road was started in May, 1900, and on Nov. 15 of the same year the first car was operated from Middleport to Racine. Later the road was extended from Middleport to Hobson Station on the Kanawha & Michigan Railway which gives the road its present 12.07 miles of track, independent of switches. Mr. Oppenheimer has been a director and officer of the company since its organization, and in 1902 took over the active control of the road and retained the position up to the present time. In 1912 he was elected president of both the railway company and the Pomeroy & Middleport Electric Company, a subsidiary of the railroad furnishing current for lighting and power purposes. From 1908 to 1912 he was located in Lexington, Ky., with the railway and lighting properties, but at the same time continued the management of both Pomeroy companies. He was also for a short time connected with the Norfolk & Portsmouth Traction Company, the Fort Wayne & Wabash Valley Traction Company and the Newport News & Old Point Railway & Electric Company. Ever since he became interested in the Pomeroy corporation, Mr. Oppenheimer has been active in the work of the Ohio Electric Light Association and was this year elected president of the association. He has made no definite plans for the future other than to take an extended rest and vacation.

I. L. OPPENHEIMER

Otto Gottschalk, who formerly was assistant superintendent of electrical equipment with the Interborough Rapid Transit Company, New York, N. Y., has been made master mechanic of the Richmond Light & Railroad Company, Staten Island, N. Y.

Oliver D. Davis, chief clerk of the freight department of the Detroit (Mich.) United Railway, has resigned to join the sales force of the Ohio Rubber Company's Detroit office. For fourteen years Mr. Davis has been connected with the freight department of the Detroit United Railway.

J. D. Dugan has been appointed superintendent of railway of the Vicksburg Light & Traction Company, Vicksburg, Miss., to succeed C. E. Warwick, who, as recently noted in the ELECTRIC RAILWAY JOURNAL, has become connected with the Eastern Wisconsin Electric Company at Sheboygan as railway superintendent.

Earl Lones, formerly general shop foreman People's Railway, Dayton, Ohio, has been appointed acting master mechanic to succeed Joseph H. Towle, who, as announced in the Sept. 21 issue of this paper, resigned to accept a position of assistant electrical engineer with the Railway Improvement Company, New York.

Harry Hartwell, formerly of the Pearson Corporation, but now connected with Chandler & Company, New York and Philadelphia, bankers, is in temporary charge of the property of the Ohio River Electric Railway & Power Company, Pomeroy, Ohio, succeeding I. L. Oppenheimer, who has retired as president and manger of the company, as noted elsewhere in this department.

C. Nesbitt Duffy, vice-president of the Manila Electric Railroad & Light Company, Manila, P. I., is chairman of the Liberty Loan campaign committee in Manila. The *Cable News American*, in commenting on this appointment, says, "Mr. Duffy is considered to be the best choice that could have been made for this place. His ability as an organizer and his energy and enthusiasm are without limit."

George S. McClure, assistant engineer of the engineering department of the Pacific Electric Railway, Los Angeles, Cal., has received a commission as first lieutenant, Seventieth Engineers, and is at Camp Humphries, Accotink, Va. Mr. McClure entered the employ of the Pacific Electric Railway on July 1, 1903, as chainman and was promoted to levelman two years later. In 1912 he became assistant engineer, which position he occupied until he entered the service of the nation.

Theodore P. Shonts, president of the Interborough Rapid Transit Company and the New York (N. Y.) Railways, at the invitation of the New York *Evening Post*, told in the magazine supplement of that paper for Sept. 21 about the effort being made by his companies to provide something like adequate service in these trying times. He emphasized the point that from a purely selfish outlook it was to the advantage of the railways to supply the riding public with adequate service at all times.

H. A. Crane, treasurer of the Northern Massachusetts Street Railway, the Connecticut Valley Street Railway and the Concord, Maynard & Hudson Street Railway, has also been appointed secretary of the various companies, with headquarters at Greenfield, Mass., to succeed R. M. Stoughton. Mr. Crane has been treasurer of the companies since the beginning of 1916, previous to which time he was connected with the banking firm of Bodell & Company, Springfield, Mass., and Providence, R. I. He was at one time assistant treasurer of the Massachusetts Agricultural College.

A. L. Linn, treasurer of the United Gas & Electric Corporation and the United Gas & Electric Engineering Corporation, New York, N. Y., has also been appointed assistant secretary of the latter company to succeed J. F. Muller, Jr., and secretary and treasurer of the American Cities Company and assistant treasurer of the Elmira Water, Light & Railroad Company, to succeed H. J. Pritchard. Before his connection with the United Gas & Electric Corporation and the United Gas & Electric Engineering Corporation, Mr. Linn was assistant to Horace E. Andrews, president of the New York State Railways and the Mohawk Valley Company, controlling the electric railways and the electric lighting and gas companies in Rochester, Syracuse and other cities in the central part of New York State.

John E. Cullen has been appointed an additional assistant to the president of the United Railways & Electric Company, Baltimore, Md. This appointment is in line with the policy of the company to enlarge its staff so as to hasten the solution of the many problems which have been created by the war. Mr. Cullen, who assumed his duties on Oct. 1, will pay particular attention to the question of public regulations and publicity. He is a Baltimorean, well known as a special writer and former city editor of the *Evening Sun*. He is a student of municipal problems, including transportation, and has an intimate knowledge of Baltimore. He has been engaged in newspaper work in New York City for the last three years, returning to Baltimore to accept this new work.

George Theis, Jr., president of the Arkansas Valley Interurban Railway, Wichita, Kan., and during the past seven months in active control of the properties of that company, has retired from active management in favor of Charles H. Smyth, general manager, who recently returned from the service of the American Red Cross Society in France. Mr. Theis has found it necessary to give up active management because of attention claimed by the many other affairs in which he is interested. In addition to being president of the Arkansas Valley Interurban Railway, he is president of the Midland Light & Ice Company, Dodge City, Kan., of the Southwest Cracker Company, Wichita, Kan., and of the Theis Ranch Company, Englewood, Kan., and also a director in several banks. Besides all this he holds extensive interests in other commercial enterprises and railroads. He will continue with the Arkansas Valley Interurban Railway as president in an advisory capacity, with headquarters in the city of Wichita.

Obituary

Major Evans Dead

There are but few men in the electric railway field whose death will be felt as much as that of Major Evans, who passed away at his home, 50 Montgomery Place, Brooklyn, on Sept. 8, following an attack of pneumonia. Major Evans had been associated with the Lorain Steel Company for thirty-four years and during that time had taken an active part in electric railway matters where his sound common sense and geniality made themselves felt for the good of the cause. No man had more friends than Major Evans and his death will be sincerely mourned.

HENRY CLAY EVANS

Henry Clay Evans was born in Pittsburgh, Pa., on May 4, 1850. He was for many years connected with the Pennsylvania State Militia as a member of the Duquesne Grays and served on the staff of Maj. Gen. A. L. Pearson, with the rank of major. He took an active part in the organization of the American Electric Railway Manufacturers' Association and has been a member of its executive committee since 1906, having been re-elected in 1909, 1912 and 1915. He served as vice-president of entertainment during the year 1913. Major Evans was also a member of the Engineers Club of Boston, the Railroad Club of New York, the Crescent Athletic Club and the Lyres Club. He leaves a widow; a daughter, Mrs. Amidee T. Haviland, and two sons, Clay, an ensign in the United States Navy, and Whiting.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Buying Rails Under War Conditions

Purchasing Agent Must Recognize War Demands and Find Out Just What Material Can Be Utilized

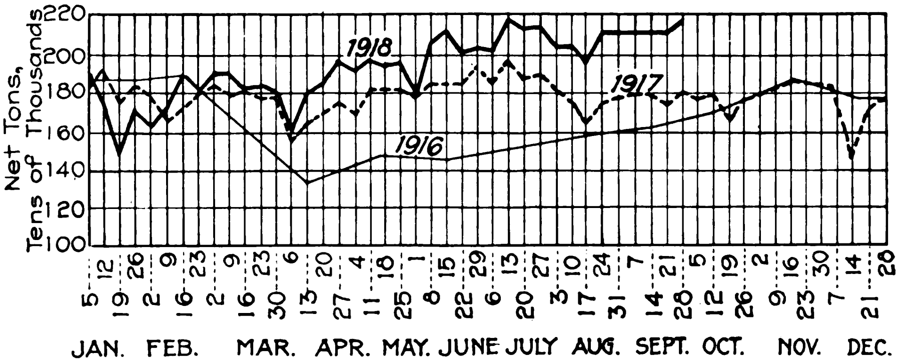
From the observations of an experienced maintenance of way engineer the following side lights upon the purchase of rails for an electric railway serving an Eastern city and its suburbs appear of interest. In times past the company specified with no lack of bidders, the kind of rails it desired, the various deliveries promised were compared, prices noted, and the award made with the full expectation that the necessary rails would arrive not far from the expected date. Now the problem is to get any rails whatever and having gotten them, to lay them perhaps not by directly employed company labor but by contractors' forces. Sometimes even this installation can only be accomplished after the real or fancied objections of local municipal authorities to the type of construction forced by the war are overcome.

RAILWAYS MUST EXPLAIN NEEDS

The demand of our overseas forces for rails must first be met, and the railway purchasing agent who overlooks this patriotic necessity and goes to Washington with an appeal in his bag and a chip on his shoulder because the steel companies decline to accept his order as desired for fulfillment in specific detail is certain to experience an awakening. The question now is, can a particular company be supplied with rails of any section whatever capable of carrying its traffic? It is necessary for the company in every case to lay its cards face upward on the table and explain its exact needs to the manufacturers and to the government authorities controlling the production and shipment of rails.

If the desired cross-section and quantity cannot be obtained, and the chances are that this will be the case generally except on the basis of exceedingly long deliveries, it will do no good to pound the table in a red-faced fashion and demand the material, even on the strength of being a buyer for an essential industry. The purchasing agent and his engineering colleague having charge of the road and maintenance conditions must take what they can get and be duly appreciative, and it is only a waste of energy and time to inveigh against the manufacturers and the government authorities for their inability to meet conditions beyond their control.

The wise purchaser of rails finds out what substitute sections and weights are possible on his system at the points where the proposed construction or repair work is to be done. He keeps track of the second-hand market (sometimes an operating company succeeds in picking up a real bargain in rails in this way), and when he sits down with the manufacturers and the government representatives he is ready to put the case before them in the clearest possible way; to show the necessity of the purchase in relation to the carrying forward of the war, and to decide promptly whether or not any "tag ends" of orders can be utilized, or whether by a change in specifications the situation can at least be temporarily met. If the need of ship plates exceeds the demand for rails, the fact must be accepted with the best possible grace. It has been found that by being perfectly frank most will be gained, and the railway buyer can be assured from the experience gotten that everything that can be done to meet genuine maintenance needs on essential lines will be done.



ESTIMATED AVERAGE TOTAL PRODUCTION PER WORKING DAY OF BITUMINOUS COAL, INCLUDING COAL COKE

Supply of Sweeper Rattan Short

The market of sweeper rattan is still in a most unsettled condition, with wide price fluctuations. Owing to the ruling of the War Trade Board reported in the Aug. 3 issue of the ELECTRIC RAILWAY JOURNAL and which is still in effect, no imports can be had and there is a great shortage of this material in the market. Prices are ranging from 38 cents a pound to 40 cents a pound with an extreme high of 55 cents reported by one dealer.

Demand at the present moment is not great but with next month the demand for supplies for winter operation is expected to begin in volume, naturally resulting in greatly diminished stocks.

Coal Production Again Increasing

Bituminous Output 2.5 Per Cent and Anthracite 12.1 Per Cent Greater Than Previous Week.

Bituminous coal production during the week ended Sept. 28 not only exceeded 13,000,000 net tons but also records the third successive week of increased production, according to the weekly report of the Geological Survey. The output during the current week (including lignite, and coal made into coke) is estimated at 13,043,000 net tons, an increase over the week preceding of 325,000 net tons or 2.5 per cent, and over the corresponding period of 1917 of 1,863,000 net tons or 16.7 per cent. The average production per working day, during the week of Sept. 28, is estimated at 2,174,000 net tons, 9 per cent in excess of the average daily production for the coal year to date and 6.7 per cent in excess of the average daily requirements during the balance of the coal year to make up the deficit.

During the past six summer months, or the first half of the coal year, production of bituminous coal is estimated at 311,216,000 net tons. This output, which is 33,418,000 net tons or 12 per cent in excess of the production during the same period of 1917, but falls short of requirements during the current year to date by 10,897,000 net tons or 3.4 per cent, the increase in requirements this period over the output for the same period last year amounting to 44,315,000 net tons or approximately 16 per cent.

The production of anthracite in the United States during the week ended Sept. 28 is estimated at 2,071,000 net tons, an increase over the week preceding of 224,000 net tons or 12.1 per cent, and over the corresponding week of last year of 65,000 net tons or 3.2 per cent. The average daily production during the current week is estimated at 345,000 net tons as against 338,000 net tons during the coal year to date and as compared with 330,000 net tons during the same period of 1917. Total production from April 1 to Sept. 28 is estimated at 51,651,000 net tons, an increase over 1917 of 1,072,000 net tons or 2.1 per cent.

Slack Adjusters in Considerable Demand

Carloads Lots Shipped—Activity Due to Shortage of Labor and Conservation Measures

Considerable interest is being reported in automatic brake slack adjusters, according to the manufacturers, due primarily it is believed, to labor shortage in electric railway shops. From all parts of the United States and Canada calls are reported to have come for information regarding the cost and requests for trial sets, as well as orders.

In some instances, railways which have installed adjusters have made an extended study of the savings effected, and it is reported that the Philadelphia Rapid Transit Company has even considered a reduction in air compressor service, due to the elimination of slackness in the brake rigging, and consequent saving in piston travel and compressor operation. In a number of other instances the reduction in brake shoe consumption has led to the purchase of adjusters, but the leading factor seems to be labor shortage.

GOVERNMENT PRIORITIES STILL CONTROL

There is some difficulty at the present time in securing materials, but it is said that practically all orders so far have been covered by government priorities, which has enabled the manufacturers to make up adjusters in quantities. One manufacturer even states that adjusters are being shipped in carload lots. In fact, installations have generally been made in considerable quantities, one railway company being reported to have purchased 5250 adjusters.

One uncommon phase of this market is the interest being shown by the electric railway transportation and claim departments. It is rather unusual for manufacturers to correspond with these departments on the subject of their equipment, but in this case one manufacturer reports considerable correspondence with claim departments on the subject of reduction in accidents caused by slack or bad-order brakes, and with transportation departments in reference to the point that the installation of the apparatus makes all cars handle alike in braking.

Prices remain about the same but are subject to change due to the variation in prices of steel shafting and malleable castings. Deliveries can be made in from two weeks to two months, depending upon whether standard types of adjusters are ordered and provided priority orders are received.

Kansas City One-Man Cars

The Kansas City Railways, as reported in our issue of Aug. 31, has purchased fifteen closed one-man safety passenger cars. The specifications follow:

Number of cars ordered	15
Name of road	The Kansas City Railways.
Date order was placed	July 17, 1918.
Builder of car body	American Car Company
Type of car	Closed one-man Safety Passenger
Seating capacity	30
Length over all	27 ft. 9½ in.
Truck wheelbase	Width over all, 8 ft.
Roof	Arch
Air brakes	Westinghouse and Safety Equipment
Axles	Hammered steel—cold rolled if available
Car signal system	Faraday
Control	K-10 double end
Couplers	Standard
Curtain fixtures	Curtain Supply Company, Rexall metal rollers
Curtain material	Pantasote-pattern K-2, Col. 86
Designation signs	1—Hunter Illuminated, latest type
Door operating mechanism	Air and hand
Fare boxes	International, C-17
Fenders or wheelguards	American Car Company standard
Hand brakes	Brake staff steel with necessary ratchet wheel, dog and floor plate at bottom, 112 inch standard drop handle.
Heater equipment	Eight Peter Smith truss plank
Headlights	Golden Glow SM-95
Motors, type and number	Six cars, 506 A. M. 2; seven cars, G. E.-258 two-motor equipment with K-10 double-end control.
Sanders	Two sand boxes under seats each end of car
Sash fixtures	Single sash, drop in pockets
Seats	Seven American Car Company reversible cross seats, hinged
Seating material	Steel, cherry wood and rattan
Step treads	Feralun safety treads, 3 in. wide
Trolley catchers or retrievers	Keystone
Trolley base	U-S-15-B
Trucks	Brill Spec. 78-M-1, Brill friction bearings
Ventilators	Eight small size, Utility Ventilating Company ventilators in roof
Wheels	Cast chilled charcoal iron, 24 in. diam. 2½ in. wide, flange ⅝ in. deep. 1 in. thick

Winnipeg Car Specifications

Specifications on the ten new motor cars recently ordered by the Winnipeg (Canada) Electric Railway, as reported in the ELECTRIC RAILWAY JOURNAL on July 13, are furnished by the builders, the Ottawa Car Manufacturing Company:

Name of road	Winnipeg Electric Railway
Number of cars ordered	10
Seating Capacity	46
Type of car	Double-truck, single-end, semi-steel motor cars
Roof	Arch
Weight of car body	1900 lb.
Length of car body	33 ft. 3 in.
Length of front vestibule	5 ft.
Length of rear vestibule	7ft. 6 in.
Length over bumpers	45 ft. 8 in.
Width over all	8 ft. 6 in.
Distance between bolsters	21 ft. 6 in.

Keystone illuminated side window signs are being installed on each rear window and front vestibule side window. The interior lighting arrangements include five shaded lights in the center of the arch roof, through a selection switch on the rear platform over the conductor's position. The cars have two-leaf vestibule doors, folding out and back, controlled by the motorman and the conductor. Folding steps are operated in conjunction with the folding doors. Hale & Kilburn lightweight seats are used, and the heating arrangements provide for Peter Smith No. 2-P-O hot-air heaters. Trucks, air brakes and motor equipment are supplied and installed by the railway company.

Raw Materials Control Production

War Requirements Are Now Sufficient to Almost Absorb All Steel and Copper Output

Raw materials for some time have been the governing factor in the production of electrical goods and railway material. To-day this condition exists in a still more aggravated form and is daily becoming worse. Production, great as it is, is limited and by no means large enough to supply fully all of the demand being made upon it at the present time.

It is daily becoming more evident that everything not absolutely essential to the winning of the war must be greatly curtailed in production. In fact, it would not be surprising if industries that have received priority classification of B or lower obtained only just as much steel, copper, brass or lead as is necessary to take care of actual war orders. That an industry receives a classification in the preference list by no means insures that industry that it will obtain the raw materials required.

The war requirements for steel, it is well known, are greater than the mills can supply. The same is true of copper. Production of copper has suffered considerably of late, largely through labor trouble. Lead supply also is low.

Consumers of copper must have permits the same as for iron and steel. Only this week the War Industries Board put the brass industry under control with respect to distribution of raw material.

Lumber Market Conditions to Be Studied

Every phase of the lumber industry relating to production costs, market and price conditions, is to be made familiar to lumbermen throughout the country by the National Lumber Manufacturers' Association. R. B. Goodman, acting president of the association in 1917, is chairman of the Bureau of Lumber Economics which has been organized. This bureau proposes to find out, among other things, the amount invested in the industry, how much timber there is in the country, and the amount owned and controlled by the industry, the value of the country's timber, and of timber controlled by the industry, cost of production, available supply of lumber as represented by stocks and production, and the supply collectively, the source, kind and volume of demand, and the price being obtained individually as well as by the industry as a whole.

Recent Incorporations

Anniston & Camp McClellan Transportation Company, Anniston, Ala.—Incorporated to construct a line from Anniston to Camp McClellan. Capital stock, $160,000. L. L. Crump, Anniston, secretary. [July 27, '18.]

Franchises

Gloucester City, N. J.—The Emergency Fleet Corporation has received a franchise from the Common Council for the construction, operation and maintenance of a double-track electric line throughout various portions of the city, to provide additional transportation facilities for workers engaged in the various shipbuilding and other war plants in this section.

Mansfield, Ohio—The Richland Public Service Company has received a twenty-five year franchise from the City Council of Mansfield. The franchise provides for a straight 5-cent fare until Jan. 1, 1920, when, if fare regulation be deemed necessary, such action can be taken by mutual agreement or arbitration.

Waco, Tex.—The Texas Electric Railway has received permission from the City Council of Waco to remove its tracks on Speight Street from Fifth to Eighth Streets and to place the line formerly on South Fourth Street from Speight to Oakwood Cemtery on South Fifth Street.

Salt Lake City, Utah.—The Bamberger Electric Railway has received permission from the Public Utilities Commission of Utah to construct an extension to connect its main line with the spur track of the Oregon Short Line in North Salt Lake.

Track and Roadway

Augusta-Aiken Railway & Electric Corporation, Augusta, Ga.—A new double-track street railway, 3 miles long, will be built by the War Department through Camp Hancock. The Augusta-Aiken Railway & Electric Corporation will furnish the rolling stock and power and will operate the line.

Columbus (Ga.) Railroad.—Plans are being contemplated by the Columbus Railroad for the construction of an extension into the military camp near Columbus.

Lincoln (Ill.) Municipal Street Railway.—Work will soon be begun on the reconstruction of the tracks of the Lincoln Municipal Street Railway on Eighth and Union Streets. The old rails on the loop formerly connecting the Illinois Central station line with the Woodlawn line are being removed and will be used to build an extension to the Latham Mining Company to accommodate the miners.

Paducah Traction & Light Company, Paducah, Ky.—Improvements are being contemplated by the Paducah Traction & Light Company to its track amounting to about $25,000.

Bangor Railway & Electric Company, Bangor, Maine.—A 113-ft. steel bridge will be built by the Bangor Railway & Electric Company at Six Mile Falls, at a cost of about $12,000.

Kansas City (Mo.) Railways.—Contracts have been awarded by the Kansas City Railways for the extension of the second track on the Country Club line from Sixty-first Street Terrace to the south side of Sixty-third Street. Work has also been begun on the reconstruction of the Prospect Avenue line from Thirty-ninth Street to Swope Parkway. It is the intention of the company to construct a loop at that point. Plans of the company include the construction of loops at other terminal points as soon as possible.

Springfield (Mo.) Traction Company.—This company reports that it has just completed the reconstruction of its track on Nichols Street.

Cooke County Transit Company, Lewiston, Mont.—It is reported that plans are being made by the Cooke County Transit Company for the construction of its proposed line from a point near Gardiner along the Yellowstone River to the Lamar River to Soda Butte Creek. Richard Zahniser, Livingston, secretary. [May 11, '18.]

Missoula (Mont.) Street Railway.—A new steel and concrete bridge will be built at once by the Missoula Street Railway over Rattlesnake Creek on East Pine Street. The contract for concrete work has been awarded to the Forseen & Settergreen Company, Missoula. Owing to the shortage of steel, the trestle work will be temporarily of wood.

Norfolk, Va.—The government has authorized the construction of a concrete viaduct over the trolley tracks across Maryland Avenue at the army base. The viaduct will be 1700 ft. long and 17 ft. high, and will include space for double street car tracks, two 8-ft. sidewalks and a 32-ft. roadway. The cost will be about $300,000. A. O. Leach, supervising engineer of construction at army supply base.

Virginia Railway & Power Company, Norfolk, Va.—A concrete and steel drawbridge will be erected by the Virginia Railway & Power Company across Tanner's Creek.

Power Houses, Shops and Buildings

United Railways & Electric Company, Baltimore, Md.—A contract has been awarded by the United Railways & Electric Company to Singer-Pentz Company, Baltimore, for the construction of a service station at Columbia Avenue and the Baltimore & Ohio Railroad tracks.

Menominee & Marinette Light & Traction Company, Menominee, Mich.—A report from the Menominee & Marinette Light & Traction Company states that it is completing the installation of a 1650-kw. hydro-electric unit at its Rapids power plant.

Great Falls (Mont.) Street Railway.—The Montana Power Company, which operates the Great Falls Street Railway, has awarded a contract to Fitzgerald & Staunton, for construction of an extension to the new wire mill of the B. & M. Smelter, and it is expected this line will be in operation by Nov. 1. All the wire for the overhead work, as well as the ground wires, will be made in the new wire mill to which the extension will be built.

Public Service Railway, Newark, N. J.—Plans have been prepared by the Public Service Railway for the construction of a new administration building to be located at its terminal at Broadway and Morgan Street, Camden, near the plant of the New York Shipbuilding Corporation.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Plans have been prepared by the Trenton & Mercer County Traction Corporation for the installation of a quantity of new generating equipment in its power plant to provide for increased operations. The company was recently ordered by the Board of Public Utility Commissioners of New Jersey to improve its service, and new rolling stock has been ordered and other improvements will be made in compliance with the ruling of the board.

Richmond Light & Railroad Company, New York, N. Y.—Arrangements, it is reported, have been completed by the Richmond Light & Railroad Company for extensive improvements and extensions to its plant and system. The United States government, it is understood, will finance a loan to the company of about $600,000, to provide funds for the work.

Northern Ohio Traction & Light Company, Akron, Ohio.—The Canton Sheet Steel Company has promised a loan of $45,000 to the Northern Ohio Traction & Light Company to finance the construction of an extension to its factory.

Webster, Monessen, Belle Vernon & Fayette City Street Railway, Charleroi, Pa.—A report from this company states that it will construct a small carhouse for the storage of an electric locomotive, to cost about $3,000.

Nashville Railway & Light Company, Nashville, Tenn.—The City Commission of Nashville has entered into a contract with the Nashville Railway & Light Company for electricity to operate the municipal electric light and power system during the period of the war. The city has closed down its electric generating plant at the request of the United States government.

Texas Electric Railway, Dallas, Tex.—The Texas Electric Railway has purchased a site between Kentucky and Tennessee Streets, McKinney, and will soon erect an express terminal and build extensive trackage to care for its growing express and freight business. The improvements contemplated will cost about $25,000.

Rolling Stock

Madison (Wis.) Railways has purchased five one-man cars from the American Car & Foundry Company.

Union Traction Company, Nashville, Tenn., is in the market for one double-end control 1200-volt motor car.

Springfield (Mo.) Traction Company, as noted in the ELECTRIC RAILWAY JOURNAL of Sept. 14, expects the arrival of twelve pay-as-you-enter, one-man cars about Oct 10.

Webster, Monessen, Belle Vernon & Fayette City Street Railway, Charleroi, Pa., has purchased from the Cincinnati Car Company three semi-convertible single-truck cars.

Trenton & Mercer County Traction Corporation, Trenton, N. J., is calling for quotations on fifteen cars with specifications approximately as follows: Length over all, 45 ft.; length over body, 32 ft.; width over all, 8 ft.; seating capacity, 48; semi-steel; double truck; four 35-hp. motor equipment; 26-in. wheels; weight, about 35,000 lb.; air brake; non-registering fare boxes; wheel guards. It is hoped the contract will be closed at a very early date.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., expects delivery on Dec. 15 from the J. G. Brill Company, of an eight-wheel double-end Wasson nose-type, plow which can be equipped with M. C. B. couplers for locomotive work when the noses are dismounted. The purchase of this equipment is being financed by the United States Shipping Board, Emergency Fleet Corporation, in order to improve electric railway transportation facilities at the Bath, Me., shipyards.

Trade Notes

Shephard Electric Crane & Hoist Company, Montour Falls, N. Y., announces that it has appointed A. J. Barnes as export manager with headquarters at the main office. Mr. Barnes will also continue to be director of publicity.

Association of Chilled Car Wheel Manufacturers—The meeting of this association scheduled for Oct. 8 has been postponed until Oct. 15. The convention will be called at 10 a. m. in the State Apartment of the Waldorf Astoria, New York City. George A. Griffin is secretary.

B. H. Tripp, special representative of the Chicago Pneumatic Tool Company on the Pacific Coast, has succeeded M. W. Priseler as district manager of sales for the Pacific Coast territory. His headquarters are at 627 Howard Street, San Francisco. The Los Angeles branch of the company, at 521 Title Insurance Building, comes under Mr. Tripp's jurisdiction.

Railway Improvement Company, New York, N. Y., announces the acquisition of J. B. Miller to its engineering staff. For the present Mr. Miller will make his headquarters at Boston, Mass. To accept his new position Mr. Miller resigned from the General Electric Company, where he had been employed in both the railway supply and publication departments.

E. O. Shreve has been promoted from assistant manager to manager of the San Francisco office of the General Electric Company. Graduating from the Iowa State College and receiving his apprentice work at Schenectady Mr. Shreve went West in 1906. He passed successively through the stages of salesman at the San Francisco office, manager of the Reno (Nev.) office, turbine expert at San Francisco, manager of the supply department at San Francisco, and finally to his present post.

New Advertising Literature

Alliance Machine Company, Alliance, Ohio: Catalog describing in considerable detail electric cranes of many varieties for use particularly about steel mills and power plants.

Indianapolis Switch & Frog Company, Springfield, Ohio.: Treatise on electric welding for track and shop repairs and conservation of track and roadway for the prevention and cure of track disease. This bulletin discusses welding by electricity by three methods. Track joining and bonding is also discussed in this booklet, with directions on how to care for the welder. Instructions for applying welded joints and bonding plates are also given.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, October 19, 1918 Number 16

He Is from Missouri and Wants to Be Shown

THE favorite slogan of Missourians is supposed to be "Show me." There is a Kansas City in Missouri and another city of the same name across the Kaw River in Kansas. The Kansas City Railways Company operates street cars in both localities. On the Missouri side the company has been permitted to charge a 6-cent fare, but no such relief has been given on the other side of the river. As a result the employees in Missouri have been getting higher wages than their fellows on the Kansas lines. Recently the company undertook to suspend service on one of the Kansas lines in order to make up a deficit. The Kansas Public Utilities Commission promptly directed that the service be restored. President Kealy—as announced in the Oct. 5 issue of the ELECTRIC RAILWAY JOURNAL—has sent a letter to the Mayor of Kansas City, Kan., in which he offers to surrender to that city complete control of the local electric railway system in return for a guarantee of 6 per cent interest on the capital invested. He also agrees to help the city authorities remove any legal barrier which may be found to stand in the way of taking over the lines. Can the Kansas authorities ask for a more open-handed offer? What an opportunity is here offered to take over a going concern on a fair basis and furnish service at cost! Surely the rate of return mentioned by President Kealy is not excessive. The Kansas Mayor has a splendid chance to show what kind of service can be given for 5 cents. If his people are behind him they should grasp at this offer and undertake to prove that electric railway managers do not know what they are talking about. Perhaps they can retain enough surplus out of the nickel fare after paying all expenses to reduce the municipal debt. Truly this is too good an opportunity to be passed up.

Colonel Kealy standing on the Missouri side of the Kaw might well say "Show me." Crossing over the river he bids the people to "Let George do it."

AMERICAN ELECTRIC RAILWAY ASSOCIATION

N. Y. Conference Program

Meeting to be convened at
UNITED ENGINEERING SOCIETIES' BLDG.
29 West Thirty-ninth Street
at 9.30 a.m.

Friday, November 1

MORNING SESSION—

Address by President John J. Stanley

Report of Electric Railway War Board

Topical Discussion:

The Needs of the Interurban Electric Railway

AFTERNOON SESSION—

Topical Discussion:

As Follows: — Light - Weight Cars, Zone System, Higher Unit Fare, Public Subsidies, Public Ownership

The discussion on each topic will be introduced by the presentation of a ten-minute paper prepared by a man of wide reputation in the electric railway field.

Why Should Wages Be the Same Where Conditions Are Different?

PRESIDENT KEALY and his associates in the management of the Kansas City Railways Company are to be commended also for making a strong defense in their case before the National War Labor Board. Ever since the first batch of awards was made by this body fixing wage scales beyond the financial ability of many of the employing companies, there has been a general feeling of despair in the industry. This was aggravated when the higher authorities announced that nothing would be done by the federal government in the way of providing means to meet these new burdens of expense. Some relief has been given here and there by local authorities to take care of individual cases, but there are still numerous companies facing the conditions brought about by the Labor Board's decision which have not been given a helping hand. Far from despairing at the outcome of the first cases handled by this board, President Kealy has set about to prove that the practically uniform wage rate announced for other cities would not be fair in the Kansas City case. First, he went before the board with an agreement signed by the management and the organized employees providing that any advance in the wage rate should be limited by the financial ability of the company to pay. Evidence has been presented since that time to prove that the company would be in a distressing financial condition if any substantial wage increase were given to the employees.

It has been argued in the Kansas City case that general figures on increased cost of living do not show the facts as far as this situation is concerned. Careful studies were made as to costs of food, rentals, etc., in Kansas City. Accurate information was presented on actual living conditions among the employees. An interesting point brought to light is the fact that the average family of the company employee consists of 3.4 persons. Cost of living has usually been figured on the basis of five persons to a family. While this particular showing may have little weight with the Labor Board, it emphasizes the fact that generally accepted bases sometimes are unfair in specific cases.

Significant Program Will Confront New York Conference

THE conference of electric railway men which is to take the place of the annual convention of the American Electric Railway Association will find itself face to face with momentous problems—problems more momentous than have ever before been confronted in this industry. The meeting should bring together the best leadership in the electric railway field. The circumstances are such that very definite progress should result. The five topics listed for the afternoon session indicate the high spots in electric railway management at the moment. They range from physical equipment to broad economic principles. These topics have been carefully selected in the expectation that their discussion will lead to some formulation of the procedure which must be followed if electric railways are to survive and serve. The general public as well as the personnel of the industry will be vitally interested in the outcome of the conference.

Tuning Up the Snow-Fighting Equipment

AMATEUR weather prophets are predicting a mild winter, a condition which will be greatly appreciated by transportation and way departments if it materializes. Squirrels are said to be laying up a lighter supply of nuts than usual, and farmers are reported to have found the corn husks quite thin this fall. Reliable as these omens may be for the farmer, they cannot be depended upon for the electric railway operator; hence, the very considerable activity in getting snow-fighting paraphernalia into shape which is manifest in railway shops everywhere. In comments upon the subject of preparedness in this matter, in the issue of this paper for Aug. 31, four requisites of a successful snow-fighting campaign were listed; namely, equipment, organization, *esprit de corps* and alertness. Equipment is placed first because the best of organizations is badly handicapped unless the proper tools have been provided. The problem in preparing the equipment is to anticipate local conditions on the basis of past experience so that all reasonable demands can be met. In addition to the standard plows and sweepers, excellent progress has been made in some quarters in fitting up work cars and other cars with light plows and scrapers. A number of such have been described in recent issues of this paper.

From the master mechanic's standpoint the special demands in the way of emergency equipment afford the most interesting problems. An example is the ice-cutting device constructed from a plow and from sweeper fittings, made and used at Schenectady and described elsewhere in this issue. A still more simple but very effective ice cutter was rigged up overnight at Rochester last winter. It consists of a knife slightly longer than the track gage, mounted on a stout angle iron attached rigidly to the truck frame of a single-track car in such a position as to clear the rail tops by 2 in. or so. When this car is weighted down and is propelled, with the assistance of a four-motor car, over ice-clogged track, the ice is sheared off clearly and effectively. Undoubtedly many such plans have been tried out successfully. This paper will be pleased to print accounts of any practicable scheme, knowledge of which will contribute to snow-fighting preparedness.

The wisdom of investing a few thousands of dollars in providing and preparing equipment for snow fighting by way of insurance is obvious when one considers how unnecessarily expensive, in dollars and public irritation, may be a few hours of preventable tie-up. It ought to be easy to get the general manager's "O. K." on a requisition for this purpose by reminding him of what happened last winter.

The "Good" Is Often The Enemy of the "Best"

THERE is many a slip 'twixt cup and lip. When the Mayor of St. Louis last April signed the United Railways resettlement ordinance, which had been approved by the Municipal Assembly by a vote of twenty-eight to one, and when President McCulloch characterized the proposed ordinance as a not ideal but "fairly good solution of a difficult problem" and expressed the hope that it would be accepted as a compromise by both parties, the way for final adoption seemed clear. But now, as noted elsewhere this week, Mr. McCulloch, well within the year allowed for acceptance, has rejected the ordinance. Why? Conditions have changed materially in the last few months, and it is now evident that the company's financial structure cannot be permanently adjusted under the proposed plan. But other objections strike directly at some of its fundamental principles.

In the first place, Mr. McCulloch declares that the ordinance is defective in the light of present standards because it does not make it easy or convenient for the public to assume operation or ownership of the property. The plan was to give the city the right, after the expiration of ten years or any five-year period thereafter, to purchase the property. This is not an unheard of provision; wherein should it cause dissatisfaction? The answer is found in Mr. McCulloch's clearly expressed distrust of commission regulation as a successful means of assuring proper service to the public and a fair return to investors in a period of crisis. Regulation has failed, he seems to feel, and the city should not be estopped by a formal, widely spaced schedule from trying to secure relief in its own way if the public should happen so to desire.

But—and this is the second point—if the public wishes to have service-at-cost operation under private ownership, then the plan should provide for good service at a minimum cost. With regulation as a system under suspicion, however, no faith is maintained that such a result can be obtained with the proposed 5-cent fare, changeable if and when the local commission has jurisdiction. In Mr. McCulloch's opinion, it can be secured only through a public "guarantee" of operating expenses, taxes, provision for future replacements and a fair return. Does this refer to a legal guarantee that the community's taxing power will be exercised to make up deficits in annual net income, as in the case in Boston until the revenues have made up the deficiency, or does it refer simply to the practical guarantee afforded by a flexible fare capable of prompt and automatic adjustment? The latter appears to be the case, because of possible constitutional restrictions on the former and because, in speaking of the proposed ordinance when it was passed, Mr. McCulloch deprecated its lack of a leading feature of an "ideal" ordinance—"a flexible fare which may be adjusted automatically from time to time so as to guarantee always good service, fair wages and a sure return upon the investment."

In short, the St. Louis resettlement plan is deficient in the very fundamentals in which it should be the strongest; it lacks a maximum of flexibility to provide what the company needs in the way of revenue or what the public wills in the way of control. In rejecting the ordinance the company is not fighting against the city's interests; it is simply asking the city to give full expression to modern far-sighted principles in laying a basis for dealing with future citizens, car riders and investors. In view of the long franchise negotiations in St. Louis, a compromise measure may a few months ago have seemed wise, but the company is right in now declaring that the ends to be gained are worthy of further effort.

The Evolution of the Track Switch

AN AUTOMATIC track switch is one of the easiest things in the world to design on paper and one of the most difficult to bring to a commercially successful status. The urgent necessity for something of the sort, however, has furnished an active stimulus to inventor and manufacturer, so that now several good devices are available. The present and prospective labor shortage, together with the need for all practicable devices which will assist in increasing the schedule speed of cars makes the track switch particularly interesting at this time. For this reason we arranged with R. C. Cram, of the Brooklyn Rapid Transit Company, to make a comprehensive survey of the subject, and the results of his study are given in an article in the present issue. To provide space for this and on account of general space limitations the publication of the next articles in the series on power transmission and choice of car equipment respectively will be deferred until November.

To return to the problem of designing a track switch that will operate in a reliable manner let us first attempt to realize what the designer is up against. His chief enemy is the weather, which has the ability to impose mechanical and electrical obstacles in his way. Devices which would be entirely reliable on a car or in a substation cannot be depended upon out of doors. The electric solenoid and plunger or the electric motor can supply all of the mechanical force needed for pushing over a switch tongue provided that current supply is available and ample and that no serious obstructions interfere with the motion of the tongue. But there's the rub, how shall good electric circuit continuity combined with freedom of tongue movement be obtained? How the difficulties have been overcome and the modern track switch evolved is taken up in Mr. Cram's article.

Another feature of switch operation is, of course, that of positive locking. To obtain this is not difficult if the other requirements are met.

Are Unreasonably Low Fares Confiscatory?

ARE the federal courts destined to be the final resort for fare relief? A brief news item in our issue of Sept. 28 told of a decision of Judge English in the Federal Court granting a permanent injunction restraining the Illinois authorities from interfering with the Illinois Traction System in the proposed increased passenger rates above 2 cents a mile with 3 cents as the maximum that can be charged. On page 676 of the issue for last week it was announced that another federal judge has taken up the application of the Grand Rapids, Grand Haven & Muskegon Railway designed to prevent enforcement of the Michigan 2-cent fare law.

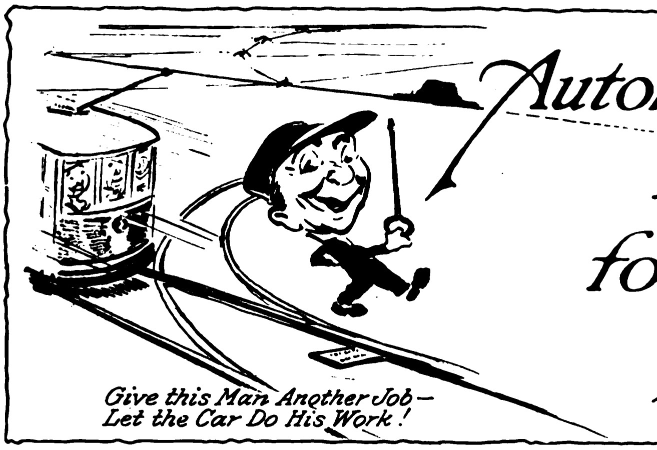
The Illinois situation is especially interesting because of the tangle in the rate situation brought about by the court's ruling. An Illinois statute has for several years fixed a limit of 2 cents per mile on passenger hauls. The Public Utilities Commission of the State has frequently held that it is powerless to allow charges above that maximum. Before the federal government took over the operation of steam roads the courts had also refused to grant a higher rate to such carriers in Illinois. With the inauguration of federal rule, the passenger rate for the steam roads was fixed at 3 cents per mile.

This, however, did not apply to electric lines within the State. The decision of Judge English apparently paves the way for other electric roads to secure a 3-cent rate within the State. However, in the case of the Illinois Traction System which operates across the river into Missouri the company encounters the ruling of the Interstate Commerce Commission that not more than 2½ cents per mile shall be charged. This tangle is further complicated in the case of the Alton, Granite & St. Louis Traction Company where the State limit of 2 cents per mile still applies and the I. C. C. maximum is met at the State line. This company has an appeal for a 3-cent rate pending in one of the State courts.

Here we find the Illinois Traction System with federal court authority to charge as high as 3 cents per mile within the State. To put that rate into effect in conjunction with the 2½-cent tariff for interstate hauls might be attacked as discriminatory. Apparently the only way in which full benefit can be had from Judge English's ruling is for the Interstate Commerce Commission to allow a similar rate for trips across the river into Missouri.

It is to be hoped that the Interstate Commerce Commission will have the broad vision of Judge English, who held that "complainants herein are subject to the same operating conditions and expenses as exist on steam lines of railroads now under federal control and that the service performed by the complainants compares favorably and is in competition with such railroads under federal control."

If State commissions or State courts are powerless or unwilling to untangle such situations as the above, we must look to the federal tribunals to clear up such palpable cases of confiscatory laws. Perhaps this latest form of remedy for inadequate rates is the solution for the troubles of the electric railways. Some drastic remedy seems necessary.



Give this Man Another Job—
Let the Car Do His Work!

Automatic Track Switches Release Men for Other Work

By
R. C. Cram
ASSISTANT ENGINEER, DEPARTMENT OF WAY AND STRUCTURE
BROOKLYN RAPID TRANSIT SYSTEM

A Study of the Development and Present Status of Automatic and Remote-Control Track Switches, with Consideration of the Factors Which Have Contributed to Their Evolution

THE traffic requirements of street railway car operation upon lines having very close headways necessitate the employment of some means for turning the switches in order to minimize delays at junction points. With car schedules under which the cars do not reach a closer spacing interval than three minutes it is possible for the motorman to turn the switch by hand with his switch iron, without causing undue delays to following cars, but where the interval is less than three minutes it becomes necessary to employ a switchman. But the cost for this amounts to $1,000 or more per year for each switch, and it was the desire to cut down this operating expense which led to the employment of mechanical and electrical devices as substitutes. The introduction of various forms of prepayment and center-entrance cars, which impose door-opening and closing duties upon the motorman and render his constant presence upon the car desirable, is another factor which in recent years has contributed to the quite general adoption of switching devices.

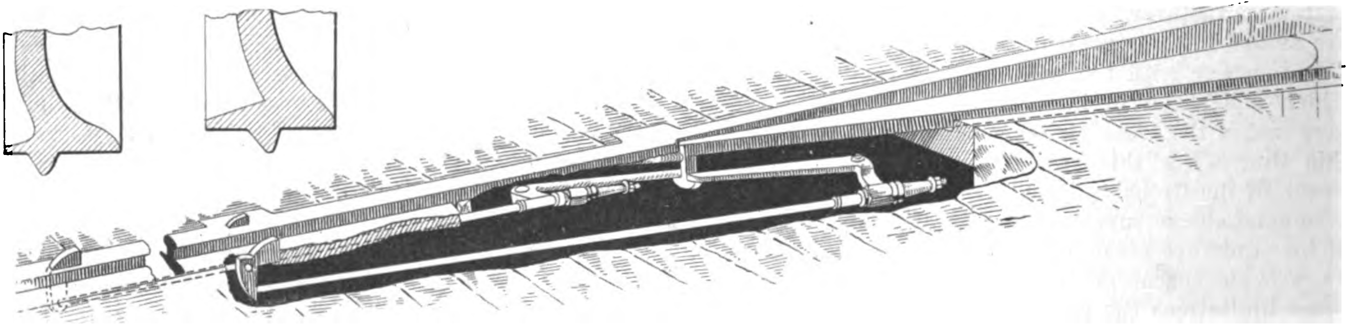


FIG. 1—EARLY MECHANICAL FORM OF TRACK SWITCH USED IN NEW YORK CITY

There is no question as to the fact that the installation of electric track switching mechanisms will result in an operating economy at any location where traffic conditions warrant the employment of a switchman only in the rush hours, say for a total period of six hours per day. This saving effected is indicated in the accompanying Table I.

The operating costs used in the table are believed to be very conservative. A recent questionnaire in *Aera* developed a range in maintenance costs for electric switching devices of from $35 to $100 per year, with an average of the four costs reported, of $65 per year per switch. It is believed that $100 will closely approximate the maintenance cost, exclusive of interest for these mechanisms on any road where there is a traffic which requires an average of not less than 500 movements per switch per day. It is to be noted that the electric apparatus is available for operation all of the time, while the use of switchmen is mainly confined to from six to eighteen hours per day.

The first attempts to produce such devices were solely along mechanical lines and the Patent Office undoubtedly has many recorded patents for mechanical devices in its files. Nevertheless a purely mechanical device has never met with favor nor has one ever been produced which has met with sufficient success to warrant its general adoption in electric railway service. According to information from Fred Bland of Sheffield, England, this statement covers the British situation also.

The first automatic track switches were used on horse car lines and consisted of two platforms resting on opposite ends of a pivot lever, somewhat like a see-saw. One platform was at the right hand side of the switch point while the other was at the left. If the switch was

TABLE I—COMPARISON OF COSTS FOR ELECTRICAL AND MANUAL OPERATION OF TRACK SWITCHES

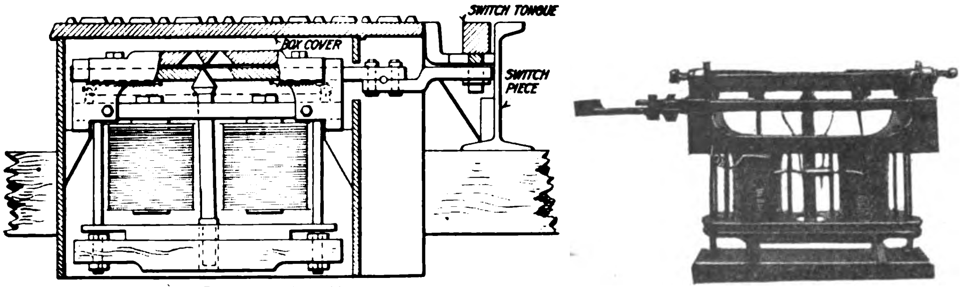
Type of Operation		Hourly Cost	Annual Cost	Annual Saving
Manual Operation, $3.50 per day of twenty hours	....	$0.160	$1,277.50	......
Electrical Operation:				
Device cost, installed	$285.00			
Interest at 5%	14.25			
Annual maintenance expense	100.00	.013	114.25	$1,163.25

to be thrown to the right the horses were pulled over so that they walked on the right hand platform which depressed under their weight, throwing the switch to the right. A heavy ball weight rolled over at the same time, holding the switch in place. If the movement was to be to the left, the horses were pulled onto the left hand platform with the similar results. The chief difficulty with this device was due to freezing and clogging with mud.

Another one of these early mechanical devices is shown in Fig. 1. It was produced in 1892 by C. E. Carey, then master mechanic of the Dry Dock, East Broadway & Battery Railroad Company, now a subsidiary of the Third Avenue Railway, New York City. As will be seen, it depends upon the use of a projecting lug which would be engaged by the wheels of certain cars only, the latter being equipped with wheels having a wider tread or special flanges.

With the advent of electric cars a mechanical device was designed to be put in the ground, using a cam shaped surface to be engaged by a pedal attached to the car platforms and depressed by the motormen. It was not successful because the mechanical part in the ground would freeze and get clogged, while the mechanism on the cars became broken by contact at too great speed with street obstructions. The requirement of parts to be attached to the car was also a disadvantage.

The early electrical devices attempted to follow steam road practice and the operating magnets were placed on the trolley pole at the curb, with connections by means of rods or wires to the switch point. Undoubtedly the placing of the magnets on the poles was for protection against moisture. One of the first electric mechanisms of this kind was the Porter device installed in Detroit, Mich., about 1895 or 1896. Another one of similar design was installed in Brooklyn about 1900 by Spangler. The chief trouble with these designs was due to the fact that the ordinary stuffing box did not keep the water out and the mechanical parts would freeze up.



Section A-B (*See Fig. 6*)

FIG. 3.—SECTION AND VIEW OF A PIONEER ELECTRIC TRACK SWITCH

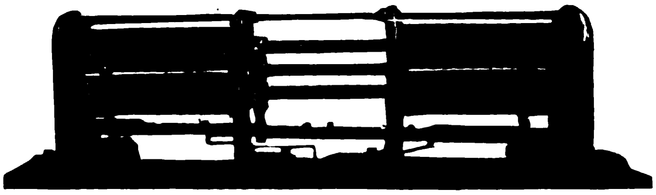


FIG. 4—EARLY DEVICE FOR USE IN CONDUIT TRACK OF METROPOLITAN STREET RAILWAY, NEW YORK

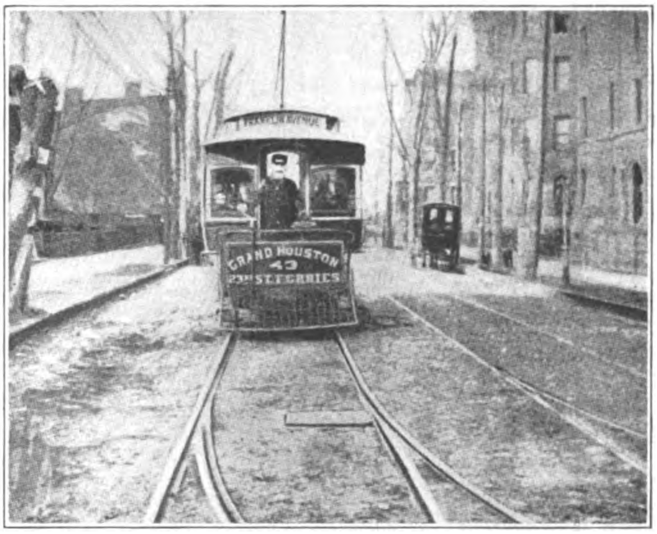


FIG. 2—STREET VIEW OF AN EARLY TYPE OF AUTOMATIC SWITCH

Meanwhile Squires, Cheatham and Baldwin were developing their devices. There is a record of two installations of the Baldwin switch in Brooklyn in March, 1897. They were put on the market by the New York Switch & Crossing Company. It is of interest to note that they were still in service until 1913 when they were removed for replacement with a more modern type. Some details of this device are shown in Figs. 2, 3 and 4 and a wiring diagram is shown in Fig. 6. Squires had his device in service in Springfield, Mass., and Cheatham installed his first device in operation in Louisville, Ky., about the year 1899.

These types placed the magnets in a mechanism box in the ground at the switch point, thus simplifying the device and the Baldwin type provided for drainage connection to the sewer, in order to protect the magnets. Cheatham's device placed a water-tight case around the magnets for protection and the Squires device was also designed to be water tight.

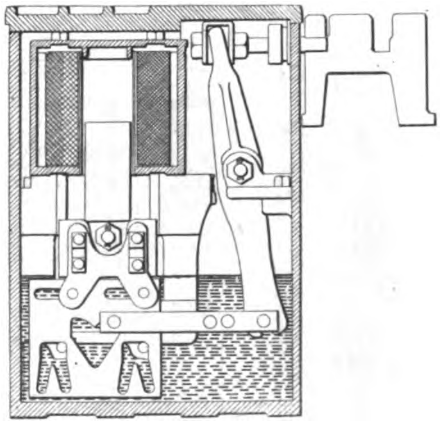


FIG. 5—SWITCH BOX WITH REVERSING CAM PLATE

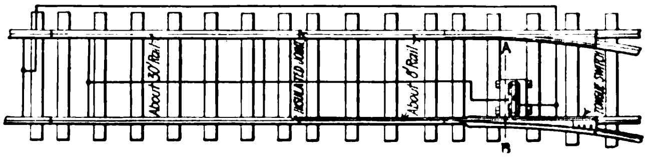


FIG. 6—WIRING DIAGRAM FOR AN EARLY TYPE OF ELECTRIC SWITCH

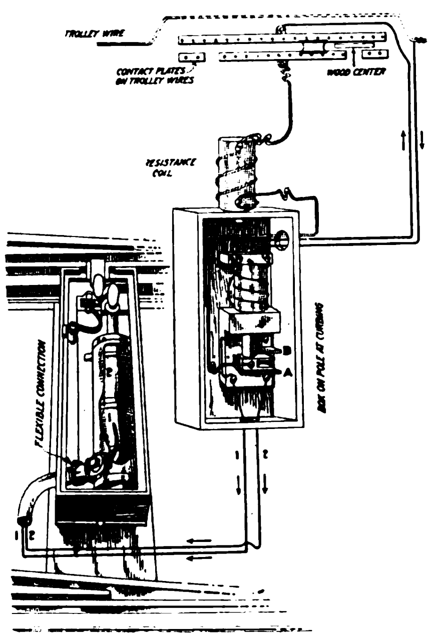
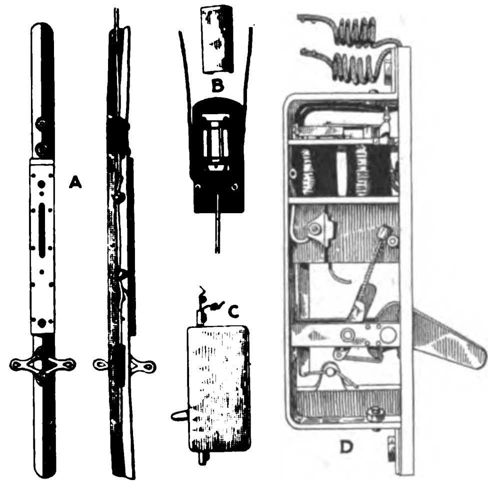


FIG. 7—WIRING DIAGRAM OF A COMPLETE MODERN ELECTRIC SWITCH INSTALLATION

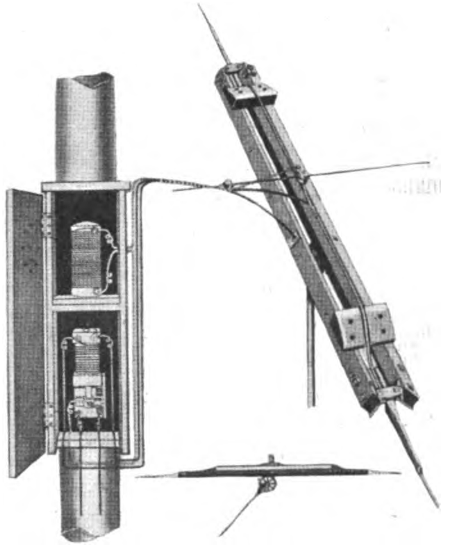
The early Baldwin device was operated by an insulated section of the track ahead of the switch, while the Cheatham and Squires mechanisms were operated by overhead contactors. The Baldwin later changed to the overhead contact also. There are three other devices which appeared between 1900 and 1903. These are the Kitt which is and has been used in Denver almost exclusively; the Wooley used in East St. Louis and elsewhere to some extent, and the Collins (American Automatic). The Kitt had two solenoids in the ground box and the circuits were controlled by an electro-mechanical current reversing device. The Wooley had two contactors on the trolley wire and was operated by current "on" or "off" under one contactor or the other as the direction required. The Collins had one solenoid in the ground box and the switch was thrown by a cam plate reversing device, also in the box. (See Fig. 5.) The first Collins devices were designed for underground conduit work in New York and were first used there in 1902. The first Collins devices for regular trolley work were installed in Brooklyn in 1903. The early type of this device was contained in a water-tight box, using an ordinary stuffing box. As this gave some trouble it was superseded by the mercury seal.

It will be seen from Fig. 6 that the modern devices have abandoned the insulated section of track as a factor in their operation and have returned to the overhead wire instead, using some form of contact-making device, operated by the passage of the trolley wheel as a means for setting up circuits which actuate the mechanism.

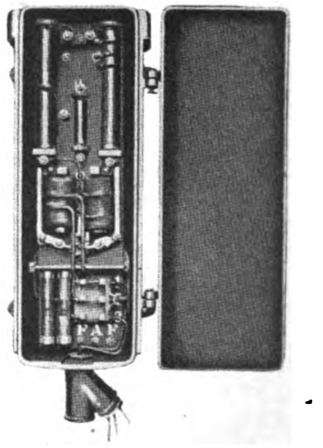
The development of curb and tower control began about 1904 when the use of automatic switching devices commenced to make headway. The first of these were installed in the Jersey City Terminal of the North Jersey Street Railway and at the Williamsburg Bridge Plaza in Brooklyn. The first complete electro mechanical interlocking for surface street railways was devised by Collins and installed in Washington in 1908.



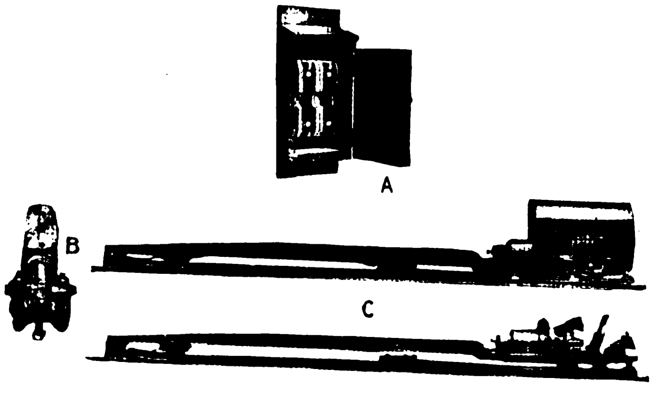
Type I



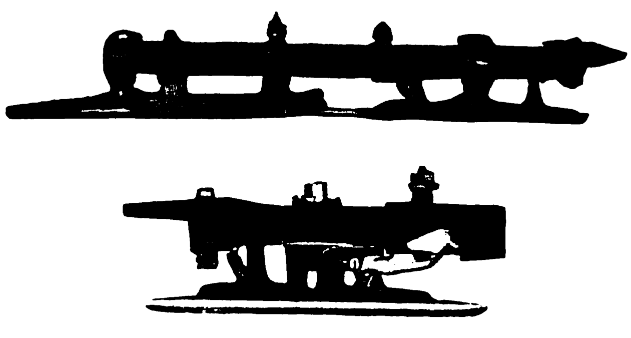
Type II



Type IV-A



TYPE III

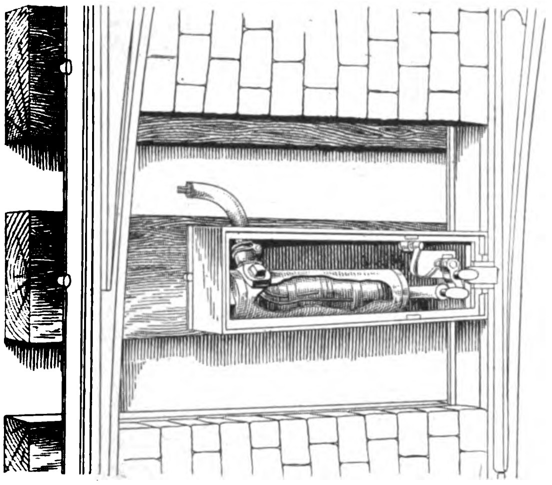


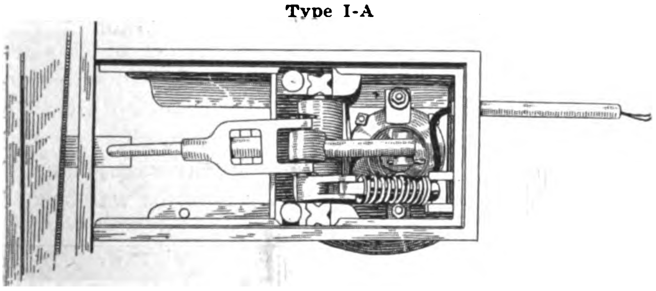
Type IV-B

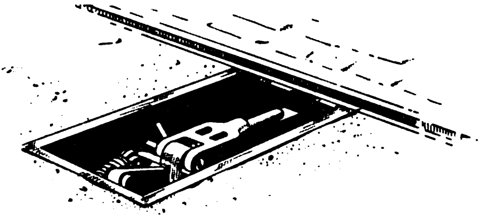
FIG. 8—MODERN TYPES OF CONTACTORS, FUSE BOXES AND CIRCUIT CHANGERS

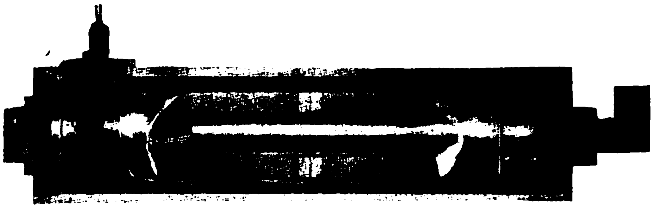
Type I.—*A*, trolley contact rail; *B*, fuse board and cover; *C*. circuit controller in cover; *D*, circuit controller on large scale with cover removed. Type II.—Circuit changer and overhead contactor. Type III.—*A*, fuse box; *B*, end view of contactor; *C*, side view of contactor with and without hood. Type IV.—*A*, relay box; *B*, starting and stopping contactors.

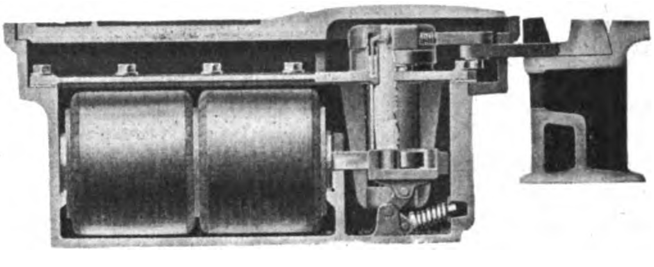
Perhaps the most radical change in electric switch design is the recent anti-splash type, operated by a small electric motor in the street box, as designed by Collins. This was introduced in 1916 and the first installation was made in Brooklyn in that year. Besides preventing splashing troubles, the device is designed for electric locking to prevent splitting and untimely operation by following cars. The same type of electric lock which is used with this device can be used with other Collins devices for locking switches against two-car train operation.


Type I-A




Type II


Type I-B


Type III

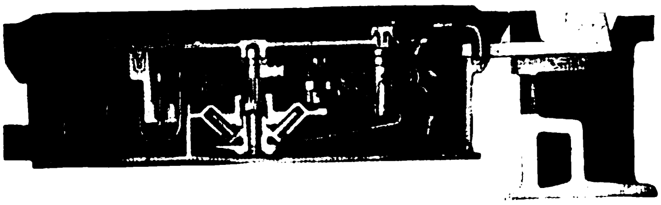

Type IV

FIG. 9—TYPES OF MODERN STREET BOX MECHANISMS FOR ELECTRIC SWITCHES

Type I.—*A*, mechanism connected to switch tongue; *B*, water-tight cylinder. Type II.—Switch and switching mechanism in relative positions.

Type III.—Cast-iron box containing switch-throwing mechanism. Type IV.—Street box, mercury seated, with motor and gears.

Present-day devices consist principally of four main parts, namely, the contactor, the circuit-changer, the fuse box and the main street box. Sometimes the contact device has the circuit-changing device attached thereto, and in some cases the circuit changer is mounted upon the trolley pole at the curb. Several types of contactors, fuse boxes and circuit changers are shown in Fig. 8, while a diagram of wiring of a complete installation is shown in Fig. 7. Views of several street-box mechanisms are shown in Fig. 9.

In general the operation of the switch tongue is accomplished by means of solenoids located in the street box, but a recently developed type does this by means of a small 110-volt motor and trains of gears also located in the street box. (See Fig. 9.) The several devices shown in the figures will be recognized by those who are familiar with such apparatus, but it is not the intention here to indicate either that these are all of the devices available or to express any preference whatever as to the types of apparatus shown.

It is of some interest to note in passing that at least one modern design of street box has the solenoids in a vertical position substantially as they were in the early type shown in Fig. 3, although the means for actuating the switch tongue are radically different.

Electric Switches in Underground Conduit Operation

The application of electric switching devices to underground conduit systems on surface lines presents some difficulties not found in ordinary surface operation, since it is necessary to operate the leaves of the conduit slot in conjunction with the switch tongue, thus requiring the movement of the additional weight of the leaves. In consequence a very powerful and rugged apparatus is needed. A drawing of the mechanical connections of the principal type of apparatus in general use on

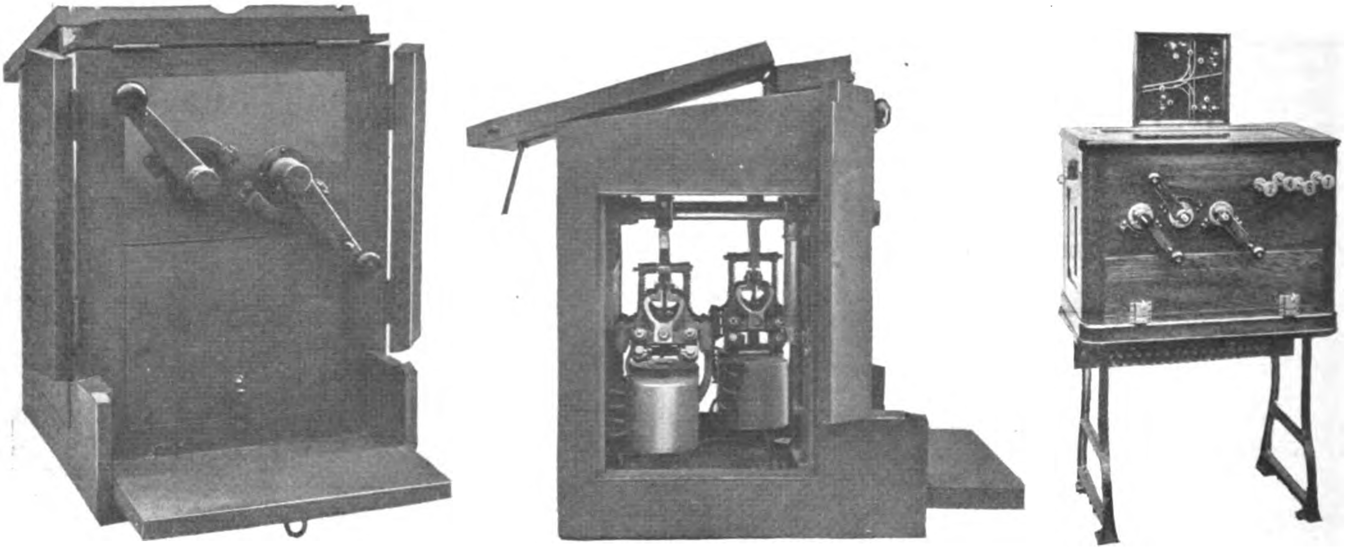


FIG. 10—TYPES OF TOWER AND CURB CONTROL FOR ELECTRIC SWITCH MECHANISMS

conduit lines is shown in Fig. 17, while a very good view of the mechanism is shown in Fig. 18, although the solenoid can not be seen, being hidden by the cylindrical casting. The type shown is in service in New York, Washington and London. It operates as follows:

The switch throwing mechanism has but one solenoid and the motion is transmitted in the two directions by means of a reversing cam plate. The particular mechanism shown in Fig. 18 also has contacts mounted upon it for use with interlocking and these operate the indicators in the tower. In the underground conduit type one of the conductor rails has an insulated section. One of the wires from the solenoid is connected to the live conductor rail and the other is connected to the insulated section.

If the motorman desires to throw the switch, current is applied to the car while the plow is on the insulated rail and the solenoid of the mechanism, being in series with the car motors, becomes energized, its plunger is lifted and the cam plate causes the switch to be thrown. When the car leaves the insulated rail the plunger and cam plate fall back by gravity and re-set to throw the switch in the opposite direction. If the switch is not to be thrown the motorman passes over the insulated section with power off. If the switch is thrown by hand the reversing cam plate also reverses. There is a toggle movement with heavy spring attached to the switch throwing mechanism to act as a semi-lock and hold the switch point and leaves in the slot rigidly in the position to which they are thrown.

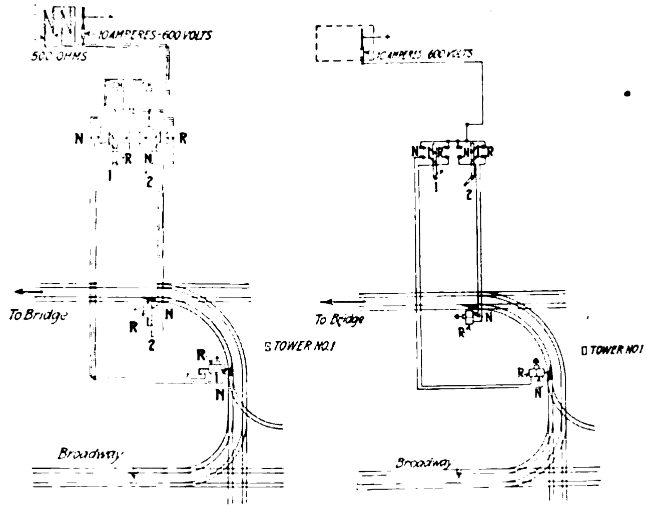


FIG. 11—WIRING DIAGRAMS; AT LEFT, TOWER CONTROL; AT RIGHT, CURB CONTROL

Severe Conditions Must Be Met

There are several rather rigid conditions which electric switching devices must meet in street railway service. They should be composed of the fewest possible parts; they should be simple enough in mechanism and electrical connections to permit the average man of intelligence to maintain them; they must be waterproof as far as the parts in the street are concerned; they must prevent any possibility of splitting the switch; they must not require more than ordinary intelligence from the motormen, and they should be non-operative under the combined current required for light, heat and air compressor circuits. Other desirable features are these: Means should be provided to prevent splashing of mud and water upon passengers and pedestrians; it should be impossible for a following car to throw the switch between two trucks of a car which may be passing over the switch; it should not be absolutely necessary

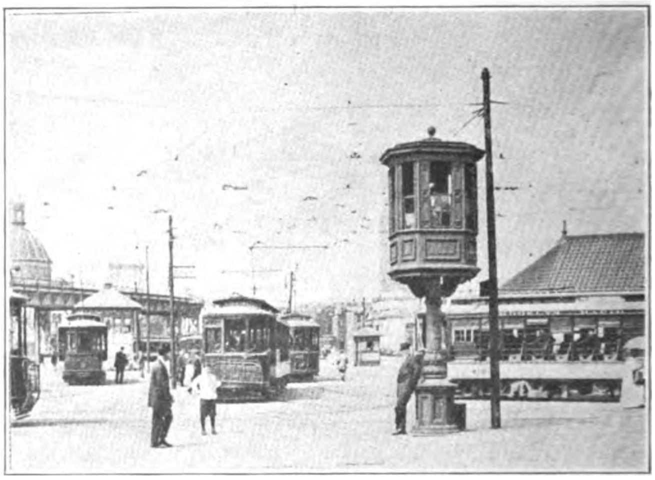


FIG. 12—TOWER CONTROL AT THE BUSY WILLIAMSBURG BRIDGE PLAZA IN BROOKLYN, N. Y.

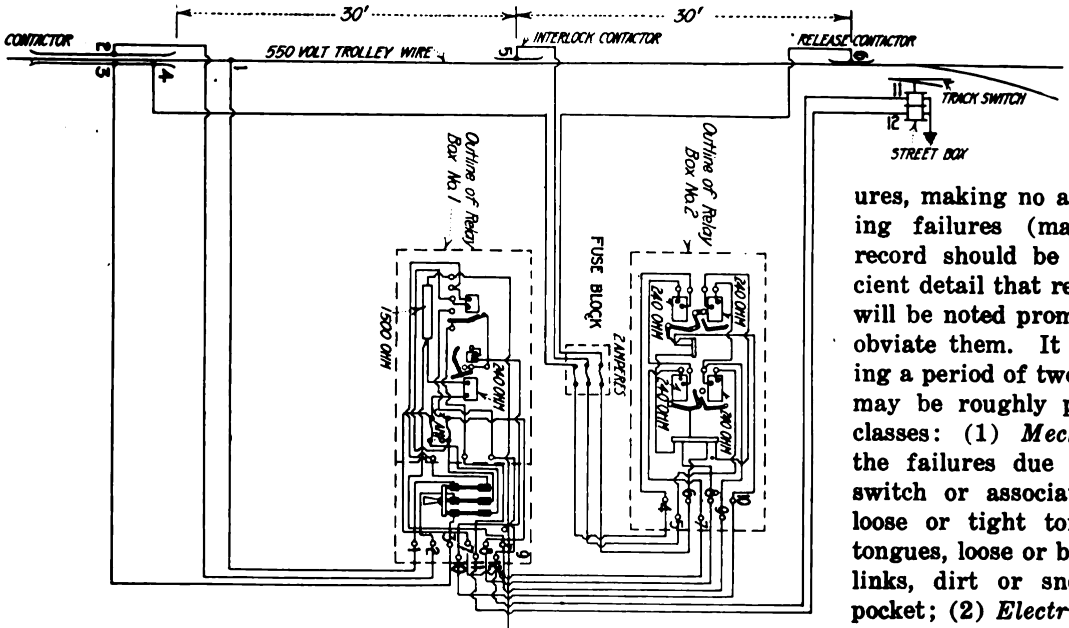


FIG. 13—WIRING DIAGRAM OF INTERLOCKING FOR ELECTRIC SWITCH OPERATION UNDER TWO-CAR TRAIN SERVICE

for the motorman to see the position of the switch in order to operate it correctly, and it should be impossible for a car to burn out the electrical apparatus by standing with trolley pole directly under the contact device. In two-car train operation, where both cars have their trolley poles in contact with the wire, it is absolutely essential that the second car of the train cannot operate the device.

These somewhat numerous requirements may be summarized into five main factors which should be considered in the selection of automatic switching devices. These are: (1) Perfection of service; (2) economical maintenance; (3) simplicity of design; (4) simplicity of installation, and (5) reasonable first cost.

Where Most of the Operating Troubles Come From

A particularly troublesome factor in connection with electric operation of switches arises from the switch pieces themselves. There are at least eight types of switch tongues which the mechanism may be required to operate. The tongues may vary in weight from 90 lb. to 240 lb. There are at least as many more methods of heel fastenings for switch tongues. It is obvious that the mechanism will work better with certain types of tongues and fastenings than with others. It follows that, in order to obtain the best results, some attention should be paid to the selection of the switch pieces with a view to securing those types which are the most reliable for electric operation. It will even be found advantageous to install the particular switch selected in all cases where electric operation is to be provided.

It has also been noted that track switches which are electrically operated are subject to more abuse from the cars and require more attention for minor repairs, such as "heel tightening," straightening or "shimming," than those not so operated. This is probably due to the fact that the cars are operated over them at greater speeds, since it is often unnecessary to stop the cars before passing over the special work. On the other hand, if the motorman must set the switch by hand, he must stop to do so and then he cannot do otherwise than pass it slowly. There are at least thirty different things which can cause failures, making no allowance for car-operating failures (man-failure). A careful record should be kept of these in sufficient detail that repeated defects or faults will be noted promptly and steps taken to obviate them. It has been observed during a period of two years that the failures may be roughly placed in three general classes: (1) *Mechanical*, including only the failures due to faults in the track switch or associated therewith, such as loose or tight tongues, bent or broken tongues, loose or bent connecting rods and links, dirt or snow and ice in switch pocket; (2) *Electrical*, including all burnt-out magnet coils or relays or resistance tubes, blown fuses, wires detached from contactors, worn contactors, defective circuit changers, worn trolley wheels, and weak tension springs in trolley bases; (3) *Operating*, such as fast operation under contactors, failure to use or not to use power at the proper time, failure to preserve proper distance from car ahead. The items of worn wheels and weak tension springs are really mechanical or equipment troubles, and failure due thereto must not be counted against the apparatus. Of course operating failures are not apparatus failures.

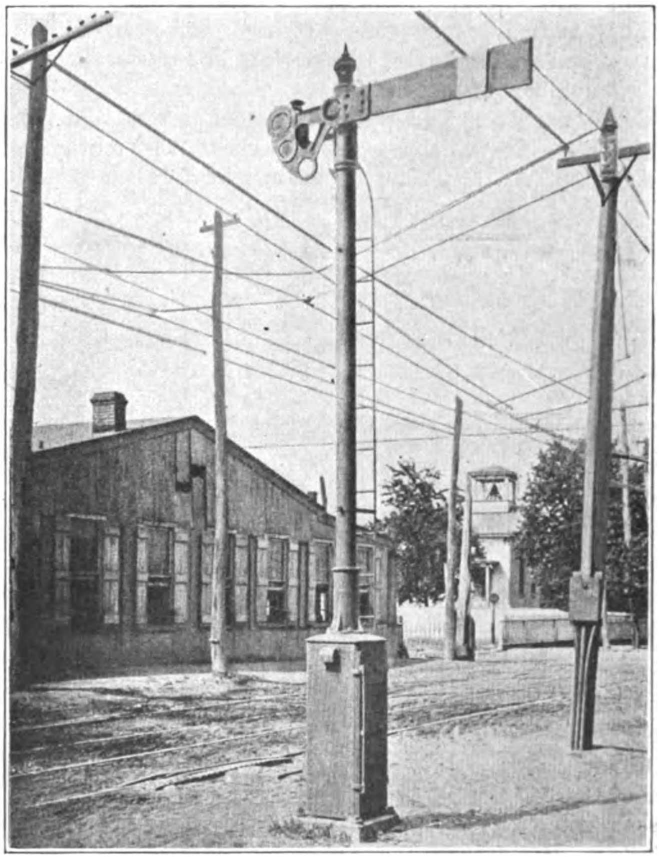


FIG. 14.—ELECTRICALLY OPERATED CROSSING DERAIL AND SEMAPHORE SIGNAL

The three groups described have been found to classify themselves into the following approximate percentages of the total "failures" reported yearly: (1) Mechanical, 15 per cent; (2) electrical, 75 per cent, and (3) operating, 10 per cent.

In connection with failures it may be said that the proper measure of electric switch performance is based upon the total number of car movements per failure without trying to classify the causes. Even this method admits of some discrepancy because very busy switches are subject to excessive heating from their almost constant use and extra trouble may be expected at such locations.

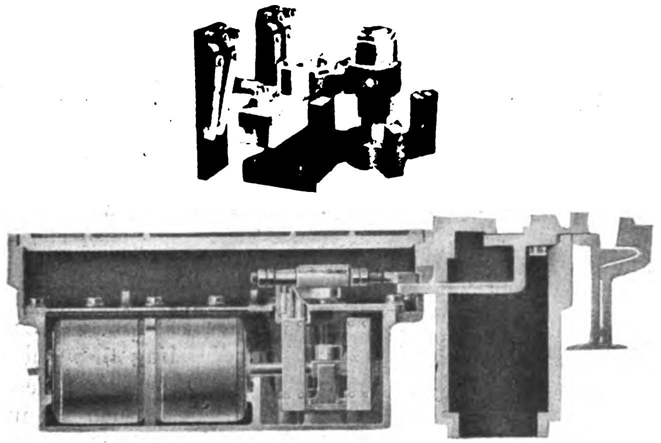
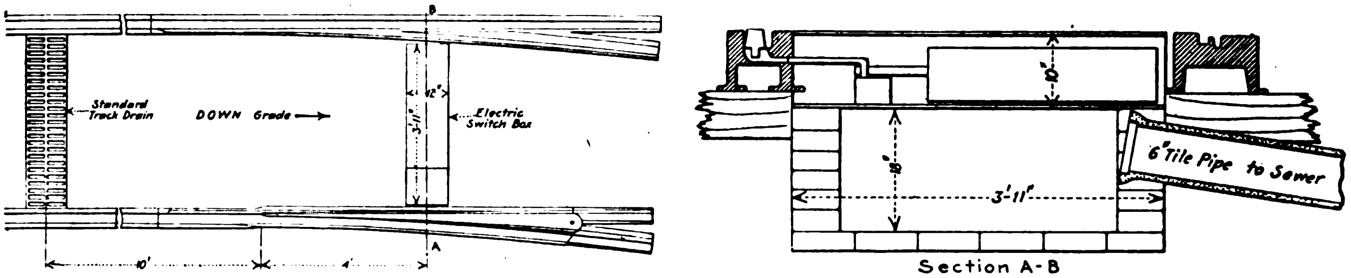


FIG. 15—DETAILS OF CROSSING—DERAIL-THROWING MECHANISM

When due consideration is given to the very onerous conditions under which electric switching devices are required to work, their performance in respect to reliability is truly remarkable. It has been observed that, upon one system having 115 devices in service, the average number of operations or movements is 863 per switch per day. The greatest number is 3026 and there are thirty-five which have from 1000 to 2000 movements per day. All the others operate over 500 times daily. There are about 38,205,000 movements per year, and it has been noted that performance records indicate failures due to defects in the device in proportion of one failure to over 46,000 operations as an average for all the switches. On another road there is a record of 117,000 operations to one failure.



Section A-B

FIG. 16—TRACK SWITCH INSTALLATION SHOWING PROVISION FOR DRAINAGE

The answers to a recent question in the American Electric Railway Association "Question Box" indicate that the electrical department of most companies assumes the maintenance of what may be considered the electric parts, beginning with the contactors at the trolley wire, and extending through the relay boxes on the pole to and including the actual magnet coils in the track box at the switch. The only work required of the track department is the adjustment and maintenance of the actual mechanical parts of the tongue switch piece. On one or two roads, however, the track department takes charge from the tongue switch up to and including the relay box on the pole. This is somewhat unsatisfactory, since it divides the responsibility for electrical maintenance between two departments, leading to trouble in placing responsibility for failures and consequent duplication of inspection and emergency calls. There is also a third party, namely, the transportation department, which must assume some of the responsibility for "troubles," since failure to observe the rules on the part of the motormen can cause much trouble and damage.

Automatic Switching at Terminals and Other Congested Points

There are locations on large city systems where car traffic and street traffic are so heavy, and the track switches are so closely grouped, that it is impracticable to attempt automatic operation of the switches. These points of congestion will be found to have a car headway of from forty-five seconds to one and one-quarter minutes. In most cases the operation by switchmen is attended with difficulties, such as dodging cars and vehicles and at some personal risk. These conditions are overcome by the use of tower or curb control devices used in conjunction with the switch-throwing mechanisms of the automatic type. These control devices are shown in Fig. 10.

The tower control consists of a switch control cabinet and resistance board. The operator has in front of him in the tower an indicator board upon which is mounted a model layout of the track and switches, each model switch being electrically operated by contacts in the real switch into positions always in correspondence with its own. Mounted on the control cabinet are control handles, one for each switch and numbered the same as the model switches on the indicator board. The handles have a rotary movement of about 60 deg., being locked in position by a simple latch which the operator must lift to move the handle, thus preventing unintentional movement. Each handle operates a cam which in turn engages a swinging latch of a magnetic blow-out, quick-break switch which makes and breaks the circuits to the solenoids in the switch-throwing mechanisms in the street, throwing the switch in the direction in which the control handle is rotated. Wiring diagrams of tower control and curb control installations are shown in Fig. 11.

In cases where the operator has many switches to handle it becomes advisable to lock the control handle so that it cannot be moved while a car is passing over the switch. This is prevented by installing two small contactors in advance of the frog on the wire. The first locks the handle by means of a small magnet mounted on the control cabinet and the second contactor unlocks it by similar means after the car has passed the switch. This is a simple form of interlocking, and the difficulties created by two-car trains are now being overcome by a similar arrangement applied to the regular automatic devices. A wiring diagram showing how this is accomplished should be of interest. One is presented in Fig. 13.

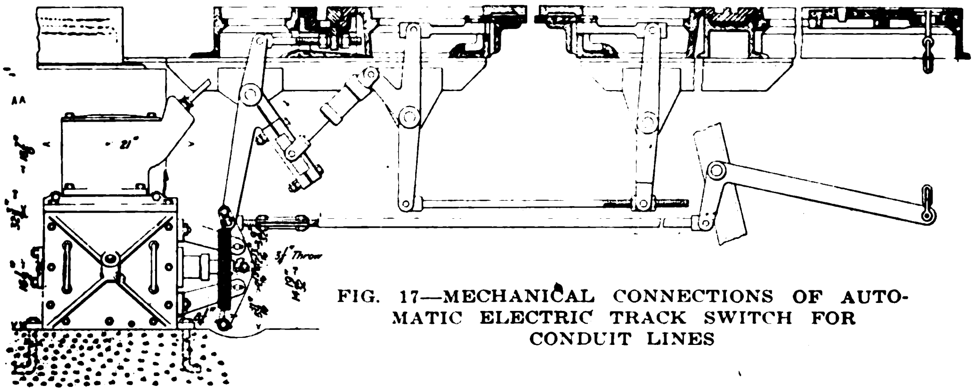


FIG. 17—MECHANICAL CONNECTIONS OF AUTOMATIC ELECTRIC TRACK SWITCH FOR CONDUIT LINES

Apparatus for Operation of Derails at Crossings

A situation somewhat analagous to the traffic conditions at congested points is found at busy surface crossings of steam and street railway lines. At these places, in addition to the crossing gates, it is a safety requirement that the crossing be protected by derailing devices. Where there is a man required to operate the gates, there is no added labor cost for operation of derailing devices. The electric switch mechanisms lend themselves readily to adaptation for this service. The control device as well as the operating mechanism is substantially the same, and it is only necessary to add a semaphore to complete it. Such an installation is shown in Fig. 14, while the operating mechanism is shown in Fig. 15.

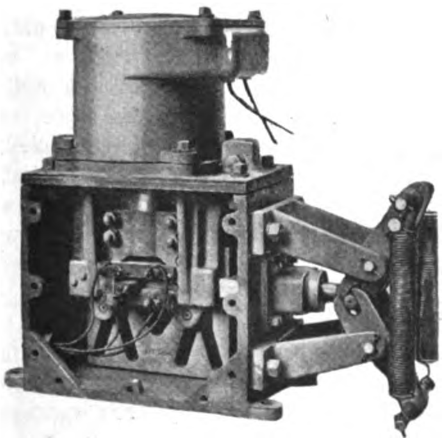


FIG. 18—MECHANISM OF ELECTRIC TRACK SWITCH FOR CONDUIT LINES. SOLENOID IS INCLOSED IN CAST CYLINDER ON TOP

The maintenance of electric switches, where there are very many to care for, will require the exclusive services of from one to five men. When their number reaches a hundred or more the latter number of men will have plenty to do as a rule, and they are provided with an automobile for quickly reaching trouble points and covering a large territory. In connection with maintenance the following description of methods for overcoming troubles during the winter season is worth quoting. It is from an article by P. Ney Wilson, covering the practice on the lines of the Connecticut Company at New Haven.

Preventing the Freezing of Electrically Operated Switches

The problem of preventing freezing of switches on the lines of the Connecticut Company is a difficult one on account of the wide variation of temperature and weather conditions. The New Haven lines alone have twenty-seven electrically operated switches and sixty patented spring boxes of various designs. Aside from salting, which is a common practice, we find the following procedure very satisfactory.

1. When new switches are installed at any season of the year, the tongue and heel tightening device is removed, oiled and carefully adjusted, and the heel box is filled completely with oil-soaked waste.
2. Electrically operated switches require regular inspection and adjustment. A settling box is built under them, connected directly to the sewer. When the switch is installed in a water pocket a track basin is placed so that it will catch sand and dirt before it reaches the switch piece. Salting in snowy weather and oil in dry weather will keep these switches free for satisfactory service.
3. "Anti-kick" spring boxes not equipped with a stuffing box are cleaned and oiled and then filled completely with oil-soaked waste plus a little salt. The waste is packed loosely around the working parts, and care must be taken that it does not interfere with their operation. This treatment applied twice during an ordinary winter will practically eliminate trouble due to freezing.
4. In all spring boxes in which plunger connections operate through a stuffing box the tight compartment should be kept filled with compressor oil.
5. As to the salting of switches at night, we find that the sending of one or more cars over the lines is the cheapest and most effective method of keeping the switches free. These cars salt switches, run through all special work not in regular use and operate all automatic switches.

A Reasonable Amount of Maintenance Necessary

In conclusion, it may be said that electric switching devices, like all other mechanisms, cannot be expected to work perfectly under all conditions and at all times. There are too many adverse factors constantly working to put them out of commission. It can only be expected that a fairly high degree of operating perfection will be obtained, and the measure of success in this will be almost wholly dependent upon the care which is given to the apparatus by the maintenance organization. It must not be expected that the devices will maintain themselves. On the contrary, they require that reasonable amount of inspection and adjustment which should be given to all mechanical and electrical devices.

"All the Trash in the River Wants to Get Into this Condensing Water Intake"

Keeping Condenser Performance Up to the Mark

By
Hartley Le H. Smith
CHIEF OF TESTING BUREAU
BROOKLYN RAPID TRANSIT SYSTEM

The Power Station Engineer Is Told How He Can Determine the Economy Which He Should Get from His Plant, Then How He Can Correct Causes of Low Vacuum

IN THE writer's article on "Diagnosing and Correcting the Causes of Low Vacuum," which appeared in the Sept. 21 issue of the ELECTRIC RAILWAY JOURNAL, the point was made that the variable which exerts very great effect upon condenser vacuum—at the top of the condenser, as elsewhere, and hence in the turbine exhaust connections—and yet which is in no way within the control of the engineer, is the intake temperature of circulating water. It is therefore the rigorously independent variable in condenser performance, and standards of condenser maintenance can only be established as matters relative to it. So important is it in turbine stations that not only does it serve as primary criterion for condenser vacuum maintenance but for comparisons of over-all station economy, or thermal efficiency, as well. A writer in the *Electrical World* of Sept. 28 notices this and illustrates it with a curve drawn between intake circulating water temperature and kilowatt-hours per gallon of fuel oil in an oil-burning power plant. (This curve is reprinted on page 703 of this issue.)

Economy Measured by Vacuum in Terms of Intake Water Temperature

The establishment of the relationship which exists between the highest practically obtainable turbine economy, or power plant over-all economy, and the vacuum in the top of a condenser and at the turbine exhaust nozzle, may be gotten in one way or another, dependent upon test facilities and circumstances, but that relationship which is within the reach of all is to determine the highest vacuum actually attained in terms of intake circulating water temperature. This only requires records of observations kept over a considerable period of time, and naturally the longer the better. All sorts of variable factors conspire to make most observations noticeably less excellent than the best actually attainable, so that in the direction of *poor* results the figures scatter in a haphazard manner when plotted, but in the direction of *best* results they mark out a boundary line which is both smooth in shape and rational in form.

Such a plot is shown in Fig. 1, extending over a period of only about six months and taken in a typical turbine power plant. It covers data not only from nine different turbine-condenser units, but these units happen to be divisible in the matter of design into groups of three distinct types. All three types are represented at or very near the boundary line.

It is very significant that a plot of the sort shown in Fig. 1 proves that vacuum maintenance at the top of a surface condenser becomes handicapped by the rise of circulating water entrance temperature which takes place during the summer. This is due not merely to the direct effect of the rising temperature but to secondary effects as well, which are somewhat involved but are undoubtedly connected with the rising height of the air cloud, caused by the decreasing efficiency of air removal by the pump equipment during hot weather. To state the over-all effect briefly it may be said that any plot of the kind shown in Fig. 1 will reveal greater temperature difference between the steam temperature at the top of the condenser corresponding to saturation pressure and the entering temperature of circulating water during summer than during winter.

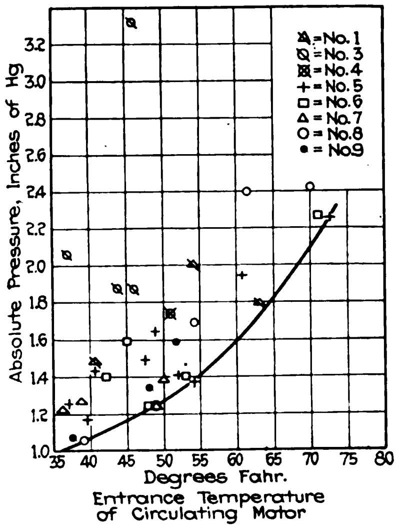


FIG. 1—VACUUM OBTAINED IN TERMS OF INTAKE CIRCULATING WATER TEMPERATURE

The curve of highest possible plant economy is obtained from the best of these readings.

After the establishment of such a standard it ought to be possible to make a strong drive after good condenser vacuum maintenance, because the operator can tell just how far he can go in condemning the indifferent performances shown by observation, regardless of the season of the year. This should make possible the drawing up in the course of perhaps another year of a new standard plot which would not only better the old one with respect to the boundary line of best performance but would be characterized also by less profuse scattering upward into the region of poor and even very poor performance. Such improvement in the standards of performance could hardly be expected to be continuous from year to year, but it ought to be the result of this sort of intensive and scientific analysis of vacuum maintenance that the first standard established even by accumulations of very considerable data would fall short of what might in time come to be regarded as the ultimate standard.

While it would unquestionably be desirable to make a careful analysis of the vacuum maintained by each condenser every day, yet in a plant with numerous turbines it becomes a matter for decision as to whether brief observations should be made on all machines operating or whether much more extended observations should be made on two or three machines so that really detailed diagnosis of their ailments may be followed by equally detailed recommendations of the particular kinds of maintenance work necessary. The writer is inclined toward the latter view. Whatever the nature of one's inclinations, however, it comes back to the fact that detailed recommendations cannot be made unless they rest upon adequately detailed observations and analysis of observations.

Reasons for Form Suggested for Tabulating Condenser Data

Illustration of a form for observations of the detailed type is shown in Fig. 2. This form grew out of a form which merely provided for checking up condenser mercury columns, and bears distinct traces of its lineage. The items under "Condenser Performance Data," however, cover in a pretty thorough manner the kinds of data which not only suffice but are required for detailed diagnosis. The order of arrangement of the items may possibly be open to some criticism. In a general way, however, those items are listed first which are matters of direct observation, and they are followed by items which involve some calculation or which are of perhaps secondary importance, and the last item is one which, although of great importance, is quite special in the sense that it could not possibly be obtained simultaneously with the others.

The circulating water discharge temperature is put high upon the list because, while it is the circulating water intake temperature and the quantity of water circulating and the turbine load which establish the circulating water discharge temperature, it is this latter temperature which establishes directly, but in a complex manner, the steam temperature at the top of the condenser and therefore the vacuum in the turbine exhaust nozzle, and therefore the economy of the turbine under consideration.

Next come data of the rises of temperature through the several passes of the condenser, be they two or three. These data are of very great importance because it is a common thing for a most unseemly great proportion of the total rise to occur in the upper pass. This means congestion of heat absorption in the upper pass with consequent undue excess of entering steam temperature above the discharge water temperature, and meanwhile the large investment representing the lower part of the condenser is not earning adequate money. Great preponderance of heat absorption in the upper pass is sure evidence of improperly proportioned steam pasageways through the condenser, or the presence of a cloud of air which has risen to rather high level in the condenser. This latter, if it exists is due to large air leakage into the condenser or poor efficiency of air removal, or both.

It is the business of the diagnostician to clear up contingent possibilities and become specific. If a condenser has improperly proportioned steam passageways, presumably the diagnostician knows it by general acquaintance with steam condenser technical literature of recent years, and calls it to the attention of those in authority who do not know it, if there are any such, and plans are made to provide more adequate steam spaces by permanently removing tubes. If large air leakage into the condenser exists, quantitative measurement of the leakage with an air bell will reveal it. Rotary pumps of the jet type, as distinguished from reciprocating dry-vacuum pumps, do not admit of the use of an air bell. Very good work in such circumstances can be done by applying Dalton's law to simultaneous observations of temperature and pressure in the air suction line. Provision for the result of such measurements is made on the line next to the last of

T. D. CO., TESTING BUREAU

VACUUM MAINTENANCE AND CALIBRATION OF CONDENSER VACUUM GAUGES.

Sheet No. 1. T. B. Order........ Williamsburg Power Station

Date	Condenser No.	Found Reading Inches of Hg.		Left Reading Inches of Hg.		Barometer	Load Kw.	Temp. of Cir. Water F.°		R.P.M. of Pumps	
		Stand. Hg Column	Cond. Hg. Column	Stand. Hg. Column	Cond. Hg. Column			Intake	Dis-ch'ge	Air	Cir-Water
......	......	......	......	......	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	......	......	......	......
......	......	......	......	......	......	......	......	......	......	......	......
......	......	......	......	......	......	} Bristol					
......	......	......	......	......	......						
......	......	......	......	......	......						

CONDENSER PERFORMANCE DATA

Condenser Number,			
Absolute Pressure, Inches of Hg.,	......	......	......
Speed of Air Pump, R.P.M.,	......	......	......
Speed of Circulating Water Pump, R.P.M.,	......	......	......
Circulating Water Discharge Temperature,	......	......	......
Temperature Rise of Circulating Water, Upper Sect.	......	......	......
Middle "	......	......	......
Lower "	......	......	......
Load K.W.,	......	......	......
Pressure on South Gland, Lb. per Sq.In.,	......	......	......
Condenser Hours since Last Cleaning,	......	......	......
Millions of Pounds of Circulating Water per Hour,	......	......	......
Diff. Pressure across Condnsr. (Ref. to Rated Water),	......	......	......
Water Level Intake,	......	......	......
Lost Head with Rated Qnty. of Circulating Water, Ft.,	......	......	......
Excess Temperature of Steam over Discharge Water,	......	......	......
Air Pressure in Air Suction Line,	......	......	......
Absolute Pressure in Clsd. Suction Line of Air Pump,	......	......	......

FIG. 2—FORM FOR TABULATING DETAILED CONDENSER PERFORMANCE

the illustrated form, Fig. 2. It should be noted that if measurements in the air section line are made with the purpose of applying Dalton's law, refinement of measurement should be attempted because rotary pumps of the jet type frequently have quite large displacement, with the result that if small or moderate quantities of air are leaking into a condenser the air in the act of withdrawal may be diffused through such a very great volume of very low pressure steam as to make the detection of the presence of the air, and much more its quantitative measurement, a matter of difficulty. There is the consolation, however, that if air is being withdrawn in large quantity the detection of its presence in the air suction line will not be difficult. It should be remarked also that the Dalton law method of quantitative measurement of air removal from a condenser is just as applicable to dry-vacuum pump installations as to the others, subject only to the difficulties incurred in pressure measurements in pipe lines supplying any sort of reciprocating pumps.

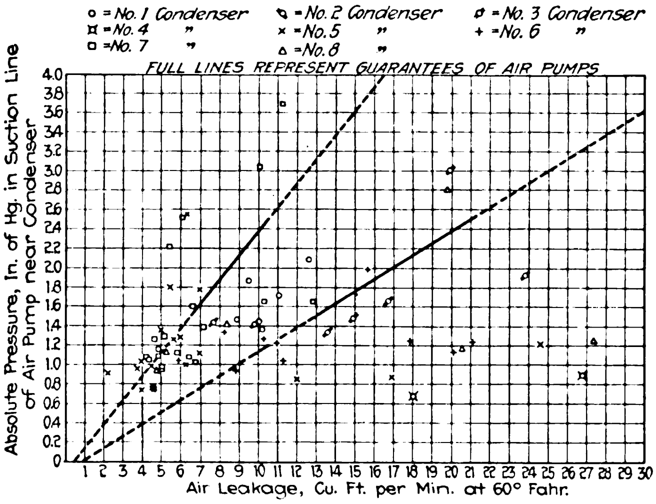


FIG. 3—CHART FOR COMPARISON OF ACTUAL WITH GUARANTEED AIR LEAKAGE

Other Possible Faults to Which the Form Calls Attention

It may suffice to take up somewhat briefly a number of the remaining items of importance appearing in the form shown in Fig. 2. Where water-sealed glands serve to prevent air from entering the turbine the pressure of water maintained on the gland supply lines by normal pumping action indicate normal or abnormal functioning of the glands with respect to water consumption. If, for instance, the water consumption becomes abnormally large the water pressure will fall and the air-sealing efficacy of the gland will be interfered with, with consequent high air leakage and low condenser vacuum.

The hours that a condenser has run since its last cleaning may affect the vacuum in two ways—it may account for a falling away from the normal quantity of circulating water by reason of trash accumulations actually obstructing the flow, and it may interfere with the transmission of heat through the tubes to the water by reason of the heat insulating effects of mud or sediment in the tubes. The hydraulic circuit of the condenser is capable of being handled much like an electric circuit. The differential pressure across a condenser varies greatly with the quantity of water flowing through it, but it also varies considerably at constant water flow with different amounts of trash obstructing it, particularly if the obstructing material is to a considerable extent leaves which become plastered over the tube plate.

Again, where open intake wells are used, the fluctuation of levels in them may depend upon more than mere tide level variation. Measurable lost head may occur in them due to perforated openings designed to stop obstructing materials which might be harmful to the circulating pumps. Variation of quantity of water circulated due to any cause will then cause variation of this lost head, but if at some constant quantity of circulating water the lost head in the circulating pump suction line increases to values appreciably above normal the the bottom of the open intake well may need cleaning out. The absolute pressure which an air pump can maintain against a closed suction value has been discussed before. Nothing is more important in vacuum maintenance. It is the prime indication of the pumping ability of the pump. To show forcibly how even the degree of air leakage itself is not more important and may in some installations be distinctly less important than the air-tightness and general perfection of mechanical working of parts, Fig. 3 is published, showing absolute pressure in the suction lines of various pumps in actual service with large variations of air leakage coming through the air suction lines from the condensers. The quantities of air leakage were measured by an air bell. The solid portions of the ruled straight lines were drawn through actual guarantees of the performance of a certain type of rotary pump in which water jet action extracts the air; the upper line representing one pump and the lower line two. The numerous plotted points all represent actual service performance of reciprocating dry-vacuum pumps. The lesson from the plot is clear. If a reciprocating pump is in fine condition it may be capable of removing a great amount of air from a condenser and yet maintain admirably low absolute air pressure while it is doing so. On the other hand, through neglect of skillful maintenance work the absolute pressure may not be notably low even though the air leaking into the condenser and needing to be removed by the pump may be moderate in amount, thanks to a tight condenser.

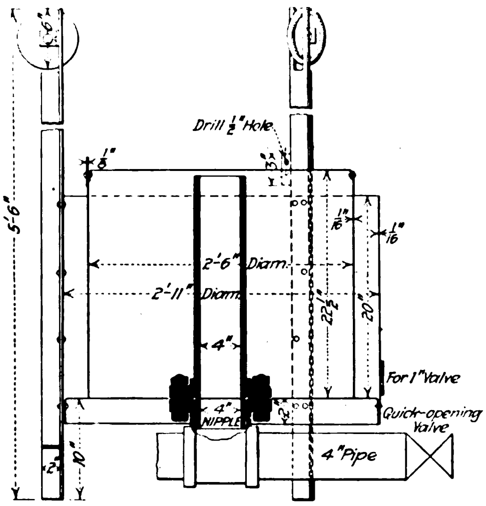


FIG. 4—AIR BELL FOR MEASURING AIR LEAKAGE

The use of an air bell gives such powerful means of control of vacuum maintenance by putting air leakage measurement upon a quantitative basis that an illustration of such a bell may be of interest, and is accordingly shown in Fig. 4. An air bell made from this drawing has been in satisfactory service for several years. The conception of using such a bell for the purpose did not originate with the company with which the writer is connected. So far as he knows it was first used by the New York Edison Company.

As a refinement in the use of an air bell, a hole may be drilled in the top of it and a rubber stopper inserted through which is passed an ordinary chemical thermometer. In this way the temperature of the air may be measured as the bell rises. This allows correction of the air volume to standard temperature to be made.

Relative Life of Manganese and Open-Hearth Rail on Curves

Results of Tests Are Given Showing Manganese Rail to Wear About Seven Times as Long as Open Hearth

By H. W. Roberts
Assistant Engineer of Maintenance of Way,
Elevated Railroads of Chicago

The accompanying diagrams, which show the wear of rail on the curves of the Chicago Elevated Railroads, will be of interest to the engineering profession in general, as they give a direct comparison between the life of manganese and high-carbon, open-hearth rail.

The curves on which these measurements were taken are all laid with 80-lb. rail, A.S.C.E. section, and are all guarded. The throatway between the running rail and the guard rail is 2 in. on the short-radius curves, and 2¼ in. on curves having radii of more than 500 ft. The elevation of the outer rail is not uniform on the various curves, on account of special conditions which must be met, but in general it will run about as follows: For curves having radii less than 250 ft., 4 in.; 250 ft. to 500 ft., 3 in.; more than 500 ft., 2 in.

The wears on the outer and inner rails are given separately, as the wear on the outer rail is somewhat more than that on the inner rail. Speaking generally, however, the life of the two rails is the same, for the reason that by the time the outer rail is worn out, the inner rail is either so badly corrugated or so badly battered at the joints that its removal is also necessary.

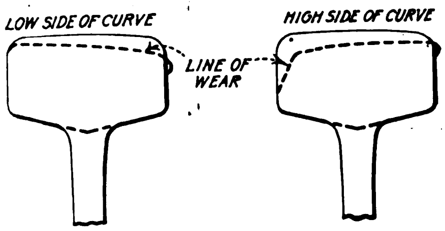
The unit of wear which is used is the reduction in the area of the head of the rail in square inches per 100,000 cars; and it was so taken in order that the measurements made on the different branches, where the traffic varies widely, might be reduced to the same basis. The total wheelage over each curve was arrived at by taking the traffic for representative days and applying this as a unit over the entire period. There is, undoubtedly, a small error in the totals arrived at in this manner, but the percentage of error is so small that it is negligible.

The equipment, at the present time, consists of 1095 motor cars and 575 coaches, the average weight of all equipment being 50,000 lb. per car. The heaviest cars are the steel motors which weigh 69,000 lb., 41,000 lb. on the motor truck and 18,000 lb. on the trailer truck, while the lightest are the coaches, which weigh 33,000 lb.

These cars are all equipped with M.C.B. standard rolled-steel wheels, 34 in. in diameter on the motor trucks and 31 in. in diameter on the trailer trucks. The motor cars are each equipped with two 160-hp. motors, are braked at a high percentage, and are operated in multiple-unit trains of from two to six cars each. The number of coaches per train bears about the same relation to the total number of cars per train as the total number of coaches bears to the total number of cars on the system.

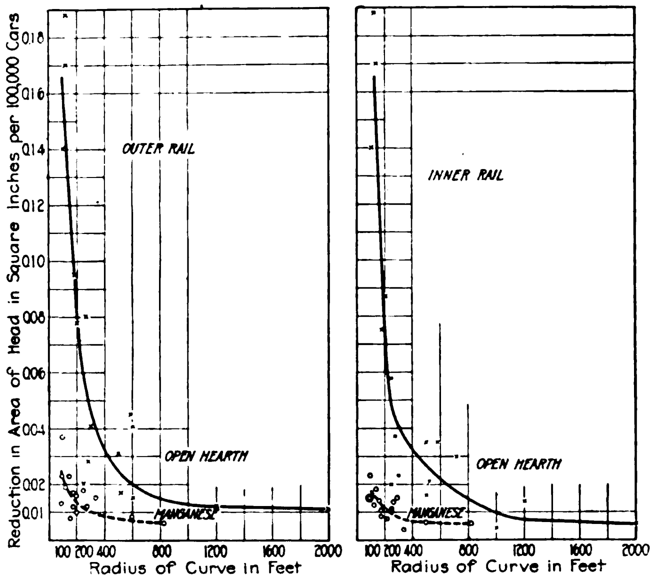
The maximum wear was found to have been reached when the area of the head of the rail had been reduced by 1.25 sq.in. This was arrived at by taking a number of sections of rail which had been removed from the track, or which was so badly worn that its removal was an immediate necessity.

The accompanying rail sections are from manganese rail which had been in the track for 4½ years. This same rail has now been in service for nearly six years and is still in good condition. The best result ever obtained with open-hearth rail on the curve containing this rail, which has a radius of 100 ft., was a life of fourteen months, while the average life for open-hearth rail was less than ten months. On another curve of the same radius we have manganese rail which has been in service for seven years, and the average life of open-hearth rail on this curve was also less than ten months.



DIAGRAMS SHOWING WEAR OF HEAD OF 80-LB. MANGANESE STEEL RAIL A.S.C.E. SECTION, LAID IN 1912

These results show that the comparison of the wear on the two kinds of rail, as shown on the diagram, is conservative, as the diagram shows the life of manganese rail to be about seven times that of open-hearth rail on curves having a radius of 100 ft.



CURVES SHOWING COMPARATIVE WEAR OF OPEN-HEARTH AND MANGANESE STEEL RAILS ON CURVES

Original area of head of 80-lb. rail, 3.30 sq.in.
Area of head of worn rail, 2.05 sq.in.

The study described above and the diagrams reproduced in connection with this article were made by the writer for B. J. Fallon, engineer of maintenance of way Chicago Elevated Railroads.

Short, Timely Articles
FOR THE
Way, Mechanical and Electrical Departments

Keeping Account of Trucking Costs

The New York State Railways Secures Economical Truck Operation by Making Careful Analysis of Detailed Cost Records

By C. L. Cadle
Chief Engineer New York State Railways, Rochester Lines

ECONOMY in motor-truck operation is quite as dependent on good operating and accounting practices as in any other business. Systematic operation is usually economic operation, and correct bookkeeping permits of the ready detection of excessive operating charges and affords the only trustworthy source of data for basing comparisons of the economic efficiency of different makes of machines and the relative value of different kinds of supplies. The practice of the New York State Railways, Rochester Lines, with reference to the dispatching of motor trucks was described in the ELECTRIC RAILWAY JOURNAL for Jan. 5, 1918, page 45. In response to some inquiries as to operating costs, the data in the accompanying tables are presented.

The gasoline-motor-operated vehicles of this company can be divided into three general classes: line trucks, delivery cars and service cars. The physical characteristics of the first two classes are set forth in Table I. The service cars are runabouts used by the several heads of departments in conducting their inspection work. The duty of these cars cannot, of course, be compared with that of the trucks, but the data are interesting from the standpoint of showing the operating costs of so-called pleasure vehicles.

To faciliate analysis the several costs, together with the car-mileage for each truck, are tabulated each month for the month and for the year ending with that month, on a form similar to that shown in Table II. The cost figures here presented are for the month of December, 1917, and for the year ended Dec. 31, 1917. The figures under the heading, "Cents per Car-Mile," which are found on the lines beginning "Average," are calculated by dividing the corresponding total cost for all trucks by the mileage for all trucks. The remainder of the table, it is believed, is self-explanatory. The high tire cost for trucks 2, 4, 5, 20 and 22, resulted because the

TABLE I—SERVICE AND PHYSICAL CHARACTERISTICS OF TRUCKS

Tuck No.	Weight of Machine, Pounds	Carrying Capacity, Pounds	Total Weight, Pounds	General Equipment	Motive Power	Class of Work Normally Assigned to Each
2	6,000	2,000	8,000	Line and wrecking tools	Gasoline	Overhead line work
3	6,000	2,000	8,000	Line and wrecking tools	Gasoline	Overhead line work
4	6,000	2,000	8,000	Line and wrecking tools	Gasoline	Overhead line work
5	6,000	2,000	8,000	Line and wrecking tools	Gasoline	Overhead line work
20	6,450	4,000	10,450	None	Gasoline	Delivery purposes
21	3,000	1,750	4,750	None	Gasoline	Delivery purposes
22	3,500	1,500	5,000	None	Gasoline	Delivery purposes
23	5,000	4,000	9,000	None	Gasoline	Delivery purposes

TABLE II—COST OF OPERATING MOTOR VEHICLES

Car No.	Car Mileage		Gasoline				Oil				Tires				Repairs				General				Total			
			Month		Year		Month		Year		Month		Year		Month		Year		Month		Year		Month		Year	
	Month	Year	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile	Total Cost	Cents per Car-Mile
White 2	652	7404	$89.50	13.7	$642.63	8.6	$8.01	1.2	$48.75	0.6	$13.65	2.1	$834.21	11.2	$44.08	6.7	$525.23	7.1	$8.76	1.3	$175.04	2.3	$164.00	25.1	$2225.86	30.06
White 3	335	4164	61.72	18.4	601.46	14.4	5.97	1.7	44.57	1.0	12.60	3.7	50.49	1.2	24.21	7.2	182.60	4.3	8.76	2.5	175.04	4.1	113.26	33.8	1054.16	25.31
White 4	400	6635	70.64	17.6	606.15	9.1	5.61	1.4	48.21	0.7	3.30	0.8	826.78	12.4	57.94	14.4	471.10	7.1	8.76	2.1	175.08	2.6	146.26	36.5	2137.32	32.06
White 5	574	6863	68.67	11.9	602.89	8.7	5.30	0.9	54.11	0.7	6.10	1.1	1404.31	20.4	142.45	24.8	910.96	13.2	8.76	1.5	175.08	2.5	231.29	40.2	3147.35	45.85
Average	490	6266	$72.63	14.8	$613.28	9.8	$6.15	1.3	$48.91	0.8	$ 8.91	1.8	$778.98	12.5	$ 67.17	13.7	$522.47	8.4	$8.76	1.7	$175.06	2.8	$163.70	33.4	$2141.17	34.3
Seldon 20	805	10415	$84.88	10.5	$721.51	6.9	$7.90	0.1	$68.69	0.6	$4.85	0.6	$422.43	4.0	$189.89	21.1	$679.10	6.5	$8.77	1.0	$180.07	1.7	$296.29	35.5	$2071.80	19.81
Ford Jwt 21	685	8347	45.78	6.6	429.55	5.1	5.65	0.8	69.56	0.8	0.00	0.0	169.70	2.0	146.58	21.4	731.89	8.7	8.77	1.3	175.08	2.0	206.78	30.2	1575.78	18.87
White 22	815	8107	57.04	7.0	412.18	5.1	4.94	0.6	34.04	0.4	171.97	21.1	549.37	6.7	51.56	6.3	289.04	3.5	8.77	1.0	174.76	2.1	294.28	36.1	1459.41	18.00
White 23	870	3562	60.26	6.9	196.47	5.5	5.97	0.6	18.96	0.5	14.73	1.6	18.16	0.5	4.06	0.4	58.69	1.6	8.77	1.0	48.03	1.2	93.79	10.7	340.31	9.55
Average	794	7608	$61.99	7.9	$439.93	5.8	$6.12	0.7	$47.85	0.6	$47.89	6.0	$283.91	3.8	$98.02	12.3	$439.68	5.0	$8.77	1.1	$144.48	1.9	$222.78	28.1	$1361.82	17.90
Ford 30	812	10385	$9.30	1.1	$166.52	1.6	$2.50	0.3	$7.14	0.1	$19.80	2.4	$195.80	1.8	$44.03	5.4	$167.12	1.6	$8.77	1.0	$156.01	1.4	$84.40	10.3	$692.59	6.66
Ford 31	800	8515	9.55	1.2	143.72	1.6	2.14	0.2	6.93	0.1	4.86	0.6	108.10	1.2	22.64	2.8	112.38	1.3	8.77	1.0	156.00	1.8	47.96	6.0	527.13	6.19
Ford 32	543	12590	19.22	3.5	208.80	1.6	4.20	0.7	9.24	0.1	2.25	0.4	101.59	0.8	9.10	1.6	111.11	0.8	8.77	1.6	156.00	1.2	43.54	8.0	586.74	4.66
Ford 33	329	7643	11.45	3.4	118.11	1.5	2.72	0.8	4.80	0.1	1.00	0.3	95.16	1.2	19.06	5.8	125.93	1.6	8.77	2.6	156.00	2.0	43.00	13.0	499.98	6.54
Overland 34	350	5353	12.68	3.6	110.10	2.0	0.71	0.2	3.83	0.1	34.55	9.8	282.22	5.2	27.60	7.8	157.39	2.9	8.77	2.4	98.33	1.7	84.31	24.0	651.87	12.17
Ford 35	329	329	13.07	3.9	16.31	4.9	2.84	0.8	3.32	0.1	0.00	0.0	0.00	0.0	34.41	10.4	46.56	14.1	8.77	2.6	8.77	2.6	59.09	17.9	74.96	22.78
Average	533	7469	$12.54	2.4	$127.26	1.7	$2.52	0.5	$5.88	0.1	$10.41	2.0	$130.48	1.7	$26.14	4.9	$120.08	1.6	$8.77	1.7	$121.85	1.8	$60.38	11.5	$505.54	6.8

Editor's Note—In the original table the garage cost per month of $2.62 for each truck or car was itemized separately. However, on account of space limitations it has been included in the general charges listed in this table.

trucks were equipped with pneumatic tires when originally purchased. It was found after considerable experience that a special solid tire purchased from the Overman Company, New York, gave the best tire economy on a car-mile basis. These tires cost approximately $650 for one complete set, dual rears and single fronts. Offsetting this cost, however, is the fact that these tires have a guaranteed mileage of 15,000 as against 6000 miles for the pneumatic tires. Our experience has been that the use of these tires reduces our tire cost per car-mile by about 50 per cent.

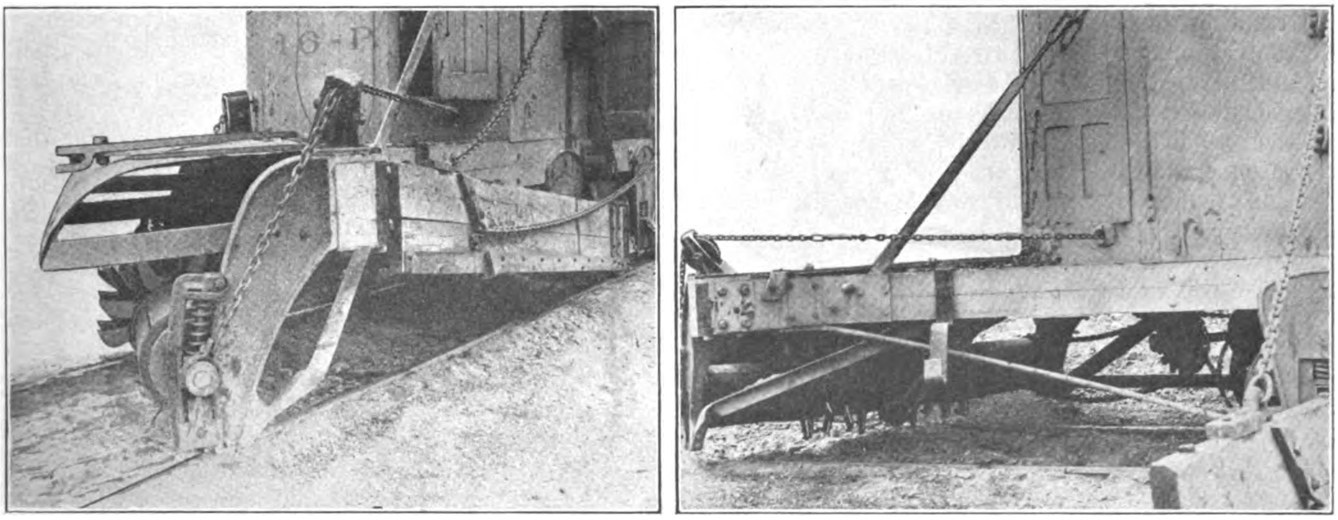
Ice Cutter Made From a Snowplow

A Simple but Effective Device Which Proved a "Life-Saver" in Schenectady Last Winter

FOR use in the winter of 1916-1917 the Schenectady (N. Y.) Railway constructed the ice-cutting attachment for one of its snowplows which is shown from two angles in the accompanying illustrations. The plow was one of several that had been built some time previously in the company's shops. The rigging can readily be placed on a sweeper body, using materials available in any shop storeroom.

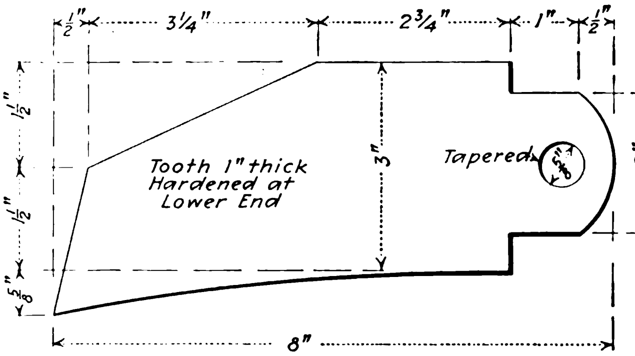
On one end of the underframe three malleable-iron broom-bearing brackets were attached, one in the middle and one on each side of the diagonal head block from which the plow formerly hung. In the bearing housings on these brackets coiled springs were placed over the bearings to resist the upward thrust from the cutter spindle which replaced the rotary broom.

The cutter spindle consists of two built-up wood drums, 18 in. in diameter, mounted on the ordinary broom shaft. On the drum surface are numerous cutters or teeth of the form and dimensions given in the scale drawing reproduced herewith. The cutters are of steel, hardened for about one-half their height from the cutting end. On the other end is a tapered hole, ⅝ in. in diameter at the large end, for the reception of a tapered plug. For the purpose of holding the cutters there are three split collars on each drum, two wide ones outside carrying two rings of teeth each, and one in the middle carrying one ring. The outside collars or straps are of ½-in. x 7-in. steel, studded with sixteen teeth each. The inside collars are ¾-in. x 3-in. steel, with six teeth each. The total number of teeth is, therefore, seventy-two. The halves of each split collar are drawn together with two ¾-in. bolts on each side.



TWO VIEWS OF ICE-CUTTING ATTACHMENT FOR SNOWPLOW, SCHENECTADY (N. Y.) RAILWAY

The shanks of the cutters are inserted in the collars and are held loosely in place by means of the tapered plugs. These in turn are locked in position with cotter pins. The wood drums are recessed to accommodate these, thus providing a keying effect of the collars against rotation, supplementing friction.



DIMENSION SKETCH OF STEEL TOOTH FOR ICE CUTTER

Provision is made for raising and lowering the outer spindle by means of chains attached to the bearings and winding upon a shaft driven from a geared handwheel staff. The driving motor is a GE-52 motor on the floor of the cab, geared to a jackshaft mounted in the axle bearings. By means of a chain the jackshaft in turn drives a countershaft under the body, from which chain drives lead to the cutter spindle and to a rotary broom at the rear end.

With the cutter on one end, the broom on the other, and the two wing plows on the side, this outfit is most convenient for work too heavy for a sweeper. It is particularly adapted for service on one-way streets. The wing plows have the usual control, one handwheel raising the heel and one the toe, a third being used to pull the wing out to the desired angle.

The ice-cutter scheme was the joint idea of F. J. Doyle, master mechanic, and W. G. Miller, now with the electric railway at Havana, Cuba.

Some Experiences with Low-Voltage Control

The Author Describes the Methods Necessary in the Maintenance of Low-Voltage Car Equipment to Prevent Trouble

By O. Gottschalk
Master Mechanic Richmond Light & Railroad Company, New Brighton, N. Y.

TWO of the most essential points in the maintenance of low-voltage control equipment are to have all connections tight and all contact surfaces clean. Experience has shown that 90 per cent of the trouble occurring comes from one of these two causes.

ALL INSULATION MUST BE KEPT CLEAN

Insulators are often located so that they are very difficult to get at for cleaning. In such cases, the best method is to blow the dirt and metallic dust off with compressed air. The insulation is sometimes in a delicate state due to heating, which tends to cause it to become brittle. If too high air pressure is used, the insulation is liable to be destroyed by the force of the blast. My experience has indicated that 40 lb. of air is the best for use, as this has sufficient force for cleaning and involves less danger of damaging the insulation than would a higher pressure. The air used must be free from moisture and vaporized oil, as both of these have an affinity for dirt and metallic dust.

HOW CONTACTS ARE CLEANED

The cleaning of interlocking contacts is best done by using a fine grade of sandpaper (No. 1 preferred). After using the sandpaper, the contacts should be wiped off with a cheap grade of cheesecloth. Waste should never be used for wiping off contacts, as small pieces are liable to become detached and cling to the contacts so as to cause open-circuits or improper contact which will result in burning of the contact surfaces. After the contact surfaces are thoroughly clean, they should be lubricated slightly with a good grade of vaseline. Care should be taken not to apply too much, but just sufficient to lubricate thoroughly, as arcing vaporizes the vaseline and this causes the arc to hold longer than it would otherwise. Dirt and metallic dust will accumulate, but with proper lubrication it will remain in a soft state and the contact surfaces will be kept clean with each wiping action.

In cases where contacts have little or no wiping action, such as interlock contacts and relay contacts, the best results are obtained by making one contact surface of carbon. I have found this an excellent opportunity to use up worn-out motor carbon brushes. It has been found that where metal against metal is used for such contacts a small arc will cause carbonization with sufficient resistance to prevent the flow of the low-voltage current. When one surface is made of carbon the arc disintegrates the carbon only and leaves the metal surface clean. The disintegrated carbon, being of a soft composition, does not remain on the surface of the contact, but is carried away in the form of soot by the heat generated by the arc.

Where carbon contacts are used it is necessary to back them up with a suitable support to avoid excessive breakage. With interlock contacts which have a sliding or wiping action, I have found that the best wear is obtained by using a spring steel finger and a contact plate of cold-rolled copper. Cast brass or copper should never be used for contacts that make and break, as the metal often contains minute blowholes and is of such soft composition that imperfect contact will cause welding. Inspectors should be careful to see that all contact surfaces wear evenly. If uneven wear takes place or if point contact exists, excessive heating will take place and welding will result.

Cylindrical contacts should not be allowed to get out of round as this will result in unequal pressure on the various parts of the contact surfaces and cause welding or arcing.

Other repairs that require attention by the inspectors are the arc deflectors or division plates. These should be cleaned carefully, as any accumulation of dirt or metallic dust will serve as a conductor for the arc and may cause a short-circuit. Careful adjustment of all contact fingers should be made so that the cylinder contacts strike at a point which is about one-third the thickness of the finger metal. Where fingers have excessive vibration, it has been found that this often causes stubbing when rapid opening or breaking of the circuit takes place.

JUMPERS REQUIRE CAREFUL INSPECTION

The service obtained from jumpers depends upon the amount of handling which they receive and also upon the manner in which they are handled. On roads where trains are cut frequently it has been found necessary to replace all jumper cable at least once each year. The greatest percentage of failures occur inside the jumper head and about 1 in. away from the point where the cable enters the jumper. These failures are caused by switchmen using the cable to pull the jumper out of the coupler socket, or by pounding the jumper head when it is not eaily inserted or removed as often occurs in wet or freezing weather. These switchmen are usually not over-careful to strike the metal head only, but strike the insulation as well which causes the damage. Operating men are bound to use the easiest method for their labor at all times, and excessive damage can only be prevented by the mechanical department using such designs of jumpers as will be easy to remove and replace and make certain that they are kept in easy working condition at all times.

Proper inspection should include the cleaning and spreading of all male and female contacts of the jumpers. Any corrosion will prevent or interrupt the flow of current.

In making up jumpers I have found the following to give the best results: Wires attached to the terminals inside the jumper heads should be secured with solder composed of 90 per cent of tin and 10 per cent of lead. This composition gives the greatest strength. A piece of leather or rubber should be placed around the cable inside the head and at a point where the cable passes through to the inside. A rubber bushing installed around the cable at the point immediately outside of the head and under the bell casting will prevent water from entering. For filling in the heads with compound, two small holes should be drilled in the head casting. One of these is for use while pouring in the asphaltum compound after it has been heated to a liquid state and the other permits the hot air to escape and insures a solid compound without cavities. This compound secures the wires firmly and prevents chafing. It also acts as an insulation and protects the wires from moisture. Where possible the compound should be forced in under pressure, as this gives a more even distribution inside the head.

PREVENTING AND LOCATING WRONG CONNECTIONS

With multiple-unit control equipment it often happens that after repairs have been made to jumper sockets the men performing the work neglect to get the wires connected to their proper contact posts and also frequently leave loose or short-circuited connections. The best method for locating wrong connections and insuring that all is in proper condition before the car is allowed to go into service is to make use of a bank of lamps with each lamp representing a given wire in the train line. This bank of lamps should be connected to a test jumper head which is inserted in the coupler socket being tested. The controller is then moved to its various positions and record is made to see that the proper lamps become lighted as each point of the controller is reached.

Frequently trouble which cannot be located with the bank-of-lamps test will develop. For such cases I have found what has been termed "shooting the circuits" to be a satisfactory test. This is made by grounding each individual train wire successively and applying 600 volts to the wire under test through a 20-amp. fuse. This test will cause loose connections to become welded or burnt off and the short-circuited or burnt-off connection can then be easily located. All jumpers should be put through a 30-amp. test at least four times a year. Suitable testing apparatus can usually be made in the shop by using lamps or heater coils so arranged as to give the desired value of current and by having suitable switches so connected that a lamp will indicate the wire which is being subjected to the heavy current test. In making this test the jumpers should be in the same position as when they are used between cars, and in addition, they should be moved about and pulled by hand, as this will facilitate locating any weak connections or partly broken wires.

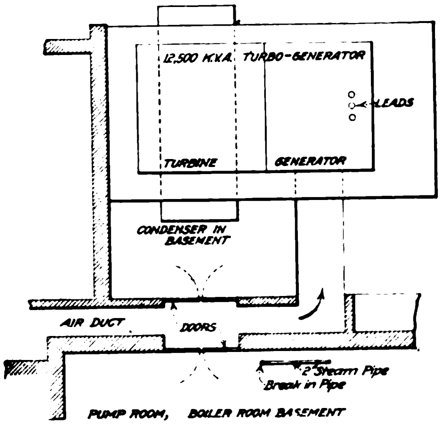
Generating Plants of Large Capacity Save Fuel

The *Tramway and Railway World*, of London, reports from a German source of information that at least one economist in Germany favors a state power monopoly after the war on grounds of fuel economy as well as on financial grounds. He thinks that all the railways and all industrial and agricultural plants should be electrified and that electricity should be produced in large plants of 100,000 kw. and distributed over high-tension mains at 100,000 volts. He calculates that by electrifying the railways it will be possible to save at least one-third of the coal consumed by them, which amounted to about 20,000,000 tons in the year immediately before the war. He urges that the state should endeavor to reduce home consumption of coal by a third and should reckon to make the most of its profit on coal for export.

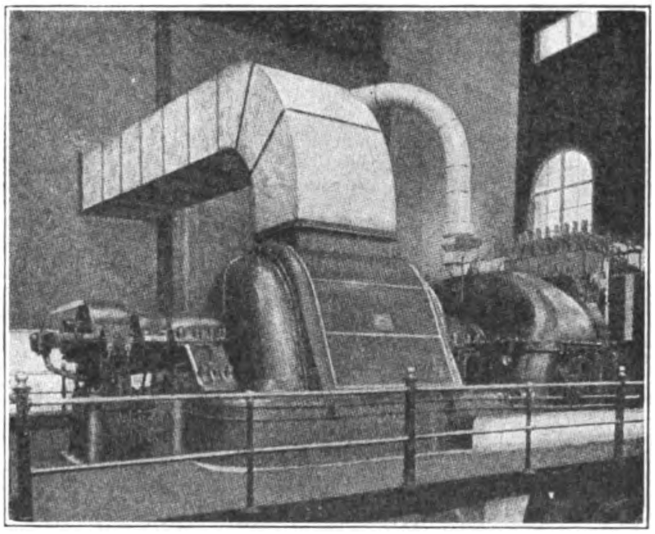
Turbine Generator Burn-Out Caused by Steam Leakage

Failure of Union in Steam Pipe Allowed Steam to Be Sucked Into Air Duct Leading to Generator

SOME months ago the 12,500-kva., three-phase, 60-cycle, 11,000-volt generator, in the Reeves Avenue power house of the Virginia Railway & Power Company at Norfolk, described in the issue of this paper for Dec. 23, 1916, short-circuited when carrying a load of about 6000 kva. The accident had such a serious effect on the local transportation that a notice of it was printed in the issue of this paper for Aug. 24. Inquiry of the company elicited the following details of the accident: Air for the turbine ventilation comes from outside the building through a masonry duct constructed on the turbine room side of the division wall which separates the turbine and boiler rooms. It is discharged through a galvanized duct into the boiler room above the boilers. The main steam header is located along the division wall on the boiler-room side, and the steam connection for the turbine is taken off above the boilers and passes through the division wall direct to the turbine. There is a drop leg near each end of the main steam header which leads to the boiler-room basement with steam trap at the lower end. Steam for the auxiliaries is taken off a short distance above the bottom of the drop leg.



GENERAL ARRANGEMENT OF APPARATUS INVOLVED IN SHORT CIRCUIT



TURBO-GENERATOR WITH DISCHARGE DUCT IN REEVES AVENUE POWER PLANT, NORFOLK, VA.

The accident was due to a failure in a 2-in. union in a pipe between the bottom of the drop leg and the steam trap, about 6 ft. from the bulkhead door in the wall of the air duct leading to the generator. This door was necessary for removing condenser tubes. This bulkhead door was built to insurance specifications and was originally a close-fit. A slight inequality in the mason work at the bottom had been produced, however, in removing condenser tubes. Steam from this leak at the union was sucked through the bulkhead door into the air duct and the generator.

The damage to the generator consisted of the burning off of three leads from the terminal blocks. About a foot of 15,000-volt, 1,000,000-circ. mil cable, insulated with varnished cambric and rubber, and flameproof braided, was also melted. The insulation on the end of all coils extending beyond the lamination slots was almost entirely burned off. The heat from the burning insulation fanned by the ventilating air damaged the end shield and the laminations for some distance from the end.

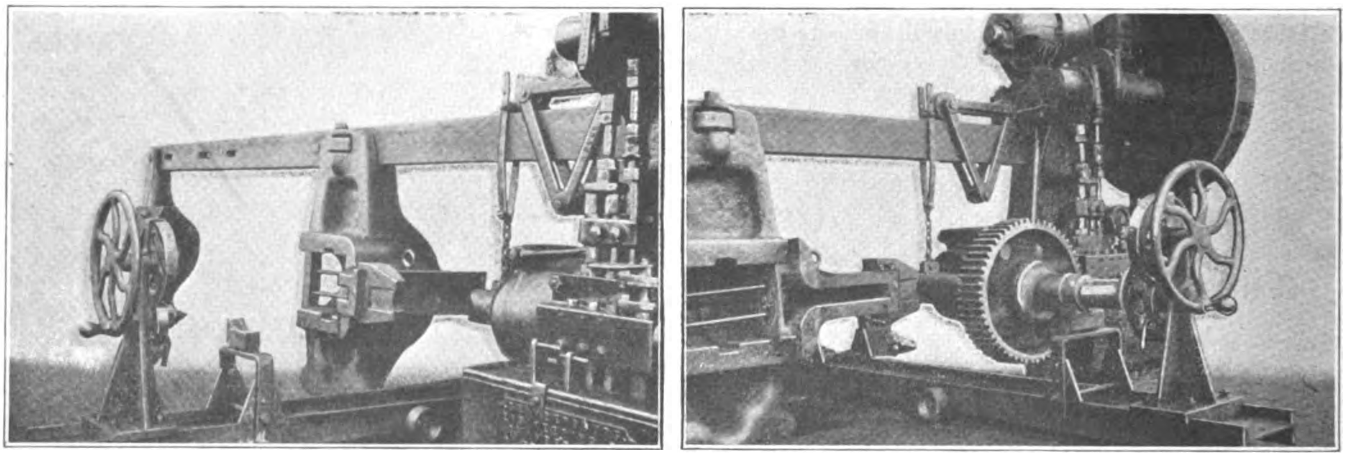
Straightening a Car Axle in Ten Minutes

By Utilizing a Wheel Press for Axle Straightening the Cleveland Railway Has Reduced by Nearly 80 per Cent the Time Required for This Operation

By H. C. Ebeling
Engineer, Cleveland (Ohio) Railway.

THIS company has had very good success with an attachment for use in connection with its wheel press by means of which it has been possible greatly to reduce the amount of time necessary for straightening axles. The equipment is shown in the accompanying pictures.

The equipment consists essentially of three parts: a carriage with centers for supporting the axle and provision for rotating it, a base block mounted on the yoke of the wheel press, and an elongation of the plunger of the press through which the force is applied to the axle.



WHEEL PRESS EQUIPPED FOR STRAIGHTENING AXLES AT HARVARD AVENUE SHOP, CLEVELAND (OHIO) RAILWAY. AT LEFT, VIEW SHOWING THREE ESSENTIAL PARTS OF STRAIGHTENING DEVICE. AT RIGHT, BENT AXLE IN POSITION FOR STRAIGHTENING

The base block mounted on the yoke is provided with movable pillow blocks arranged to receive the axle, while the plunger extension consists of a short shaft having the end which comes in contact with the axle notched to prevent slipping on the latter.

The rotating and supporting mechanism consists of two standards, mounted on a 10-in. I-beam lying flatwise. At the tops of the standards are adjustable centers by which the axle is secured. Connected with one center is a small crank which engages with the projection of a lathe dog clamped on the axle. This center is connected through a pair of gears to a hand wheel by means of which the axle is easily and positively rotated.

Two blocks are provided beneath the axle to take the weight when the axle is removed from the centers. These blocks also assist in testing, as they provide surfaces upon which a straight edge can be laid to be used as a support for the operator's hand. The tests for bent portions of the axle are made by touching the high points with a piece of chalk as the axle is rapidly rotated. The operation of straightening an axle consists simply in applying force, at the high points indicated by the chalk marks, which bends it back toward its original shape.

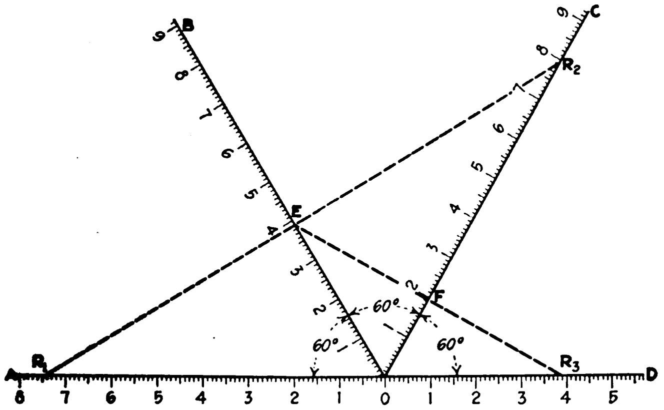
From the description it will be obvious that the operation of testing, pressing, testing again, etc., is a very simple one with this equipment. The operation is kept up, of course, until, in testing, the chalk makes a complete circle around the circumference. In straightening an axle it is not necessary to remove the gear or to remove the axle from the centers when applying pressure.

A casual observer might inquire why a large company like ours does not have a machine designed especially for straightening axles. The fact is that we have such a machine but it is too slow, being fitted with a hand-operated hydraulic ram. When it is used, the axle is supported on pillow blocks near the bend and pressure is applied by means of hydraulic plungers. It takes considerable time and man power to pump up to 5, 10 or 12 tons, and all of this work is lost when the pressure is released and the axle rotated to determine whether or not the bend has been removed. This loss of time and energy is considerable, as an axle must sometimes be tested as many as ten times before it is pronounced straight. With the hydraulic apparatus it required about forty-five minutes to straighten an axle, while now we are able to straighten one in ten minutes, the saving being due in part to the fact that the wheel press is power driven.

Short-Cut for Finding Combined Resistance of Multiple Circuits

Simple and Fairly Accurate Graphical Method for Determining the Value of Several Resistances, Connected in Parallel

WITH certain practical problems, especially those connected with distribution systems, it is frequently necessary to calculate the combined resistance of several circuits connected in parallel. When there are a large number of these circuits, the standard method of calculation becomes somewhat tedious. A considerable amount of this routine work can be eliminated by using the following graphical method.*



GRAPHICAL DETERMINATION OF RESISTANCE OF MULTIPLE CIRCUITS

The method is best illustrated by the solution of a practical problem. Let us find the combined resistance of an overhead trolley system consisting of two trolley wires for two parallel tracks fed from a common feeder. The trolley wires have a resistance of 7½ and 8 ohms respectively and the feeder 4 ohms.

The solution of the problem as indicated in the accompanying diagram consists of drawing four lines with each pair including an angle of 60 deg., along the first line *OA* lay off the resistance of the first trolley wire, 7½ ohms equal to OR_1, then along the third line *OC*, lay off the resistance of the second trolley wire 8 ohms equal to OR_2, draw the line R_1-R_2, this intersects the second line *OB* at *E* and the distance *OE* measured to the same scale as was used in laying off the previous values is 3.9 ohms. This gives the combined resistance of the two trolley wires. Next lay out the resistance of the feeder, 4 ohms along the line *OD* as indicated by the distance OR_2 and draw the line R_3E. This intersects the line *OC* at *F* and the distance *OF* measured to the same scale as the preceding is 1.97 ohms. This is the combined resistance of the three circuits which we are considering. Should there be a fourth resistance in circuit, this is then laid off along the axis *OA* and the operation continued as already described.

Like all graphical methods the accuracy of the result depends to a certain extent upon the scale which is used. This method, however, will be found very convenient for checking results, and where extreme accuracy is not necessary it gives a quick and less tedious method than the usual calculation.

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*This graphical method is a short-cut solution of the algebraic equation of parallel circuits. The theory of the method, as given in a recent issue of the *Revue Generale de l'Electricite* is as follows:

Consider axes of rectangular co-ordinates *OX* and *OY* and draw two straight lines passing through the origin *O* and making an angle of 60 deg. with the axis *OX* as shown in the accompanying diagram.

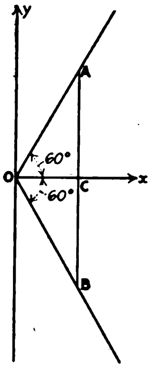
Lay off on these lines two lengths *OA* and *OB* proportional respectively to the resistances R_1 and R_2 of two conductors connected in parallel. The points *A* and *B* determine a straight line *AB* whose equation with respect to the system of co-ordinates is $X\,(R + R_2) - Y(R_1 - R_2) - R_1R_2 = 0$.

The line *AB* cuts the axis *OX* at a point *C*. This intercept may be expressed by the equation

$$x = \frac{R_1R_2}{R_1 + R_2}$$

This may also be written

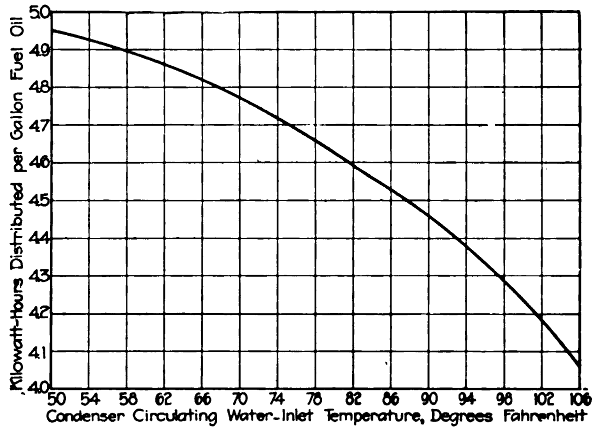
$$\frac{1}{x} = \frac{1}{R_1} + \frac{1}{R_2}$$



This equation is the same as that of the standard formula used for determining the combined resistance of two parallel circuits and shows that the length *OC* is proportional to the resistance of the combined conductors R_1 and R_2 when connected in parallel.

Relation of Intake Water Temperature and Power Plant Efficiency

IN THE ISSUE of this paper for Sept. 21, Hartley LeH. Smith emphasized the importance of the temperature of the intake circulating water in connection with the turbine vacuum and, therefore, the plant efficiency. His point is illustrated by the accompanying "bogie" curve from the Houston Lighting & Power Company, Houston, Tex. This was prepared from the steam curve of the turbine to show the output per unit of force with different intake water temperatures. The percentage by which each day's results are above or below the "bogie" is posted in the turbine room to indicate the actual economies which are being achieved in the station.

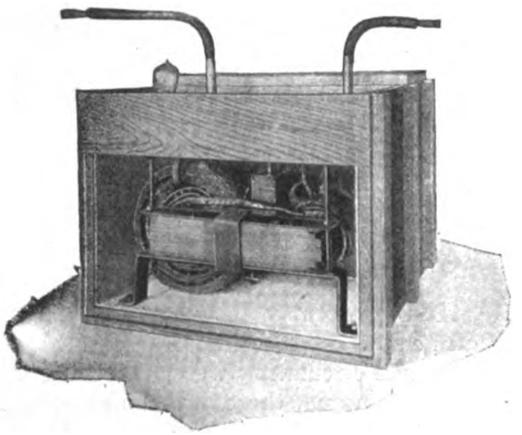


"BOGIE" CURVE OF EFFICIENCY OF POWER PLANT AS INDICATED BY OUTPUT PER UNIT OF FUEL

The New York State Railways, Syracuse lines, is installing an acetylene generator at its Wolf Street shops, for the purpose of supplying gas for cutting and welding. This is being done on account of difficulty in procuring gas, although carbide and oxygen are readily obtainable. A concrete foundation has been placed outside the shop wall to support the generator, which will be covered with a light protecting structure. Heat will be supplied from the hot water system used in the shops. The generator is of the Vulcan "positive pressure feed" type, holding 50 lb. of carbide and producing 56 cu.ft. of gas per hour.

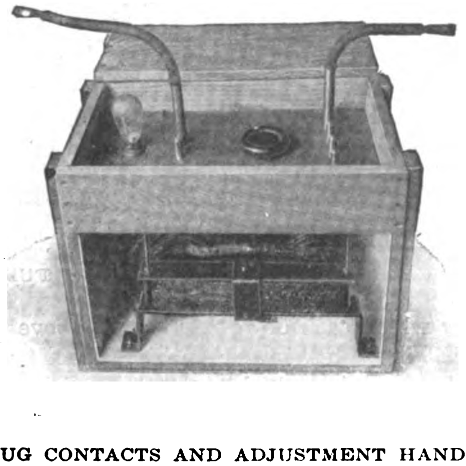
Portable Transformer Used for Electric Arc Welding

A NEW FORM of arc welding equipment for use with alternating current has been placed on the market by the Electric Arc Cutting & Welding Company, Newark, N. J. This consists essentially of an auto-transformer with taps from the various windings brought out and connected to plug contacts. Connections to these are made in a manner similar to the plugging connection of a telephone switchboard. The control of the heat conditions of the arc is made by using a shunt in the magnetic circuit which can be readily moved by an adjustment handle. This feature of heat control maintains a constant power consumption automatically for any given setting. The theory is that constant heat requires constant power, that is, the heat in the arc is the product of both the current and voltage across it.



TRANSFORMER MOUNTING

The following are some of the advantages claimed for this type of machine: (1) Light weight and ease in handling. The largest 60-cycle type weighs 250 lb. and can be handled by two men. (2) No moving parts. (3) Low maintenance cost. (4) High efficiency. The transformer is from 80 per cent to 90 per cent efficient and a pound of mild steel can be deposited by this machine with from 1½ to 2¼ kw.-hr. (5) Machines are designed for use with any alternating-current power supply and for any voltage. (6) Positive heat control, preventing burning of the metal or making of imperfect welds through deficiency in heat. (7) High penetrative qualities for cutting.



PLUG CONTACTS AND ADJUSTMENT HANDLE

Steel Hardening Process Makes Substitute for Manganese Specials

A PROCESS for hardening and carbonizing steel by the direct application of an oxy-acetylene flame is being used with success by electric railways on the Pacific Coast. The most important application of the process made by the United Railroads of San Francisco is its use on special work which has been built up in the shops and which is then substituted for manganese special work. Thus far, crossings so treated are reported as giving service equal to the more costly special steel.

A built-up crossing hardened by this process is said to cost about one-third as much as manganese special work. The oldest crossing on which this treatmen has been used was until recently at Mission and Sixth Streets in San Francisco. It is still in good shape although it has had four years of moderately heavy service.

The process is based on the theory that iron or steel, when brought to a high temperature, will absorb the carbon and other elements necessary to hardening if solutions of salt, sulphate of copper and potassium are applied to the surface in the presence of a hot gas with high carbon content. The tempering is effected while the metal is still hot by chilling it suddenly with water.

The commercial type of oxy-acetylene apparatus is used for heating, and the particular results desired on the metal to be treated are secured by regulating the proportions of acetylene and oxygen supplied to the heating flame. The acetylene gas which carries the highest percentage of carbon has been found to give best results. The proportions of gas in the flame are not important during the initial stages of the heating; in fact, the combination which will produce the hottest flame is generally used. The need for regulation of the flame comes when the metal reaches a high heat and its "pores begin to open" and the affinity for carbon and other elements develops. In this condition the metal has been found to saturate itself with carbon if that element is available. In this "hardening flame" the acetylene gas predominates.

A distinction is made between this process and the common case-hardening methods. The new process is intended actually to alter the chemical composition of the metal treated and the tempering is done as a separate final step in the work. The temper can be made to any degree of hardness, it is claimed, and to any ordinary depth. In the ball of a rail the temper is usually made ⅜ in. deep.

In treating crossings in place it is usually the practice to harden each rail for about 9 in. each side of the crossover. Then where each unit joins rail to rail a length of 6 in. to 9 in. is hardened to insure against breaks at this point. It is claimed that during hardening no expansion can occur in the bolts which might later result in a loosening of the crossing because the high heat is limited to the spot where hardening is desired.

Special work can be treated by this oxy-acetylene method for a cost of about 10 cents per square inch of surface treated. The process has been patented by Nelson H. Bray, San Francisco, Cal.

P. R. T. Acts on Epidemic

Effective Work Against the Influenza Done by the Company by Means of Car Signs and Preventive Measures

WHEN the so-called Spanish influenza, or epidemic influenza as it is now known in this country, made its appearance in Philadelphia late in September, the Philadelphia Rapid Transit Company was one of the first institutions in the city to realize the need for quick action. President T. E. Mitten at once took steps to insure that everything possible be done, not only to prevent the spread of the influenza among the company's employees but in co-operation with the Board of Health, Bureau of Police and Street Cleaning Departments of the city, the most vigorous precautions were taken to protect the traveling public.

Signs were posted in the windows of all the cars, urging the public to prevent the spread of germs by refraining from careless sneezing, coughing or expectorating, avoiding dust and keeping the ventilators open in the cars. The signs attracted favorable comment because of their effectiveness in quieting hysteria and unnecessary fear. A quotation from Doctor William Pepper, Dean of the School of Medicine, University of Pennsylvania reading "Do not get scared to death—many already have been" was used to special advantage in restoring confidence and cool judgment.

Another slogan "Sneeze, cough or expectorate (if you must) in your handkerchief," which has been used in other cities as well, met with quick response on the part of the public.

The company organized a special force of seventy-five men for the purpose of disinfecting all cars at the ends of the lines, with Fer-sul and carbolic acid. Instructions were issued to conductors to keep the car ventilators open and to air the car thoroughly at the lay-over end of the line by opening the doors and end windows of every car.

Motormen and conductors were also cautioned to use their handkerchiefs when necessary to sneeze, cough or expectorate. The need for rigid enforcement of the ordinance prohibiting spitting upon the cars and stations of the company was emphasized and employees were instructed to co-operate with the Police Department to this end.

The company also placed under the direction of the city street cleaning department, six car sprinklers and five wagon sprinklers, which were used continuously night and day for thoroughly flushing streets. These sprinklers also carried large banners reading "Avoid the Dust."

Preventive Methods Among Employees

Among its own employees, the management, by instruction and assistance, left no precaution untried to prevent the spread of the influenza and to relieve those employees afflicted with the disease.

By vigorous follow-up work including the institution of special automobile messenger service between New York and Philadelphia, a supply of a nasal ointment with nasal applicator was obtained in sufficient quantities to distribute one of the nasal applicators and a tube of the compound to each of the 11,000 employees. The ointment known as V. E. M. is a cooling, soothing, mildly antiseptic combination of menthol and eucalyptol (Australian) in a pure hydro-carbon base. No charge was made to the employees for this, and its use was recommended as a preventive.

Flying squads of demonstrators, each consisting of a physician, a nurse and an assistant nurse, were sent out over the entire system, and at each carhouse demonstrations were given as to the method of using the nasal applicator and ointment. These squads at the same time took the opportunity to give talks to the employees on the care of health and the need for cleanliness and general precautionary and preventive measures.

The daily disinfecting of all telephones throughout the company's offices was another one of the preventive measures taken. A circular issue by the Metropolitan

OPEN ALL VENTILATORS
SAYS
DOCTOR PEPPER—U. of P.

AVOID THE DUST
SAYS
DOCTOR PEPPER—U. of P.

To Prevent the Spread of
EPIDEMIC INFLUENZA
sneeze, cough or expectorate (if you must) in your handkerchief. You are in no danger if everyone heeds this warning.
This car is disinfected.
Ventilators must be kept open.
BY ORDER OF **BOARD OF HEALTH**

EPIDEMIC INFLUENZA
DON'T GET SCARED TO DEATH
—MANY ALREADY HAVE BEEN—
AVOID THE DUST—OPEN ALL VENTILATORS—
CLOTHE YOURSELF WARMLY
DON'T SPIT EXCEPT IN YOUR HANDKERCHIEF
CLEAN UP YOUR OWN PREMISES
SAYS
DOCTOR WILLIAM PEPPER
DEAN OF THE SCHOOL OF MEDICINE
UNIVERSITY OF PENNSYLVANIA

SIGNS POSTED IN PHILADELPHIA CARS

Life Insurance Company on what and what not to do when the influenza makes its appearance was distributed to all employees.

The Philadelphia Rapid Transit Company did not lose so many of its employees through sickness as some of the other large institutions in the city and it was able to provide adequate service throughout the epidemic. At the peak of the contagion the largest number out because of sickness was 2100 from a total of about 11,000 employees. Of the 6000 motormen and conductors employed, the highest number reported sick on any one day was 1339.

The company on Sept. 1, 1918, had taken out a blanket policy with the Metropolitan Life Insurance Company insuring in the amount of $1,000 the lives of all employees who became members of the Co-operative Association. Between Sept. 1, and Oct. 15, upwards of forty of these policies became payable because of death. The monthly dues are $1 and none of these deceased employees had paid in more than $2 as premiums. Nevertheless, the sum of $1,000 was paid promptly to the beneficary in each case.

The Health of Women in Railway Service

Woman Specialist in Brooklyn, After Observation of Months, Notes Marked General Improvement In Physical Condition

AN INTERVIEW is published in the October issue of the *B. R. T. Monthly* with Dr. Alice Bowman on the general health of the women conductors employed in Brooklyn. The Monthly explains that Dr. Bowman, who is a woman specialist of long experience, was retained by the company last March to pass upon the physical condition of women applicants for positions in the transportation departments. In connection with this work, and through her association, both professionally and personally, with women in the service, Dr. Bowman has had exceptional opportunities to observe any variations in the health of the women, whether for better or worse, that might occur. She spoke recently with great enthusiasm of the results of her observations. Her remarks, as quoted, follow:

"Speaking generally," she said, "I have observed a remarkable improvement in the spirits of the girls who have entered the transportation service—a marked change for the better in their mental attitude, a broadening in their outlook on life, and perceptible physical improvement in those cases where there was noticeable room for such improvement.

"For women who are strong enough to undertake such work, normally constituted women—and it is the purpose of our examination to eliminate those who are not—the work is not too hard. In the first place, once they have become accustomed to it, the girls really enjoy 'railroading.' There is action to it, motion, change of scene, new faces—the perpetual touch and go of humanity that sustains us all, more or less, and makes life worth the living. These elements compensate for the inevitable irritations that, in common with the men conductors and guards, the girls must encounter, and which are regarded simply as part of the day's work. There is, in short, very little of that monotony which so unfortunately characterizes the average work, whether domestic or industrial, which is performed by the average woman.

"Specifically, my observations have led me to the conclusion that there is nothing in the strictly physical part of the work—the motion or lurching of the cars, the reaching for bell and register cord, the necessity of making their way through crowded cars—that is essentially injurious to the feminine organization. The tensioning of limbs and balancing of body that are called for in moving about in a moving car seemed to have a tendency to strengthen rather than weaken the muscles brought into play, and the open air, enjoyed almost continuously on the surface cars and part of the time on the Rapid Transit lines, brings results in clearer skin and brighter eyes and better lung capacity.

"Three cases that were especially convincing to me were those of girls who were in poor condition, although not sufficiently ill to be rejected on entering the company's service, but who showed really astonishing improvement after anywhere from six weeks to two months on the cars. One of these girls was suffering from anemia, the second from incipient lung trouble, and the third from a bad condition of her skin. All three not only showed great improvement, but all declared that the work on the cars agreed with them better than anything they had ever done before in their lives. All were on the job feeling fit the last time I saw them.

"Another girl I know who liked the work—a typical case, I think—gave it up because of some criticism on the part of her friends, and returned to a factory where she had been working before. It was not long, however, before she was back asking for reinstatement. She declared that the factory work seemed unbearable after 'railroading,' and that she had not felt nearly so well. From then on, as she expressed it, the cars were good enough for her. Incidentally, her husband was in France, and she was supporting her little boy, four years old, and living with her parents. By working extra when she felt like it, she was making regularly from $18 to $24 a week."

Electrolysis of Condenser Tubes

A RECENT issue of London *Engineering* contains the results of an analysis of two cases of condenser tube corrosion made by the Material Prüfungsamt near Berlin, Germany. One brass originally contained the following percentages of metals: Copper, 70.5; zinc, 28.8; lead, 0.21; tin, 0.28; iron, 0.08. The corroded alloy contained: Copper, 97.4; zinc, 0.69; lead, 0.06; tin, 0.46; iron, 0.08. In the other case the original analysis yielded the following percentages: Copper, 59.2; zinc, 40.37; no tin; iron, 0.32; lead, 0.24. The corroded alloy had the composition: Copper, 97.76; zinc, 1.29; no tin; iron, 0.10; lead, 0.05.

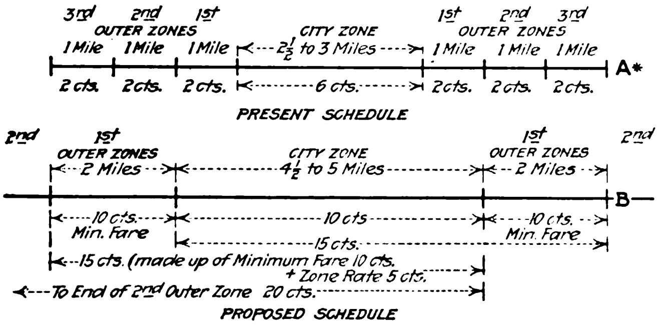
In both cases the corrosion had bleached out the zinc and had also diminished the small percentage of lead, while there was little or no change in the iron. That the ordinary water of the supply main may give rise to considerable differences of electric potential is shown by the water of Charlottenburg, a suburb of Berlin. In this water couples of zinc and brass acquire a potential difference of 0.888 volt. In view of the actual wide uses of substitutes for metals and alloys the Prussian government has drawn attention to the danger of electrolysis.

Bay State Asks 10-Cent City Fare

Suburban Lines Divided Into Zones of Two Miles With Fare of 5-Cent and 10-Cent Minimum—Reduced Rate Tickets to Be Abolished

ON OCT. 11 the Bay State Street Railway of Boston asked for an increase in fares with abolition of all reduced-rate tickets including those sold for off-peak hours. The petition requested authority to put the new fares in operation on Nov. 11. Presumably the Public Service Commission will grant hearings to consider the petition and to hear any opposition.

Briefly, the proposed plan divides the cities into "city zones," approximately 4½ to 5 miles in diameter, in which the fare will be 10 cents, and the interurban lines into 2-mile zones, in which the fare will be 5 cents a zone with a 10-cent minimum fare. The fare schedule, which was adopted June 24, has much smaller city zones, averaging perhaps 2½ to 3 miles in diameter with a 6-cent cash fare, and outer zones of about 1 mile in length with fares at the rate of 2 cents per mile. The accompanying diagram shows the general plan.



CASH FARES, PRESENT AND PROPOSED SCHEDULES ON BAY STATE RAILWAY

The upper diagram shows present cash fares, but certain reduced-rate tickets are sold. The lower diagram shows the proposed schedule of fares. Under this schedule all reduced-rate tickets, except school tickets, are eliminated.

Note: On some of the lines in the present schedule the outer zone rates are 2½ cents and 3 cents per mile.

The proposed schedule also calls for the abolition on all reduced rate tickets with the exception of those sold to school children. The company believes that the use of the nickel and its multiple, the dime, will prove of great advantage from the point of view of simplifying the collection, handling and accounting of its revenue.

In increasing the so-called city zones these zones have in general been increased by taking in the first zone on each side of the former urban zone limit. Beyond the new urban zone limit the zones have practically been doubled in length in comparison with the previous zones. Within the city zones, universal transfers will be given.

The principal reduced-rate tickets which will be eliminated are: All-day city tickets, six for 30 cents; mid-day or off-peak city tickets, six for 25 cents; all-day suburban tickets, seven for 50 cents (good from the city zone to the limit of the first outer zone); mid-day or off-peak suburban tickets, four for 25 cents (good from the city zone to the limit of the first outer zone).

All four of these present reduced-rate tickets are good only to the traffic center.

The company's experience has been that the reduced-rate tickets have not built up traffic, and the city fares were not on the average increased appreciably by their use. The company's present schedule has generally been criticised as being too complicated. The revenue has been unsatisfactory, and it is hoped by the adoption of the proposed schedule greatly to improve the situation.

Where the Bay State lines are in competition with the Boston Elevated Railway, as in Chelsea and Hyde Park, the city zone fare unit is to be established at 7 cents, as in Boston.

The explanation of the plan given to the press by Receiver Wallace B. Donham follows:

STATEMENT OF RECEIVER DONHAM

The Bay State Street Railway Company must have a large increase in revenue immediately, and I am filing a new fare schedule to-day. It has been my intention not to file with the Public Service Commission another tariff revising the fares but to leave this problem to the trustees who are appointed by the Governor to manage the property under the legislation passed last winter. This however turned out to be impossible for several reasons.

In the first place, financial conditions arising out of the war have made it so difficult to raise money, particularly for street railways, that it has not yet been possible to accomplish a reorganization of the property under the public control act. Such a reorganization necessitates raising several millions of dollars. Trustees could not therefore take over the management of the property, and the receivership could not be brought to an end.

In the meantime, the labor situation has developed in such a way as to bring about a crisis, requiring an immediate readjustment of revenue. The Bay State Street Railway employees are to-day getting less compensation than the employees on street railways such as the Springfield Street Railway, Worcester Consolidated and Middlesex & Boston, and very much less than the employees of the Boston Elevated.

It is impossible that this situation should continue long, and I, as receiver, have no funds with which to pay higher wages. If wages are not raised the property cannot continuously be operated because it will be impossible to get men to operate the cars. If wages were raised without an increase in revenue, the property could not be operated because the United States Court which appointed the receiver would not allow me to borrow money for the purpose of paying operating expenses.

Nothing else therefore is possible but an increase in fares and in order to accomplish the result, this increase in fares must be substantial.

The schedule under which the company has been operating this summer has not proved satisfactory to the public or to the employees of the road, and has generally been criticized because it is too complicated. The reduced rate city tickets have not built up traffic and the city fares were not therefore on the average increased appreciably. The city revenue has therefore been unsatisfactory.

The revised schedule filed to-day is drawn with a view to eliminating all possible complications and getting the system on a simple, readily understood and workable system of fares. The city areas are made larger than the city areas in the tariff operated this summer and the country zones are made approximately two miles in length instead of one mile in length. The whole system is then put upon a uniform basis of fares with a 10-cent minimum fare, good in the cities with universal transfers and in the outlying districts good for two zones or any part of two zones with additional fares of 5 cents a zone for rides extending outside the cities or more than two zones in the country. In general, reduced rate city, suburban and workingmen's tickets are abolished.

The present Hyde Park city zone is left as it now exists and the unit fare is made 7 cents because of its proximity to the elevated system. Similarly in the Chelsea system to Scollay Square which is within the limits of the Boston elevated territory, the fare will be by later tariff placed on the same basis as the elevated fare.

Increases in the rates of electric railway fare are not confined to the United States. In Japan the Imperial Government Railway recently made a decided advance which is expected to have a widespread influence in the movement for higher fares throughout the empire.

AMERICAN ASSOCIATION NEWS

War Board Recommends Two Types of Cars to Housing Bureau

IN RESPONSE to the Aug. 19 invitation of Otto M. Eidlitz, director of the United States Bureau of Industrial Housing and Transportation, that the War Board of the American Electric Railway Association suggest a car suitable for use under average city conditions on standard gage track, the majority of the committee appointed for that purpose has recommended two types, "A" and "B," for its consideration.

Type "A" is arranged for both prepayment and side-door pay-as-you-leave operation, with one or two operators on the car. It is 47 ft. 9 in. over all. Type "B" car, which is 47 ft. long, has doors at all corners and is arranged for either one-man or two-man operation. Both cars are designed for train service if desired. The specifications were drawn up by C. O. Birney in co-operation with car builders, electrical manufacturers and others.

As some of the members of the committee felt that wider doors and drop platforms would be more desirable for heavy service conditions, it was moved to appoint a new sub-committee with H. H. Adams as chairman to prepare comparative plans and specifications. The details of membership of this committee were left to the discretion of E. C. Faber, manager of the War Board.

A resolution of appreciation and thanks, proposed by J. H. Hanna, was voted C. O. Birney and his aides for their thorough work in so short a period. A similar motion was proposed by Mr. Faber and carried at the meeting of the sub-committee (Messrs. Lambert, Layng, Birney, Seely and Wells) on Monday, Oct. 14.

The committee members present at the meeting were E. C. Faber, J. H. Hanna, John Lindall, H. H. Adams, M. B. Lambert, J. F. Layng, C. O. Birney and Gardner F. Wells, the latter representing the Bureau of Housing and Transportation. There were also present as guests of the committee J. C. Thirlwall and Walter Jackson.

Pamphlet Gives Testimony on Utility Taxation

THE national committee on public utility conditions, with which the American Electric Railway War Board is associated, has published in pamphlet form a transcript of the testimony given on Sept. 14 by Philip H. Gadsden, chairman of the committee, before the committee on finance, United States Senate, on the war revenue bill. Mr. Gadsden's testimony was a plea for the reduction of the tax of 12 per cent and 18 per cent on net earnings. During this testimony Mr. Gadsden pointed out that the War Finance Corporation in several cases had required companies to discontinue paying dividends when it loaned the money to them, whereas the bill required the companies to pay 6 per cent more on earnings which are not paid out in the form of dividends. In other words, the railways were penalized by the taxing authorities for doing what they were instructed to do by the War Finance Corporation.

LETTER TO THE EDITORS

Further Objections to Proposed Daylight Saving Extension

NEW YORK DAYLIGHT SAVING COMMITTEE
NEW YORK, Oct. 14, 1918.

To the Editors:

In addition to the arguments against the proposed winter extension of daylight saving quoted in the admirable editorial in your issue of Sept 21, there are the following objections:

1. We have no precedent of successful experience of other countries to base an action which, on the very face of it, seems ridiculous, namely to try to save daylight *before* daylight in winter short days.
2. It would throw our time out of uniformity with European time.
3. It would arouse such opposition as would result in killing the summer movement which has been so beneficial.

MARCUS M. MARKS,
President National and New York
Daylight Saving Associations.

Canadian Association Elects Officers

THE Canadian Electric Railway Association met at Toronto, Ontario, on Sept. 17 and 18, with the president, C. L. Wilson, assistant manager Toronto & York Radial Railway, in the chair. On account of war conditions, the usual practice of having papers read and discussed was omitted, and the greater part of the time was devoted to the reading and discussion of the honorary secretary's report on the association's work for the past year, and the discussion of other matters vitally affecting all electric railway companies, such as the necessity for securing increased revenues, etc.

The following were unanimously elected as officers: President, A. Eastman, vice-president and general manager Windsor, Essex & Lake Shore Rapid Railway; vice-president, A. Gaboury, superintendent Montreal Tramways; honorary secretary-treasurer, Acton Burrows, managing director *Canadian Railway & Marine World;* executive committee: E. P. Coleman, general manager Dominion Power & Transmission Company; James D. Fraser, director and secretary-treasurer Ottawa Electric Railway; G. Gordon Gale, vice-president and general manager Hull Electric Company; H. M. Hopper, general manager New Brunswick Power Company; George Kidd, general manager British Columbia Electric Railway; M. W. Kirkwood, general manager Grand River Railway; J. S. Mackenzie, treasurer Winnipeg Electric Railway; R. M. Reade, superintendent city and Quebec County divisions, Quebec Railway, Light & Power Company; C. L. Wilson, assistant manager Toronto & York Radial Railway; assistant secretary, A. A. Burrows, business manager *Canadian Railway & Marine World.*

The American Society of Mechanical Engineers has issued a roll of honor of members in national service. Of the 9141 members of the society 933, or more than 10 per cent, have responded to the country's call.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

No One-Man Makeshifts

Massachusetts Commission Insists that One-Man Cars Must Contain Safety Features

In a decision dated Oct. 10 the Public Service Commission of Massachusetts dismissed a petition of the Connecticut Valley Street Railway for approval of type and use of one-man cars upon its Millers Falls division in the town of Montague and upon its Conway Street line in the town of Greenfield.

WANTED TO USE OLD CARS

The company desired to operate the cars now in use on the Millers Falls division with one man without remodeling, merely closing the rear doors and requiring passengers to enter and leave by the front end. The company maintained that it does not feel that it ought to go to the expense of furnishing new cars for this division under existing conditions. It was a part of the company's plan to provide two men on the morning trip and the late afternoon trip, on which workmen are taken to Millers Falls, and vice versa at night, by utilizing as a spare conductor one of the passengers who is an ex-employee of the railway.

The commission is of the opinion that the use of old and inappropriate equipment for one-man service on such lines is apt to prove disappointing to both patrons and company. The chief question in the case is that of safety of operation, as the traffic is light except when the company plans to provide two men. The operating conditions on a portion of the route, at the Turners Falls end, are unfavorable, in the commission's view, on account of the presence of a long and comparatively steep grade with a 90-deg. turn about 600 ft. from the bottom. The decision says, in closing:

WOULD ENCOURAGE ONE-MAN CARS

"The commission is fully aware of the financial straits in which many railways now find themselves, under war-time prices and wages. It is our belief that one-man operation ought to be encouraged, and the commission is ready to approve the use by the petitioner upon its Millers Falls division of new one-man cars of modern design, or of old cars properly reconstructed for such use. It is possible, indeed, that all the special devices above described (the usual complete safety and automatic features of the safety car) would not be necessary, and any plans for simplified reconstruction which the company may desire to submit will be received and reviewed without prejudice.

"It is our information that reasonably prompt deliveries can be expected, either of new equipment or of apparatus necessary for reconstruction purposes. After careful consideration, however, the commission is not willing to approve the mere elimination of the conductor, without any adaptation of the existing cars for one-man operation. We reach this conclusion not only because of the recently demonstrated danger of operation upon the line in question, but because of a belief that it would not be a desirable precedent to set.

"The companies in other parts of the country which have derived financial advantage from one-man operation have gained not only from the saving of labor, but also, and in perhaps greater degree, from the improvement of service which it has made possible. There may be lines where the makeshift arrangement proposed by the petitioner may reasonably be permitted, but in the great majority of cases it would, in our judgment, be inconsistent with both the public and the company's interest. The petition is dismissed."

Interurban Strike Settled

The strike of platform men employed on the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., on its interurban lines between Erie, Pa., and Buffalo, declared at 4 a.m. on Oct. 3, was called off two days later when George E. Bullock, receiver for the company, agreed to submit the wage question to the War Labor Board for a decision. The men had been receiving 40 cents an hour. They demand an increase of 8 cents an hour. An offer of 45 cents an hour made by Mr. Bullock was rejected.

Although the strike was called off by the trainmen on Oct. 5, the company was unable at once to operate cars from the Buffalo city line to its Main Street terminal, a distance of almost 5 miles, because of the strike in the power houses of the International Railway, Buffalo, which supplies the company with power. This situation has been remedied and now the company is operating cars along its entire route. For a short time after the strike was settled, no cars were operated between Buffalo and Dunkirk because Receiver Bullock said the traffic did not warrant the service. The Buffalo & Lake Erie Traction Company is now the only interurban line entering Buffalo. No cars of the Buffalo, Lockport & Rochester line operate over the International lines between the Lockport city line and the Buffalo interurban terminal. Buffalo, Lockport & Rochester cars stop at the Lockport city line.

War Labor Board on Rates

Indicates That Where Labor Opposes Fare Advances It Will Nullify Wage Awards

Plain indication was given on Oct. 8 by the National War Labor Board that in cases where organized labor opposes advanced electric railway fares recommended by the board in connection with increased wages awarded to employees of public utility companies, the entire award will be suspended.

THE BOARD'S LETTER

In this connection the board made public a letter to John R. Alpine, acting president of the American Federation of Labor, calling his attention to the fact that labor organizations in New Orleans were planning to oppose increased fares recommended by the board when it granted an increase to the railway employees there. The letter of Messrs. Taft and Walsh, joint chairmen of the board, follows:

"We are advised that an organized labor meeting is to be called in New Orleans to protest against a recommendation made by us as arbitrators in the issue made by complaint of street railway employees of the Amalgamated Association against the New Orleans Railway & Light Company.

"In that case we made a very substantial increase in the wages of platform men, equal to approximately 70 per cent, and in order that the company might have the money with which to meet this very great increase in its operating expenses we recommended to the local municipal authorities that there be made an adequate increase in the rates of fare. This matter was brought to the attention of the Municipal Council on the application of the railway and in the face of our award was resisted by the president of the Local Amalgamated Association and by other representatives of the local organizations affiliated with the American Federation of Labor.

MAY SUSPEND AWARD

"We are advised that on Sunday, Oct. 6, a meeting of organized labor is to be called to protest against compliance with our recommendations as to the increase in fare. If this action is taken by the labor organizations it would seem that in justice we shall be compelled to suspend the entire award, including the increase in wages, pending a rehearing of this matter which we now have under advisement.

"We trust that you will take whatever action you may be advised will fit the situation."

The rate matter is referred to on page 717 of this issue.

Boston Accepts Wage Award

Trustees Recognize Ineffectiveness of Increase in Unit Fare and Start Zone Fare Studies—Messrs. Richey and Witt Retained

The board of trustees of the Boston (Mass.) Elevated Railway at a regular meeting on Oct. 8 accepted the award of Messrs. Taft and Walsh on the application of the employees for increased wages. It is understood that the local carmen's union has also accepted the award.

WAGE INCREASE $3,000,000 A YEAR

Officials of the company estimate that the increase in the rate of wages granted by this action of the War Labor Board will be in the neighborhood of $3,000,000 per annum. With the adjustments in the wages of other classes of employees which are bound to follow, and which are in principle accepted by the board of trustees, the total increase is likely to exceed the sum named.

Now that the award of wages has been made, and as soon as the application of the same can be figured out, it will be the policy of the board of trustees to make regular monthly publications, beginning as soon as possible with the figures for July, August and September, of all receipts and expenses incident to the operation of the property. In this connection Stanley R. Miller, of the trustees for the public operation of the railway, has made the following statement:

"It is obvious that with the disappointing increase in revenue which has followed the increase in the fare unit, the showing for the first quarter will be very poor. In particular, the statement for the month of July is certain to be almost disastrously bad, because in that month were some unusual expenses while the fare increase did not become effective until Aug. 1.

"The trustees are confronted with an extremely difficult and serious problem. They are required by law to establish rates of fare sufficient to meet the cost of providing service. When they assumed office it was very evident that a crisis was at hand and quick action was imperative. Acting on the best advice then obtainable, the fare unit was increased from 5 cents to 7 cents, the increase taking effect on Aug. 1. The effect of that increase upon the actual revenue received has already indicated the necessity of some further very radical action in the matter either of the rate of fare or the entire basis of fares. It is obvious that there must be a very large increase in the company's revenue.

TOTAL NEW EXPENSES $7,500,000

"Speaking roughly, the trustees are confronted with new expenses and financial requirements chargeable against the cost of operation, expressly required by the statute, amounting to $7,500,000. This sum is made up of the $3,000,000 wage increase, an item of additional depreciation of substantially $1,600,000, an additional rental charge on account of the Dorchester subway of $400,000, increased cost of coal $500,000, interest and dividend charges upon recent issues of bonds and the new preferred stock of the Boston Elevated Railway of $300,000, 5 per cent dividend upon the common stock of the Boston Elevated Railway of about $1,200,000.

"The increase in the fare unit from 5 cents to 7 cents on Aug. 1 was followed by an increase in revenue of $368,000 for the month of August, which was 23.79 per cent more than the revenue in August, 1917.

"In September the revenue increase was $186,000, or 12.15 per cent. For the first ten days of October there has been an actual decrease in revenue as compared with the same period of 1917. It should be pointed out that the low rate of revenue increase in September and the actual decrease suffered in October have undoubtedly been due in a considerable measure to the epidemic of influenza recently prevalent.

"The trustees have no option under the law but to establish rates of fare of some kind that will, in their judgment, meet the cost of service. Any deficit which results if such cost of service is not covered is in the first instance reimbursed to the company by the Commonwealth, and later pro-rated by the Commonwealth on the cities and towns served by the elevated. The question, therefore, is a very intimate one for every taxpayer of the Metropolitan District.

"Recognizing the evident ineffectiveness of the mere increase in the fare unit, the trustees have inaugurated searching investigations as to various possible other means of fare collections. It is in the mind of everybody that the zone system of fare charges should be carefully considered in its possible application to the Boston situation. Professor Richey has already been giving considerable time to this question, and Peter Witt, Cleveland, Ohio, will come to Boston to make an exhaustive study and recommendations."

The wage rates just referred to are fixed for the period of the war only. The Boston five-year graduated scale is cut down to a graduated scale covering the first three months, next nine months and thereafter. The wage scales in cents per hour are compared in the accompanying table.

Surface lines, motormen and conductors:	Award of War Labor Board	1918 Wage Scale by 1916 Agreement, Established Scale	Total, Incl. War Compensation of 2 Cents per Hour
First three months' service	43	30.25	32.25
Next nine months' service	46	30.5	32.5
Thereafter	48	31.75–35.5	33.75–37.5
Rapid transit lines, motormen:			
First three months' service	45	33.75	35.75
Next nine months' service	48	33.75	35.75
Thereafter	50	34.5–37.5	36.5–39.5
Rapid transit lines, guards:			
First three months' service	43	29	31
Next nine months' service	43.75	29	31
Thereafter	44.5	30.5–32.00	32.5–34.00
Rapid transit lines, brakemen:			
First three months' service	40	25.5	27.5
Next nine months' service	41	25.5	27.5
Thereafter	42.5	26.75–28.25	28.25–30.25

In the 1916 agreement column, the established scale after the first year ranged between the rates shown, extending from the second to the fifth year inclusive, subsequent rates being those of the fifth year. The War Labor Board's award wipes out four of the five years of the sliding scale agreed upon between the company and the union, and scheduled to run from 1916-1919. The wages in the 1916 column are those the company was paying in 1918. By that agreement there were progressive increases from year to year. The actual rates paid in 1916 are not shown, the comparison being merely between the 1918 rates and the award of the War Labor Board. The war compensation added to the rates in the second column, 2 cents an hour, was awarded by Henry B. Endicott in 1918 in a special arbitration between the company and the union. This flat increase when added to the second column gives the actual rates the employees tabulated were receiving prior to the War Labor Board's award.

The wages of employees other than those fixed above were increased by 28 per cent, in the board's award, and in any case where this percentage increase did not bring the wage up to a minimum of 42½ cents an hour, that minimum was established by the War Labor Board in the case of all adult male employees and of women employed in the same classification as men, the women receiving equal pay for equal work. Two instances of the striking increase of pay granted to miscellaneous employees follow: Porters received 22½ cents an hour, and now receive 42½; car cleaners received 26 cents an hour, and now receive 42½. This is a weekly increase of $14 for porters and of $10.23 for cleaners.

Another important recommendation of the board was that for the duration of the war the agreement as to schedule runs on both the surface and the rapid transit lines be modified so that 55 per cent instead of 70 per cent of the schedule runs are to be laid out with outside time not to exceed eleven hours. The award is dated Oct. 2, 1918, and takes effect as of June 15, 1918, continuing for the duration of the war with a provision for reopening by either party at six months' intervals, beginning on April 1, 1919.

St. Louis Franchise Settlement Rejected

New Ordinance Not Sufficiently Flexible, Says Company President, Who Sees Breakdown of Commission Regulation

The franchise settlement ordinance of April 10 has been rejected by the United Railways, St. Louis, Mo. This was made known by the company through a letter addressed on Oct. 8 by President Richard McCulloch of the company to Mayor Kiel. The reasons for rejection as summarized by President McCulloch are as follows:

CONDITIONS HAVE CHANGED

1. Fundamental conditions have so changed that the company confesses its inability to give St. Louis and contiguous territory adequate transportation facilities under the ordinance of April 10.

2. The growth of government ownership since the war began indicates that every facility for the public operation or ownership of these railways should be provided in any settlement ordinance; the present ordinance is not sufficiently flexible in these respects.

3. Street railway service should be sold at cost. Lowest cost will result from a public guarantee of integrity of investment and interest thereon; the present ordinance does not permit this result.

4. An equitable adjustment of the company's capitalization cannot be made under this ordinance.

The ordinance known as the "compromise ordinance," affecting the relations of the city of St. Louis and the United Railways, after being passed by the Board of Aldermen, was signed by the Mayor on April 10. The conference and hearings on the ordinance were begun in 1916, and have been reviewed in the ELECTRIC RAILWAY JOURNAL. In his letter to the Mayor President McCulloch said in part:

"This country had not at that time (the start of negotiations) entered into the world war. Regulation of street railway rates by commissions was then thought practicable and sufficiently responsive to moderate changes in expenses and cost of service to meet all reasonable requirements. Public ownership appeared many years off and an issue to conjure with rather than to consider seriously.

CONCESSIONS BURDENSOME

"In the progress of the settlement conferences, representatives of the railway conceded many matters which they believed at the time to be of importance. We felt that we were justified in traveling far along the road required to meet your views and those of your associates in the administration to the end that harmony might finally result.

"While the ordinance was in the Board of Aldermen fundamental conditions began to show changes visible even to the layman. Prices of all commodities showed a heavy upward trend. With the rise of commodities there came increases in cost of living. Fairness to labor required that wages be largely increased. With the general rise in commodity prices and wage level, there came the increased cost of capital. Interest rates have gone so high that little capital for the extension of our railway system could be obtained on the basis contemplated as fair at the time that the ordinance was first discussed. In the light of present conditions and those likely to obtain during the war readjustment period, it now appears that we would have misled not only ourselves but also your administration and the public with respect to improved street railway facilities in St. Louis and contiguous territory. The ordinance of April 10 could not have accomplished its expected purpose.

COMMISSION REGULATION HAS FAILED

"In Massachusetts, where regulation of street railways has been practiced the longest, it has been determined that commission regulation failed. It cannot meet the crisis of rapidly changing conditions. It has proved satisfactory neither to the public nor to the investors. It failed to provide the facilities to which the public believed they were entitled. It failed to give to the investors that certainty of return which they were led to believe was rightfully theirs because of the State supervision of issue of securities and the limitation of profits to mere legal interest rates.

"The operation of the steam railroads and the lines of wire communication by the federal government has been made necessary by the war. There, too, in the case of the railroads regulation by commission failed to carry them over the crisis. There are many thoughtful people who see the necessity of public ownership of municipal and intercity public utilities. The public will decide this question and decide it right. But the franchise of April 10, 1918, did not make it easy or convenient for the public to assume the operation either with or without public ownership of the railways. In this respect, the ordinance was defective judged from present-day standards and would likely have been found to be unsatisfactory both to the public and to the company.

"Public utilities have suffered large losses in earnings since the war began. Variation in earning power makes an industry hazardous from the investors' viewpoint. Certainty of return makes an industry stable. Low interest rates are associated with stable earnings, and high interest rates with hazardous industries. Where the nation, state or municipality, guarantees the return, capital can be cheaply obtained. The best present-day thought is that the making of such guarantees in respect of public utilities is a proper function of government.

"If for the time the public wishes the street railways in St. Louis and contiguous territory to be privately owned and operated under a service-at-cost plan, then any street railway settlement ordinance should provide for making the cost a minimum. This can be done only by arranging for the public guarantee of operating expenses, taxes, allowances for future replacements and a return upon the money fairly invested in the enterprise. On no other basis could the public expect good service. And on no other basis would the company be justified in entering into new arrangements which involved an undertaking to expand the present facilities. The financial structure of the company cannot be permanently adjusted under the ordinance of April 10.

A MODERN SETTLEMENT NECESSARY

"For these reasons, the United Railways respectfully advises you that the ordinance of April 10 cannot be accepted by the company, and is hereby declined.

"We think that we are cognizant of the transportation requirements of the city of St. Louis and contiguous territory. We know that the present disturbed conditions are satisfactory neither to the public nor to the investors who have provided such facilities as you now enjoy. The best interests of a Greater St. Louis require that a modern settlement be reached involving conditions that will be readily approved by the public. We stand ready to discuss the subject and continue the discussion until a fair arrangement has been concluded."

Status of St. Louis Wage Question

The United Railways, St. Louis, Mo., has refused to accede to a proposal made by the local union that the wage scale now in existence be abrogated and that hearing be held before the War Labor Board to determine if the men are entitled to an increase in salary. The present wage scale of the company was agreed upon by both sides June 1, when, at a conference of the company officials and the officials of the newly formed union, the strike was formally settled. More than a month ago the employees through their union asked that the wage question be left to the War Labor Board. This request was rejected. Following this refusal the employees appealed to the War Labor Board in a letter from A. O. Piant, president of the union. The secretary of the War Labor Board then mailed a copy of this letter to the United Railways and asked if the company would submit to the conference suggested. The reply of the company, while it does not refuse to arrange a conference, sets forth the reasons why the company cannot entertain a proposition dealing with any increase in salary. It suggests that the employees make their request to the Public Service Commission at the time that the petition of the company for another increase in fares is heard.

Buffalo Strike Unsettled

Company Making Effort to Operate, But Mayor Seems Determined to Force Receivership

Three plans are being advanced to end the strike of employees of the International Railway, Buffalo, N. Y., and thus bring about a complete resumption of service in Buffalo, Niagara Falls and Lockport and on the Olcott division of the International lines. They are all suggested by members of the City Council. Two have the approval of the International Railway while one is being opposed by the company.

The plan opposed by the company is that being carried out by the Mayor and one member of the City Council. Justice Louis B. Marcus of the Supreme Court of Erie County issued a writ of mandamus directing the company to start the operation of cars on all of its lines at noon on Oct. 10. The judge said that failure to operate cars would force him to apply to the United States Court for the Western District of New York for the appointment of a receiver to operate the line. An appeal was taken to the Appellate Division of the Supreme Court at Rochester and a stay was granted. The Appellate Division affirmed the decision of Justice Marcus and a further appeal has been taken by the company to the New York State Court of Appeals. Arguments were set to be heard in Albany on Oct. 18. If the Court of Appeals affirms the judgment of the lower court, the case may be carried to the United States Supreme Court.

Despite the efforts of every daily newspaper, the Chamber of Commerce, the Retail Merchants' Association and other commercial organizations to have the Council enact an emergency ordinance which would end the strike at once, the Mayor says he will hold out indefinitely.

The two plans for a settlement which have the approval of three members of the City Council and officials of the railway provide for partial reorganization of the company and a 6-cent fare. The first plan provides for the enactment by the City Council of an emergency resolution allowing the company to collect a 6-cent fare from passengers pending an investigation into what should be a reasonable rate of fare by the Public Service Commission of the Second District and the giving of rebate slips for 1-cent to all passengers who pay the 6-cent fare. These rebate slips would allow passengers to get a rebate of 1 cent if the State Public Service Board holds that a 5-cent fare is just and equitable.

This plan also provides for the appointment of additional members to the board of directors of the company by the City Council. Under this plan, which has the approval of E. G. Connette, president of the International Railway, and the directors, the strikers would receive the wage award of the War Labor Board and they would also be guaranteed by the company the back pay to June 1, computed on the basis of the award of the War Labor Board. Approval of this plan by the Council would not be subject to a referendum of the voters at a special or general election in the same manner as the first 6-cent fare resolution enacted by the Council and later rejected by the voters.

The second plan, which also has the approval of the company and is favored by three members of the City Council, likewise provides for an emergency 6-cent fare ordinance with a 1-cent rebate slip, but other provisions differ from the first plan. This plan provides for a board of three to operate the road, each to receive a salary of $1,000 a month. One of these commissioners would be named by the city; the second by a Supreme Court justice and the third by the railway. This plan would remain in force until May 1, 1920. The Milburn agreement, under which the company now operates, would be in effect again after this date with all of its previous fare and franchise restrictions.

The company has made an effort to operate cars. In fact, it has been operating cars since the strike to the extent that it could secure men for the purpose.

P. R. T. Urges Employees to Buy Liberty Bonds

T. E. Mitten, president of the Philadelphia Rapid Transit Company, on Oct. 1 sent to all employees of the company a letter reading as follows:

> The average pay of this company's employees has been advanced over 90 per cent since June, 1913.
>
> The average cost of living has here been increased 66 per cent since June, 1913. (Cost of living, as published by the Bureau of Labor Statistics.)
>
> Secretary McAdoo is quoted as saying that "Those who spend everything they earn are not only living in a fool's paradise, but they are doing a grievous injury to their country. They are living in a fool's paradise because the same degree of prosperity cannot be expected to continue upon the return of peace."
>
> For your own sake and the sake of the future of your family—*SAVE NOW*.
>
> For the sake of your country in its hour of need, invest your savings in Liberty Bonds. The government wants all the money we can spare to help win the war, and will pay us 4¼ per cent interest.
>
> Those of us who stay at home and earn these good wages must now come forward and do our part.
>
> The management earnestly requests that you sign the inclosed order on the treasurer for 10 per cent of your pay for the six months beginning Oct. 12, and return this order in the inclosed envelope. The result will be a subscription of over $500,000 to the Fourth Liberty Loan, and a very substantial addition to your savings account.
>
> Let us all now sign up and show our patriotism in this unmistakable way.

On Oct. 13 a second letter was sent, explaining that up to that time some 3000 subscriptions had been received. It stated, however, that for those who desired to adopt such a plan the payments for the bonds need be only 5 per cent rather than 10 per cent of the wages per month, the payments to continue over a year instead of six months. This plan, it was explained, would apply to all applications filed unless the treasurer was otherwise directed in writing.

The men have responded very generously with their subscriptions.

Seattle Sale Attacked

Municipal Ownership Advocate Sees City Piling Up Deficit of $1,590,000 Annually on Present Basis

Oliver T. Erickson, one of the strongest municipal ownership advocates in the City Council of Seattle, Wash., and the backer and supporter of the present municipal railway in Seattle, has attacked the city's pending deal to pay $15,000,000 for the railway lines of the Puget Sound Traction, Light & Power Company. Mr. Erickson after investigation expresses the belief that $15,000,000 is more than the property is worth. He fears that an effort to operate the system on the basis of the purchase price so far discussed may prove a "black eye" for municipal ownership. He states that on a 5-cent fare basis there is a possibility of a deficit of $1,590,794 annually. When the negotiations for the property were under way, Mr. Erickson was out of the city.

SKEPTICAL ABOUT INCREASED FARES

Mr. Erickson says the vital question is not what the lines cost, or what it would cost to duplicate them, but whether the city can take them over on such a valuation and operate without piling up losses. He says:

"What may be done with fares above 5 cents is problematical. Increasing revenue by increasing fares has a very limited range, due mostly to the advent of the automobile. The $750,000 interest charge, of course, would begin to decrease after five years, and other expenses may decrease, but that leaves plenty of room for speculation."

In replying to Councilman Erickson's statements, Mayor Ole Hanson says that he is preparing a detailed reply to show that the city is making a good deal in buying the traction property. Thomas F. Murphine, Superintendent of Public Utilities, is preparing a statement to combat Mr. Erickson's figures.

Due to the time required in checking up the traction properties, city officials stated that it would probably be Oct. 15 before the accountants at work on the books had completed their work.

Walter F. Meier, Corporation Counsel, has been instructed by the City Council to prepare an ordinance authorizing the issuance of the bonds, and the formal transfer of the property. The bonds will be for twenty years and bear interest at 5 per cent.

SUBURBAN LINE OFFERED

The Seattle & Rainier Valley Railway recently made its first definite offer to sell the line to the city of Seattle. The property was tendered to the city for the sum of approximately $1,600,000. Acceptance of the offer, however, has not yet been determined upon. President Sampsell presented a statement showing that the company has outstanding securities of $1,755,443, but states that he is willing to turn the property over to the city at a sum approximating $1,650,000, accepting 5 per cent bonds in payment.

Chicago Staggers Hours

Follows the Lead of Washington and New York in Attempt to Spread the Rush-Hour Peak

The spread of Spanish influenza in Chicago, Ill., led to the prohibition of smoking on cars during the week ended Oct. 12 and is likely to bring about the staggered-hour plan of opening and closing a number of large establishments.

At a meeting of national, state and city members of the influenza commission on Oct. 14, the prohibition of smoking was agreed to as a very necessary measure to prevent the spread of this disease.

On most of the elevated lines there has always been a special smoking car on each train. The new rule against smoking will make these extra cars available for general service and it is expected that the order will thus relieve congestion.

On the surface lines smoking has always been permitted on the front platform. The medical authorities agreed that there was an unusual amount of expectorating by smokers and this had a tendency to spread influenza and other diseases. The officials of both companies were agreeable to the change and the commissioner of health announced that it would become effective at once. The rule will be enforced by the police department.

As a first step in the line of staggered hours for opening and closing, the managers of the State Street department stores announced that they would have their employees report for duty in three shifts, instead of one. A concerted effort will be made to have this system extended in all industrial establishments in the loop district, including the big stores and downtown factories. This move is being promoted by the Association of Commerce, the Illinois Manufacturers' Association, the Office Building Managers' Association, and the State Street merchants. It is expected to have a considerable effect in reducing the peak load mornings and evenings.

Favorable Action on D. C. Belt Line

A favorable decision has been reached by the War and Navy Departments for the establishment of a belt line at Washington, D. C., to relieve electric railway congestion in the center of the city and to accommodate government workers in West Potomac Park. The plan for this belt line formed the subject of a section of the reports of John A. Beeler to the Public Utilities Commission during the summer.

Objection to the plan was made, especially by the War Department, in that it called for the laying of car tracks on B Street through a portion of the Mall, which, officials thought, would mar the beauty of the park. This objection was withdrawn on Oct. 6. The line will be used by both the Capital Traction Company and the Washington Railway & Electric Company.

It is understood that official objection to the plan was withdrawn in the face of the pressing public necessity for better electric railway facilities. The plan involves the laying of new tracks over a portion of the route. The government will either construct them or guarantee the cost.

The District Commissioners have turned the matter over to the Bureau of Industrial Housing, Otto M. Eidlitz, director, who has full power to build any railway necessary to accommodate war workers.

Agree on Pittsburgh Wages

At meetings on Oct. 2 motormen and conductors of the Pittsburgh (Pa.) Railway voted to accept an increase in wages making the maximum pay 48 cents an hour, and agreed to consent to temporary changes in the schedules. The men agreed also to work such hours as are deemed necessary in carrying on the war work of the district.

Effective on Sept. 16 the receivers for the company agree to the following changes in wages:

Present wages: First six months, 37 cents an hour; second six months, 39 cents an hour; second year, 41 cents an hour; third year and thereafter, 45 cents an hour.

New wages: First three months, 43 cents an hour; next nine months, 46 cents an hour; first year and thereafter, 48 cents an hour.

News Notes

Portland May Employ Women.—The Portland Railway, Light & Power Company, Portland, Ore., is considering the employment of women. The matter is being taken up with the employees.

Influenza Stops Road.—So serious were the inroads made among its employees by the Spanish influenza that the Brattleboro (Vt.) Street Railway, included in the system of the Twin State Gas & Electric Company, was compelled to suspend service on Oct. 11.

Labor Matters Adjusted.—All misunderstandings between the employees of the Seattle & Rainier Valley Railway, Seattle, Wash., and that company, which threatened to cause a strike, have been settled satisfactorily. Back wages will be paid the men for the month of August. If the city of Seattle does not purchase the railway, as is now contemplated, the matter of an increase in wages will be referred to the War Labor Board.

Examinations for Car Equipment Inspectors.—The United States Civil Service Commission announces an open competitive examination for senior inspector of car equipment. Applicants must be between twenty-five and sixty years of age, have had at least five years' experience as master mechanic, master car builder, general car foreman or similar service, and within two years preceding the date of application have been in active service in such capacity. Applications must be filed with the Civil Service Commission, Washington, D. C., by Nov. 12. The work is to be with the Interstate Commerce Commission.

New Working Terms Wanted.—A ten-hour work day is asked by the motormen and conductors of the Washington Railway & Electric Company, Washington, D. C., in an agreement which they have submitted to the company. A letter accompanying the agreement asks that representatives of the union be granted a conference with officials of the company to consider the terms of the memorandum. No changes in the wage scale are asked for, the company having recently put into effect a new scale of 43 cents an hour for the first three months, 46 cents an hour for the next nine months and 48 cents thereafter.

Portland Wages Before Board.—The matter of allowing a 60 per cent increase in wages demanded by interurban train operators employed by the Portland Railway, Light & Power Company, Portland, Ore., will be decided by the War Labor Board. A review of the testimony has been forwarded to Washington, D. C. Franklin T. Griffith, president of the company, in testifying stated that the men have already been granted substantial increases and that their new demand, if granted, would mean an increase of 128 per cent over what was paid in June, 1917. The application for an increase was filed by the trainmen, engineers and conductors on a basis of 79 cents an hour for conductors, 53 cents for brakemen, 73 cents for motormen and 53¾ cents for trolleymen. The present scale is 48½ cents for conductors and motormen.

Wages and Fares Coupled.—A delegation representing employees and officials of the Springfield (Mo.) Traction Company, waited on the City Council recently with a request to make an appointment for the purpose of discussing the new demands of the railway workers for an increase in wages. All the members of the delegation assured the Council that the negotiations between the employees and the company for an increase in compensation are of an entirely friendly nature. E. C. Deal, general manager of the company, intimated that the only means apparent to the officials of the company by which to raise the money to pay the increase demanded would be through raising the fares. Mr. Deal said: "It is a matter in which all the citizens of Springfield are interested and our suggestion is that a committee of prominent citizens should be appointed to look into the question and make a report recommending the proper course to pursue."

Financial and Corporate

Receiver Fagan a Fighter

Stands Out Stoutly for What He Regards as the Best Interest of Pittsburgh Railways

Charles A. Fagan, one of the receivers of the Pittsburgh (Pa.) Railways, on Oct. 8 in the United States District Court filed a petition and answer dissenting from the answer of his colleagues, J. D. Callery and H. S. A. Stewart, who had replied to the recent petitions of the Colonial Trust Company and the Union Trust Company, trustees, demanding payments of about $100,000 in the way of fixed charges.

WOULD CONSERVE FUNDS

Mr. Fagan thus continues his opposition to the expenditure of funds in the hands of the receivers of the Pittsburgh Railways for fixed charges and interest due bondholders of underlying companies, in the face of the uncertain results from the 7-cent fare, the recent annual wage increase of approximately $450,000, and the paramount need of rehabilitating the system.

The majority receivers concurred in the filing of the answer, so far as admitting that the amounts were due. Receivers Callery and Stewart did not state specifically in their answer that they believed that the money should be paid to the bondholders represented by the trust companies.

The petitions demanding that the interest due the bondholders of the Washington & Canonsburg Street Railway and the Pittsburgh & West End Passenger Railway, Oct. 1, 1918, be paid were filed in the United States Court. The petitioners alleged that the two underlying companies were operating on a profitable basis and that the receipts in the hands of the receivers from the two systems were sufficient to pay the interest due. The amount involved is said to be $100,000.

RECEIVERS HAVE $1,118,053

Mr. Fagan declared that it was impossible for the receivers to ascertain what portion of the funds in the hands of the receivers had been derived from underlying companies. He said that the funds in the hands of the receivers on Sept. 5, 1918, are $1,118,053, and that the funds belong generally to all the creditors of the Pittsburgh Railways and not to any one creditor. He further avers that the receivers are under contract with the public to return excess money in the event that the Public Service Commission reverses the 7-cent fare schedule.

In his petition Mr. Fagan said:

"If all the fixed charges due and past due against the Pittsburgh Railways are paid and the court should order the expenditure of funds which municipalities have asked for improvements and if the receivers should expend the money already ordered by the court for improvements, the receivers would have insufficient funds to carry out their plans."

Mr. Fagan has asked that the court order a general survey of all the fixed charges of the Pittsburgh Railways past due, and determine what funds are necessary to be retained to make the betterments and improvements ordered by the court. He has asked further that some system be adopted by the receivers, with the approval of the court, by which such portions of the fixed charges shall be paid by the receivers as they fall due. He has still further asked that the court make an order by which the receivers shall be guided in the payments of fixed charges so that all creditors of the Pittsburgh Railways may be treated on equal basis.

Petaluma Sale Oct. 29

To aid in the reorganization of the Petaluma & Santa Rosa Railway, Petaluma, Cal., the reorganization committee on Oct. 8 asked authority from the State Railroad Commission to bid the property in and to pay off certain indebtedness. The reorganization committee is composed of Rudolph Spreckels, Frank A. Brush, George P. McNear, Allen I. Kittle, W. H. Hamilton, Russell Daurie, H. P. Goodman, James Otis and L. B. Maclay, and they have incorporated the Petaluma & Santa Rosa Railroad under the order of the Railroad Commission made on Aug. 16 last. The reorganized company has the following officers: Thomas Maclay, president; George P. McNear, vice-president and treasurer; and R. W. Wise, secretary.

According to the applicant railroad company, it wishes to bid for the property of the railway on Oct. 29, in a foreclosure sale ordered by the Superior Court of Sonoma County, and it has proposed to pay for it with bonds to the amount of $750,000 issued by the reorganized railroad, through an exchange process with the old company's bonds. In addition, the newly incorporated railroad has sold its stock in the sum of $72,730, and it asks authority to expend $66,400 of that amount in discharging five notes for different sums.

The authority asked is carrying out the purpose of the reorganization agreement.

The approval of the reorganization plan of the company was referred to in the ELECTRIC RAILWAY JOURNAL for Aug. 31, page 387, at which time the terms of the reorganization were reviewed.

Canadian Line Scrapped

Electrification of Competing Line and Rise of Auto Compel Suspension by London & Lake Erie Line

Following a period of uncertainty in which municipal purchase and scrapping seemed alternate probabilities, the London & Lake Erie Railway & Transportation Company, London, Ont., has gone the latter route. Freight and passenger service terminated, on twenty-four hours notice, on the night of Oct. 9. The rails, according to report, will go to Japan, while cars, overhead and other property are being disposed of to half a dozen parties who have made offers of purchase.

COMPANY WANTED TO SELL

The company offered some months ago to sell out to London, Ont., St. Thomas, Port Stanley, Lambeth and the other municipalities served, at $445,000, representing about 50 per cent of the bonded indebtedness. Sir Adam Beck, London, Ont., secured a report from engineers of the Ontario Hydroelectric Power Commission showing that the road would meet capital charges, with no allowance for taxes or depreciation, if $241,000 were paid in 5 per cent bonds. He reported further that the road had a scrap value of $261,000 against which a charge of $20,000 would have to be made for dismantling and disposing of the railway property.

The company rejected the offer but after announcing in May that it would scrap the line at once, it continued negotiations with a group of Lambeth citizens, who reported on Oct. 8 to a meeting of municipal representatives in London that they believed the company would sell for $325,000. Sir Adam Beck presented a report showing that since May $8,000 a year would have to be added to operating costs, as the people could no more readily avoid paying advanced wages than the private company. The purchase was therefore considered no longer feasible. Sir Adam suggested as an alternative plan that London and other places directly concerned buy a 10 or 12-mile section south from London to Lambeth or Tempo, tie this in with the London Street Railway system and hand it over to the latter for operation, at a "fair profit."

PROMPT TO DISCONTINUE SERVICE

The directors of the London & Lake Erie Railway & Transportation Company held a meeting immediately afterward and determined to discontinue service the following night, abandon negotiations for the sale and dispose of the physical property of the company without delay.

As stated some months ago in the ELECTRIC RAILWAY JOURNAL, the electrification of the paralleling London & Port Stanley Railway and the development of the use of autos in the rural districts destroyed the earning capacity of the former once prosperous line.

Spokane Company Earnings

Washington Water Power Company Shows Surplus of $940,709 After Paying Dividends

The income, profit and loss statement of the Washington Water Power Company, Spokane, Wash., for the year ended Dec. 31, 1917, follows:

Gross revenue		$2,856,213
Operating expenses	$1,172,129	
Taxes	268,735	
Uncollectible accounts, etc.	10,028	1,450,892
Gross income from operations		$1,405,321
Deductions from income		769,280
Net income		$636,041
Surplus Dec. 31, 1916	$922,796	
Credit adjustments prior years	1,472	924,268
		$1,560,309
Dividends paid		619,600
Surplus Dec. 31, 1917		$940,709

No separate figures are given in this company's report for light and power and for railway earnings, but it is stated that the number of passengers carried increased from 15,601,850 in 1916 to 17,305,047 in 1917, and that the gross railway receipts gained 15 per cent in the last year.

Owing to the location of the company in the interior, it has not enjoyed, except in the mining district, the prosperity from war business which has been experienced in some parts of the country. The additional business that has come to it, however, is of normal growth and will probably be permanent.

The car-miles in 1917 totaled 3,839,830 as compared to 3,666,944 in 1916, and the car-hours were 534,775 and 413,259 respectively. One-man cars are operated on two-thirds of the total car mileage. The company's records, it is said, show a perceptible decrease in accidents on the one-man car lines.

The total expenditures for additions and betterments in 1917 were $456,417, of which $32,407 was for the railway department.

One Value for Rates and Taxes

The State administration of North Dakota contemplates the valuation by the State of every public utility within its boundaries, to determine a basis for tax assessments and service charges. The valuation is being made for the State Tax Commission and the Railroad Commission by Hagenah & Erickson, Chicago, Ill. Physical property in practically all of the companies in the State has been valued and the accountants are beginning on the books.

When the valuations have been fixed by the engineers the companies will have an opportunity to come in for a hearing and ask that the valuation be increased or decreased. They will be heard both as to taxes and rates, and then an official State valuation will be announced. Thereafter the valuation, it is said, will increase or decrease as State engineers give companies credit for additions and betterments and charge off depreciation. If a company comes into court to complain that its valuation is placed too high for taxation purposes it may be reduced, but the reduced valuation will be used as the basis in rate cases.

Mr. Erickson of the firm which is conducting the valuation work was a member of the original utilities commission of three which established the practices that made the Wisconsin plan a model for other states. Mr. Hagenah was a consulting engineer employed by the Wisconsin Railroad Commission.

North American Net Reduced

The comparative income statement of the North American Company, New York, N. Y., for the calendar years 1916 and 1917 follows:

	1917	1916
Interest received or accrued	$493,852	$450,131
Dividends received	1,571,675	1,824,278
Profits and compensation for services	33,766	29,920
Total	$2,099,293	$2,304,329
Administrative expenses	$100,212	$77,961
Taxes	87,507	33,334
Interest paid or accrued	108,007	17,491
Accounts written off and reserves	......	13,625
Total	$295,726	$142,411
Net income	$1,803,567	$2,161,918
Dividends paid or accrued	1,489,665	1,489,665
Balance forward	$313,902	$672,253

This company derives its income almost entirely from interest and dividend payments by subsidiaries. In general the operating revenues of all such enterprises increased during 1917, but the operating expenses also rose to such an extent as to leave smaller margins for dividends after provision for increased interest charges. This explains a large part of the loss of almost 54 per cent in the year's surplus income of the holding company, although it should be noted that the expenses of this concern were more than doubled.

The results of operation of the two leading railway subsidiaries, the Milwaukee Electric Railway & Light Company and the United Railways of St. Louis, were noted in the ELECTRIC RAILWAY JOURNAL of July 13 and Sept. 14 respectively.

Omaha Net Falls

Gross Revenues Rise 4 Per Cent But Higher Operating Costs Cut Into Earning Power

During the year ended Dec. 31, 1917, the gross operating revenues of the Omaha & Council Bluffs Street Railway, Omaha, Neb., increased $141,833 or 4.36 per cent as compared to those in 1916. During the same period, however, the operating expenses rose $184,584 or 10.07 per cent, and the net income fell off $68,328 or 13.4 per cent.

WAGE BONUS $25,494

On July 1 a bonus of 6 per cent of the wages earned during the previous six months was paid to each employee in the service at that time whose earnings did not exceed $100 a month. This bonus amounted to $25,494. Effective on July 1 the wage scale of the trainmen was increased 2 cents an hour, and a general increase in wages was made in the shops and all other operating departments. The increased cost of operating the power plant during the year was $53,790, owing to increased cost of labor and fuel.

Taxes continued to rise, the total taxes for the year being $315,589, an increase of $26,613. Most of this increase was caused by the increase in the federal income tax from 2 per cent to 6 per cent of the net income.

NET SURPLUS $42,108

Despite the large increase in operating expenses, owing to the increased cost of labor, fuel and all materials necessary to the operation of the road, the company had a net surplus for the year of $42,108, after paying the usual dividends of 5 per cent on the preferred stock and 4 per cent on the common stock.

COMPARATIVE INCOME STATEMENT OF OMAHA & COUNCIL BLUFFS STREET RAILWAY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Revenue from transportation	$3,190,834	93.98	$3,069,324	94.35
Revenue from other operations	204,326	6.02	184,003	5.65
Gross operating revenues	$3,395,160	100.00	$3,253,327	100.00
Operating expenses	2,017,731	59.43	1,833,146	56.35
Net operating revenue	$1,377,429	40.57	$1,420,180	43.65
Taxes assignable to railway operations	314,572	9.27	288,679	8.85
Operating income	$1,062,857	31.30	$1,131,501	34.80
Other income	17,368	0.51	14,839	0.45
Gross income	$1,080,225	31.81	$1,146,340	35.25
Deductions from income	638,417	18.80	636,204	19.56
Net income	$441,808	13.01	$510,136	15.69
Dividends	399,700	11.77	400,000	12.30
Surplus for year	$42,108	1.24	$110,136	3.39

The balance shown in accrued depreciation, as of Jan. 1, 1918, was $1,573,886. Of this amount $110,145 was charged to the account during the year for rebuilding tracks and other renewals. Moreover, $288,551 was expended during the year for additions and betterments. No new extensions were made, the principal item of expenditures being for the purchase of forty semi-steel pay-as-you-enter passenger cars.

Financial News Notes

Wants City to Take Line.—A hearing was held at Topeka, Kan., on Oct. 5 on the application of the Kansas Electric Utilities Company to the Public Utilities Commission for permission to junk its plant. At the hearing officers of the company told the commission that they would be glad to turn the line over to the city of Parsons if the city would operate the road for the benefit of the citizens. The company said it could not afford to continue the operation of the line under the terms and conditions that exist at present. The losses of the company were referred to briefly in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 5, page 634.

Stockholders Await Road's Fate.—Stockholders in the Southern Illinois Traction Company, for several years in the hands of a receiver, expect that when the United States District Court convenes on Oct. 21 in special session at East St. Louis, Ill., a final report and order to sell assets will be issued. The rails have been laid for about ten years and never used. This is the road in which former United States Senator William Lorimer, as the head of Lorimer & Gallagher, was interested. The East St. Louis terminus of the line is at Fourth Street and Broadway. At one time the company obtained a franchise for a St. Louis loop and planned to come into the city via the free bridge. The St. Louis franchise was later revoked.

Receiver's Appointment Confirmed.—The appointment of Harrison B. Freeman, Hartford, Conn., as temporary receiver of the Hartford & Springfield Street Railway, Warehouse Point, Conn., was confirmed by Judge William S. Case on Oct. 14. The appraisers appointed are Warren P. Bristol, local manager of the Connecticut Company at Hartford, and Walter P. Schwabe, Thompsonville, general manager of the Northern Connecticut Light & Power Company. The receiver is authorized to continue the business for four months. The appointment of Mr. Freeman as temporary receiver was noted in the ELECTRIC RAILWAY JOURNAL of Oct. 12, page 672.

Abandonment Stopped by Injunction.—Judge Oliver Branch of the Superior Court at Claremont, N. H., has issued an injunction restraining the Claremont Railway & Lighting Company from discontinuing its freight and passenger service. The company had announced its intention of taking this step on Oct. 19 unless a purchaser for the property came forward. Judge Branch acted on petition of manufacturers and town officials. He set Oct. 15 for a hearing on the question of appointing a receiver for the property. The company operates 6 miles of line. The decision to abandon the road was referred to briefly in the issue of the ELECTRIC RAILWAY JOURNAL of Oct. 5, page 634.

Will Abandon Forty-four Miles.—When the new tariff of the Berkshire Street Railway, Pittsfield, Mass., referred to elsewhere in this issue, goes into effect on Nov. 12, service will be discontinued for the present at least on the "Huckleberry" line from Lee to Huntington and from Great Barrington to Egremont and from Great Barrington to Canaan, Conn. By this order 44 miles of track will be abandoned as follows: From Lee to Huntington, 24 miles; from Great Barrington to Egremont 7 miles; from Great Barrington to Canaan, 13 miles. This order will probably mean giving up the power station at Sheffield and transferring the operating base to Housatonic.

Bristol County Line Dismantled.—Swift-McNutt Company, Boston, Mass., has dismantled the property of the Bristol County Street Railway and its line running from Hebronville to Taunton. This is the whole of the company's property with the exception of the 3½-mile branch from Briggs Corner to Attleboro, which was purchased by the city of Attleboro and is being operated under the name of the "A. B. C. Railway," under an arrangement with the Interstate Consolidated Street Railway. The Bristol County Street Railway is the predecessor company which some time ago took back under its unsatisfied mortgage the property being used by the reorganized company, the Taunton & Pawtucket Street Railway. Notes in regard to efforts to save the line from dismantlement were published in the ELECTRIC RAILWAY JOURNAL of Jan. 26, Feb. 16, May 4 and Aug. 1.

Government Funds to Rehabilitate Line.—William B. Cutter, receiver of the Buffalo & Depew Railway, Buffalo, N. Y., has been granted permission by Justice Louis W. Marcus in the Supreme Court of Erie County to issue $45,000 of receiver's certificates, and to execute a contract with the United States Housing Corporation of the Bureau of Industrial Housing and Transportation of the Federal Department of Labor, for the rehabilitation and re-equipment of the line. Under this contract the government will buy the receiver's certificates and the proceeds will be applied to the extension of the railroad one-half mile into the village of Lancaster and the renewal of a part of its roadbed. In addition to taking these certificates, the government also agrees to buy twelve additional cars and a new 300-kw. rotary converter and lease them to the receiver for the period of the war. This order and contract are the result of efforts made by the American Car & Foundry Company, Depew, to have the government aid in the rehabilitation of the road. The extension will be between Depew and Lancaster.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$23,054	$11,944	$11,110	$596	$10,514
1m., Aug., '17	24,863	12,408	12,455	430	12,025

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$216,072	*$171,814	$44,258	$35,839	$8,418
1m., July, '17	220,802	*143,462	77,340	35,790	41,550
7m., July, '18	1,179,532	*1,021,780	157,752	250,926	93,174
7m., July, '17	1,218,890	*885,051	333,839	250,385	83,454

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$1,696,059	$54,325	$1,641,734	$31,819	$1,609,915
1m., Aug., '17	1,366,659	30,809	1,335,850	226	1,335,624
12m., Aug., '18	21,661,286	423,096	21,238,190	52,241	21,185,949
12m., Aug., '17	17,296,942	320,588	16,976,354	3,264	16,973,089

CLEVELAND, PAINESVILLE & EASTERN RAILROAD,
WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$57,656	*$36,013	$21,643	$11,772	$9,871
1m., July, '17	56,772	*33,540	23,232	11,439	11,793
7m., July, '18	313,849	*211,884	101,965	80,711	21,254
7m., July, '17	300,093	*186,100	113,993	82,007	31,986

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$251,823	*$159,850	$91,973	$39,523	$52,42
1m., July, '17	175,143	*116,321	58,822	37,192	21,633
12m., July, '18	2,462,034	*1,599,471	862,563	466,650	395,913
12m., July, '17	1,962,079	*1,301,593	660,486	443,142	217,344

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
12m., Aug., '18	$6,915,831	$4,494,572	$2,421,259	$1,109,035	$1,312,224
12m., Aug., '17	6,019,418	3,391,350	2,248,068	948,121	1,479,947

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$2,725,190	$1,843,234	$881,956	$818,358	$63,598
1m., Aug., '17	2,436,680	1,404,966	1,031,714	812,440	219,274
2m., Aug., '18	5,451,453	3,523,787	1,927,665	1,632,644	295,021
2m., Aug., '17	4,874,074	2,834,441	2,039,633	1,623,771	415,862

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$445,648	*$337,060	$108,588	$103,645	‡$39,643
1m., Aug., '17	426,115	*274,715	151,400	85,282	‡73,167
12m., Aug., '18	5,552,609	*3,961,496	1,591,113	1,143,063	‡563,449
12m., Aug., '17	4,444,721	*2,847,949	1,596,772	939,530	‡701,590

PUGET SOUND TRACTION, LIGHT & POWER COMPANY,
SEATTLE, WASH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$1,000,340	*$634,767	$365,573	$316,992	$48,581
1m., July, '17	586,369	*401,049	185,320	192,735	†7,415
12m., July, '18	10,927,234	*6,782,383	4,144,851	2,626,716	1,518,135
12m., July, '17	8,734,738	*5,318,963	3,415,775	2,263,456	1,152,319

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., July, '18	$97,977	*$69,992	$27,985	$25,496	$2,489
1m., July, '17	78,072	*53,543	24,529	24,352	177
12m., July, '18	1,091,340	*735,802	355,538	297,053	58,485
12m., July, '17	897,533	*595,688	301,845	286,971	14,873

*Includes taxes. ‡ Includes non-operating income.

Traffic and Transportation

Southern Fare Review

New Orleans Gets Increase—Many Other Rate Cases Still Pending, Including Atlanta

The news from various sections of the Southeast regarding electric railways carries a feeling of optimism. The Alabama Public Service Commission has granted the Anniston Traction Company the right to increase car fares to 6 cents over the entire system with the exception of the Oxford line, on which there will be a 10-cent fare. Permission was likewise granted the Mobile Electric Company to charge 6 cents, with the stipulation that the increase shall remain in effect until after the signing of a general peace. Although the Montgomery Traction Company asked for 7 cents it was allowed an increase to 6 cents. It was also ordered that transfers be given over all the lines, thereby forcing the company to extend this privilege to Pickett Springs and Camp Sheridan. Present rules governing the sale of tickets to school children must be continued and the company must render safe and adequate service. The Georgia Railroad Commission has allowed the Augusta-Aiken Railway & Electric Company to increase its fare from 5 cents to 6 cents. As a concession to the public, the commissioner's order requires that no changes shall be made in regulations regarding transfers, nor any changes in the regulations governing the transportation of infants. The petition of the Athens Railway & Light Company will be heard on Nov. 5.

Following out the recommendations of the War Finance Corporation the City Council of New Orleans has passed an ordinance granting an increase of 35 per cent in rates for gas and electricity. On a writ of injunction filed by attorneys for organized labor, however, orders were issued by Judge Gage in the Civil District Court, for the officials of the New Orleans Railway & Light Company to appear on Oct. 16 and show cause why an injunction should not be issued restraining the company from putting the power increases into effect and charging fares in excess of 5 cents.

The War Finance Corporation loaned the company $1,000,000 with the understanding that the city would allow an increase in rates. The opposition to the increase is coming from organized labor in the face of a recent ruling by the War Labor Board, whereby wages of the employees of the company were increased in some instances as high as 70 per cent. The agitation has elicited from the War Labor Board a letter to John R. Alpine, acting president of the American Federation of Labor, as noted on page 709 of this issue.

Taking the position that a public utility company could not be expected to increase its expenses by paying higher wages to employees, without an opportunity to increase its income by means of higher fares, the War Labor Board has put itself on record at last, and the decision in this case will probably have a far-reaching effect. The outcome of the New Orleans situation will have considerable bearing on the Atlanta hearing set for Oct. 14, which in a measure is a parallel case to that of New Orleans.

Five Cents in Indianapolis

The Public Service Commission of Indiana on Oct. 12 granted the Indianapolis Traction & Terminal Company a straight 5-cent cash fare, effective at midnight, on Oct. 13. A charge of 1 cent is to be made for all transfers when issued, and this 1-cent charge is to be rebated when the transfer is offered in payment of fare, in accordance with the transfer regulations.

The sale of 4-cent tickets is discontinued, but patrons may tender these tickets in payment of fare until Oct. 20, when any surplus tickets will be redeemed by the company. The sale of tickets at the rate of five for 25 cents is covered by the new order of the commission.

The decision of the commission also agrees to the proposal which was accepted by the Indianapolis Traction & Terminal Company, covering the appointment of three directors to the company by the Governor of Indiana, the Mayor of Indianapolis and the Indianapolis Chamber of Commerce respectively.

The commission also recommended that to enable the company to compete in the labor market and secure sufficient men for the operation of its cars a 50 per cent increase in its wage budget should be made. The company on Oct. 13 announced that the new wage schedule for motormen and conductors in the employ of the company would be as follows:

In service one year or less, 34 cents; more than one year and less than two years, 35 cents; more than two years and less than three years, 36 cents; more than three years and less than four years, 37 cents; more than four years and less than five years, 38 cents; five years and over, 39 cents.

Increases in wages will also be made in other operating departments of the company.

The new fare system is to be tried for sixty days, at which time it will be determined whether the revenue produced will be adequate.

Columbus Case Reargued

Representatives of the Eastern Bondholders Insist Upon Right to Surrender Franchise

Arguments were heard before United States District Judge H. C. Hollister on Oct. 10 in the case of Eastern bondholders against the city of Columbus, Ohio, to prevent the enforcement of the ordinance which requires the Columbus Railway, Power & Light Company to operate on the basis of eight tickets for a quarter. The allegations were similar to those made in the case brought some time ago by the company itself, except that the protection of bondholders living outside of the State of Ohio was made a consideration in the appeal.

First Suit Dismissed

Judge D. C. Westenhaver of Cleveland dismissed the first suit for want of jurisdiction and in his comments said it is not within the province of a court to nullify a contract between the city and a public service corporation. The sanctity of contracts must be upheld, he contended, although he advised the city to enact legislation that would give the company needed relief from the burdens brought on by war conditions.

The principal question argued in the later suit was whether the contract really was binding upon the company, if it wished to give it up, and how much the company was affected by the conditions arising out of war emergency. City Solicitor Scarlett contended that there was no statute under which the company could be released from the contract. He quoted extensively from Judge Westenhaver's opinion. He explained, however, that the City Council was now taking steps to look into the company's financial condition and have an appraisal of its property made with a view to arriving at a fair basis for an increase in the rate of fare. Mr. Scarlett said that members of the Council did not feel they could rely upon the statements furnished by the management of the company.

Previous Argument Reiterated

J. S. Clark, president of the E. W. Clark Management Company, by which the road is operated, presented its case. He followed the same line of argument used in the first case. He said that the franchise granted the company in 1901 gave it the privilege of operating on the streets of the city, and that it could be terminated at any time. It was shown that the old rate of fare, eight tickets for a quarter, would not pay the expense of operation, especially since the wages of employees have been so materially increased. The fact that the Federal War Labor Board had recommended an increase in the rate of fare, when the decision on employees' wages was announced, was among the subjects that received attention at the hearing.

Freight Rates Increased

Commission Allows Connecticut Company 40-50 Per Cent Advance in Station-Service Freight Charges

Because of increased operating costs the Connecticut Company, New Haven, Conn., has been authorized by the Public Utilities Commission to advance still farther the freight rates which went into effect on Jan. 1, 1918. The present authorization made effective on Oct. 15 the following rates for one-class station-service freight: 15 cents per 100 lb. for a distance not exceeding 5 miles, and 1 cent per 100 lb. for each additional 5 miles or fraction thereof, the minimum charge being 35 cents for shipment.

STATEMENT OF RATES

Under the old rates the minimum charge was 10 cents per 100 lb. for a short haul of not exceeding 10 miles, the maximum charge being 29 cents per 100 lb. for the longest haul on the system. Under the proposed schedule submitted by the petitioner, the minimum rate would have been 26 cents per 100 lb. for a short haul of not exceeding 5 miles, with a maximum charge of 49 cents per 100 lb. for the longest haul and a minimum charge of 50 cents per shipment.

In commenting upon the proposal the Connecticut Public Service Commission says:

"The proposed rates would represent from 140 to 150 per cent increase over the present rates. The company established a rate solely upon a comparative basis, irrespective of the reasonableness of the return on the amount invested, which is contrary to all well-recognized rate-making principles. It also disregards certain material elements of expense connected with steam railroads, not present in trolley freight service, notably expensive terminal facilities.

"The rates proposed, which are applicable to all less-than-carload shipments (as the company has only one classification) are substantially the same as the first-class rates of the New York, New Haven & Hartford Railroad, although the latter has six classifications and only a small percentage of its freight is carried as first class. The proposed rates cannot, therefore, be justly claimed to be on a parity with steam railroad rates, as they are 55 per cent higher than the average of the second, third and fourth-class steam railroad rates. The petitioner claims that this increase over steam railroad rates is justifiable because of the better and more expeditious service which it renders.

LIBERAL RATE POLICY NECESSARY

"In establishing a rate at this time to meet emergency conditions, the commission feels that a liberal policy should be followed in order that utility companies may be maintained at their maximum efficiency. Such a policy, however, does not contemplate the establishment of rates which would cause an unnecessary burden upon the public."

Taking into consideration, therefore, the question of depreciation, the increase in wages, the probable future increase in cost of material and supplies, and also the fact that the company's entire business is not producing sufficient revenue to pay operating expenses and fixed charges, the commission decided that an average 40 per cent to 50 per cent increase in station-service freight rates would be reasonable, even with the assumption that a certain per cent increase in rate would not yield a like per cent increase in revenue.

Two Cents a Mile in Holyoke

The Holyoke (Mass.) Street Railway has applied to the Public Service Commission of Massachusetts for the right to put into effect a new fare system on Oct. 30 which will be on a 2-mile basis at approximately 2 cents a mile and will be in the nature of a universal zone system. Permission to sell tickets at the rate of twelve for $1 will also be sought. The proposal is to divide the operations of the company's cars into twenty zones and will still further reduce the riding power of a nickel. The new project does away with lap-overs and will simplify the operation of the cars to a considerable extent, and transfers will be issued to ticket holders only. The changes that are proposed in the tariff which has just been filed with the commission affect the Holyoke, Chicopee, Amherst and Sunderland lines of the company.

The City Hall will be the center of the inner zone and the company proposes to charge a 5-cent fare from that point to any point within the inner zone. To ride from one point within the inner zone to another point in the same zone will cost 10 cents in cash or 8⅓ cents by use of tickets. This will mean a double fare when a passenger rides through the zone, past the City Hall.

On the Westfield line there will be three fare limits from the Holyoke City Hall to the Westfield town line. The Chicopee, Chicopee Falls and Springfield lines will have the same fare limits, but instead of being able to make the trip for 6⅔ cents by the use of tickets it will cost 8⅓ cents using tickets, or 10 cents cash fare.

Two registers, one for cash and the other for tickets and transfers will be installed in all cars. Passengers using tickets can obtain transfers, but otherwise transfers will not be issued. A cash fare of 5 cents will allow a person to ride no further than 2 miles. A ticket for which 8⅓ cents has been paid will allow of a ride of approximately 4 miles.

Zone fares have been in effect in the city of Holyoke since Feb. 17. The situation there with respect to revenue obtained by the Holyoke Street Railway was reviewed in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 14, page 456.

Berkshire Fare Increase

Company at Pittsfield, Mass., Will Retain Five-Cent Unit, But Stop Some Lines

After a careful investigation of the use made by the public of the Berkshires of the service of the Berkshire Street Railway, Pittsfield, Mass., a plan has been worked out and has been filed with the Public Service Commission providing for a uniform rate over the entire system and still maintaining the 5-cent piece as the unit of fare. This has been accomplished by a rearrangement of the fare zone in the suburban territory and a reduction of the fare area in the cities.

The plan contemplates a circle with a radius of approximately 3 miles from the center of North Adams, the center of Pittsfield and the center of Great Barrington. Within that radius the fare will be 5 cents, with certain charges for transfers. Beyond this there will be an additional fare of 5 cents, making the fare from North Adams to Williamstown and Adams 10 cents, from Pittsfield to Dalton 10 cents, and from Great Barrington to Housatonic 10 cents. The portions of the lines outside of the outer circles have been divided into zones of approximately 2 miles each, in each of which zones a 5-cent fare will be charged. It is proposed further that at certain hours of the day transfers will be issued within the inner circle at Pittsfield and North Adams without extra charge, and that at other times a charge of 2 cents will be made for a transfer.

Under this arrangement the fare from Pittsfield to Berkshire will be 15 cents, to Cheshire 25 cents, to Adams Center 35 cents, and to North Adams 45 cents, with the addition of the war tax for all fares over 35 cents.

The fare from Pittsfield to Lenox village will be 20 cents, to Lee 25 cents, to South Lee 35 cents, to Stockbridge 40 cents, to Glendale 45 cents, to Housatonic 50 cents, and to Great Barrington 60 cents, with the addition of the war tax for all fares over 35 cents.

It is the hope of the management that it will not be necessary to abandon and scrap any of the company's property, but for the present at least, it is proposed to discontinue service upon the lines south and west of Great Barrington and upon the line from Lee to Huntington. This is necessitated in order that the company may continue a going concern and not be forced to discontinue service essential to the communities from Great Barrington to the Vermont State line. The management says that without the increase in revenue coupled with economies to be obtained by a discontinuance of service now operated at a loss, the property can no longer be run so as to give the required service to this more densely-settled portion of the county.

The new tariff will go into effect on Nov. 12. After that date 44 miles of track will be abandoned.

Court Hears New Jersey Case

The Public Service Railway, Newark, N. J., began charging a 7-cent fare on Oct. 15, the date set by the Board of Public Utility Commissioners for the new fare. Each passenger is receiving a receipt for the extra 2 cents, however, pending the final court ruling.

The question of issuing these extra fare receipts came before Justice Swayze at the hearing held by him at his home on Oct. 10 on the writ obtained by the League of Municipalities to prevent the new fare being put into effect. The court at this hearing gave it as his conclusion that the legal right to have the status quo preserved was clear. He said that while it had been demonstrated to him by President T. N. McCarter of the railway that the plan which had been suggested for giving receipts for the 2 cents was impracticable, some other arrangement could probably be devised to relieve the situation. The system of receipts now in force was then worked out by the company.

The matter of the rebate slips out of the way, Justice Swayze heard argument on Oct. 14 by both sides as to the validity of the order of the utility commission for the 7-cent fare. At the conclusion of this argument Judge Swayze announced that he would decide the case on or before Nov. 19, the day on which the Court of Errors and Appeals opens. If the case is decided against the company an appeal will probably be taken at once to the Court of Errors and Appeals. An early adjudication is anticipated.

Fare Review at Trenton

Justice Trenchard in the New Jersey Supreme Court has allowed a writ to the city of Trenton to review the decision of the Board of Public Utility Commissioners whereby the Trenton & Mercer County Traction Corporation was authorized to charge a flat 6-cent fare for service beginning on Oct. 15. Under the order of Justice Trenchard the writ will act as a stay pending litigation of the new rate unless the company can devise some plan whereby it will give its passengers receipts entitling them to a refund of the excess fare paid under the new rate in the event of the Supreme Court reversing the rate advance allowed by the commission.

At a conference between Justices Trenchard and Swayze and counsel for the city and the company it was agreed that the final hearing to determine the legality of the commission's 6-cent fare decision would be held before Justice Swayze at Newark on Oct. 16. Justice Swayze will sit as the Supreme Court, and it is expected that his decision in this case will be handed down shortly afterward. At the conference on Oct. 11 the company said it would be difficult to get the receipts for excess fare printed in time to use them by Oct. 15. Justice Swayze said it was entirely up to the company whether it gave receipts and collected the new rate or whether the writ should act as a stay pending the suit. Justice Trenchard told the company that a system of receipts could be worked out satisfactorily. He pointed out that two classes of riders must be provided for in the scheme—those using strip tickets and those paying cash fares.

George L. Record, counsel for the city of Trenton at the conference, contended that there was no such thing as emergency rates as were contemplated by the public utility law of the State and that the State body acted without legal authority.

Chamber of Commerce Report Unsatisfactory

The special traction committee of the Chamber of Commerce of Norfolk, Va., has made its final report to the board of directors. Among other things, the report states that the committee has found itself "powerless to reach any satisfactory understanding with the Virginia Railway & Power Company for better service, and the matter has to be finally settled by the City Council." Furthermore, that the committee "feels that the service to and from the Army and Navy bases is inadequate and that the company should be required to give such service as will obviate the necessity on the part of the government of using army trucks for transportation" of its employees. The committee recommended that Delos F. Wilcox, who made a report on the traction problem in 1914, be brought to Norfolk again to make a report up to date. Finally, the committee went on record as being opposed to the City Council granting the Virginia Railway & Power Company the right to increase its fares to 6 cents until it first makes improvements in its service to justify the increase. The report has been adopted by the full chamber.

Chicago Fare Hearing Closed

The second hearing before the Public Utilities Commission of Illinois on the petition of the Chicago Elevated Railroads for a 7-cent fare was postponed from Sept. 30 to Oct. 7 because city officials who were to appear in opposition were detained on other matters. The hearings were held on Oct. 7, 8 and 9, the final summing up taking place on the last date.

The discussion and arguments concerned chiefly what increase in revenue the 7-cent fare would produce. As stated in the report of the first hearing in the ELECTRIC RAILWAY JOURNAL for Sept. 8, page 592, Britton I. Budd, president of the Chicago Elevated Railroads, testified that judging from the reports of other companies operating with increased fares he believed the 7-cent fare would produce an increase in gross revenue not exceeding 20 per cent or $2,000,000 while the requirements are $2,447,000.

The case is now in the hands of the commission.

Transportation News Notes

Eight Cents in Wilkes-Barre.—The Wilkes-Barre (Pa.) Railway went to an 8-cent fare on Oct. 1.

Benton Harbor Asks Relief.—C. K. Minary, president Benton Harbor-St. Joe Railway & Light Company, has asked the Boston Harbor City Council for the right to charge a higher fare.

Survey of Scranton Conditions.—Delos F. Wilcox has been retained by the City of Scranton, Pa., to inquire into and report on the situation affecting service and rates on the Scranton Railway.

Jitney Fares Ten Cents.—Jitney bus fares in San Francisco, Cal., were raised on Oct. 14 to 10 cents, following a meeting of the Jitney Drivers' Union. There were only 270 jitneys on the streets of the city at that time.

Six Cents in Racine.—The 6-cent fare for adults and the 3-cent fare for children, granted to the Milwaukee Heat, Light & Traction Company, operating in Racine, Wis., was put into effect on Oct. 6. The decision of the Railroad Commission of Wisconsin in this case was rendered on Sept. 10.

Six Cents Wanted in Niagara.—The International Railway, Buffalo, N. Y., has asked the Council of Niagara Falls, N. Y., in which it operates, to approve an increase in fare from 5 cents to 6 cents. The Council has taken the request under consideration pending reference to the Public Service Commission.

Harrisburg Increase in Effect.—The 5-cent fare passed out of existence in Harrisburg, Pa., on Oct. 1, when the Harrisburg Railways added 1 cent and the Valley Railways 2 cents to the nickel charge. Certificates are being issued to each passenger for redemption in case the Public Service Commission rules against the increase.

Wants Freight Rate Increase.—The New Jersey & Pennsylvania Traction Company has filed with the Board of Public Utility Commissioners of New Jersey a schedule of proposed increases in freight rates on its lines between Trenton and Princeton. Besides extra charges for smaller articles, there are also increases provided for the freightage of lumber, machinery, etc. There will be a public hearing on Oct. 22 on the company's application for increased passenger rates.

New Seattle-Tacoma Rates.—A new passenger tariff has been filed with the Public Service Commission of Washington by the Puget Sound Electric Railway, increasing the one-way fare between Seattle and Tacoma, and all way points and terminals. The round-trip fare will remain the same.

The new tariff provides for an increase in the one-way fare from 73 cents to 91 cents, between Seattle and Tacoma, and from 2 cents to 2½ cents a mile on way points and terminals.

More Seven-Cent Fares Announced.—The Philadelphia & Easton Electric Railway, Doylestown, Pa., has filed notice of an increase of fares from 6 to 7 cents, and advances in freight and milk rates with the Public Service Commission. Other notices of 7-cent fares have been filed by the Citizens' Traction Company, operating in Oil City, Franklin, and vicinity, while the Lancaster & York Furnace Street Railway, Millersville, Pa., has given notice of an increase in 5-cent fare zones, causing increases in single fares.

Seven Cents for Vicksburg.—At a special meeting of the Aldermen of Vicksburg, Miss., held recently for the purpose of taking up with the Vicksburg Light & Traction Company the readjustment of fares, it was ordered by the board that the city attorney prepare an ordinance together with necessary resolutions allowing the company to make a charge of 7 cents for all fares. Where tickets are purchased, however, a discount of three-fourths of a cent on each fare will be made by the company, thus making all such fares 6¼ cents. Tickets for school children are to remain at the same price as in the past.

San Antonio Plea Rejected.—The City Commission of San Antonio, Tex., at the regular Council meeting on Oct. 3 adopted an ordinance denying the application of the traction department of the San Antonio Public Service Corporation for an increase of fares to 6 cents or the alternative of eliminating the transfer and provided that a violation of the 5-cent fare and transfer provisions of the franchise would constitute a misdemeanor, punishable upon conviction by a fine and subject the company to forfeiture of its franchise. The ordinance was adopted by unanimous vote of the Mayor and Commissioners present.

After Dishonest Conductors.—As a result of a careful investigation the New York State Railways has discovered that considerable of the money collected in fares on the Utica lines does not reach the company. In consequence it caused the arrest recently of three conductors, Floyd V. Carter, Ernest W. Miller, and Thomas J. Donnelly. The men were arrested upon the complaint of J. N. Jones, superintendent of transportation of the Utica lines. When arraigned in court Carter and Donnelly pleaded guilty and were sentenced to thirty days while Miller, who pleaded not guilty, was released on $200 bail for trial later.

Charleston Fare Hearing Nov. 7.—The Charleston Consolidated Railway & Lighting Company, Charleston, S. C., has applied to the Railroad Commission of South Carolina for an increase in passenger rates over the line, viz.; a straight fare of 5 cents, at all times and at all hours, from the city boundary to the navy yard, with an additional straight fare of 3 cents from the navy yard to North Charleston, with the privilege of a return ticket from the navy yard to North Charleston of 5 cents. The commission will hold a public hearing in regard to the matter in Charleston on Nov. 7.

Six Cents and Tickets in Galveston.—The Galveston (Tex.) Electric Company is now charging a 6-cent fare, with half fares for children under twelve and for school children. The ordinance recently passed by the City Commission became effective on Oct. 1. No change was made in regard to transfers. According to an announcement made by the general manager, the company will place on sale books of tickets, each book containing ten tickets for 60 cents for the convenience of patrons who do not wish to be troubled with pennies. The tickets will be on sale at the carhouses and at all drug stores and other principal places of business in the city.

Will Vote on Jitney Return.—The voters of Los Angeles, Cal., are to be called upon at the election on Nov. 5 to decide whether the proposed ordinance shall be adopted which has been submitted by initiative petition and makes lawful the operation of jitney buses in the downtown district, from which they are now excluded. Inclosed with the ballots at the election will be an argument against the ordinance by George Baker Anderson, in which the voters are appealed to convincingly to vote against the measure. As part of the argument against the ordinance are included the reasons advanced by the New York Commission in ruling against the jitney.

Six-Cent Ordinance for Austin.—The City Council of Austin, Tex., has ordered the city attorney to draft an ordinance authorizing the Austin Street Railway to charge 6 cents for full fares and 3 cents for half fares, with 3 cents as the fare for students. This action was taken after a hearing on a petition presented by the company asking authority to increase fares. The request of the company was reinforced by a petition from the employees of the railway setting forth that the employees should have a wage increase and that the company had declined to increase wages unless it was authorized to increase fares. It is regarded as quite certain that the Council will pass the ordinance when it is drafted by the city attorney.

Court May Fix Fare.—In commenting on the appointment of a receiver for the Binghamton (N. Y.) Railway the *Republican* of that city made the following statement about fares: "In connection with the going of the company into receivership it is interesting to learn that probably the rate of carfare will be increased far beyond what it would have been fixed at if the Council had allowed the rate to be raised. The company has applied for permission to raise it to 8 cents. That is reported as higher than if the Council had granted its permission. But the court will probably issue an order fixing the carfare at about 8 or 9 cents, and that will be all. There are many Councils, but only one court, and what that court says, according to the attorneys, goes."

Fare Referendum in Houston.—Qualified voters of Houston are to have an opportunity to say at the polls whether or not the Houston Electric Company shall be permitted to charge a 6-cent fare, with half fares at 3 cents. When the City Council decided that the company was entitled to the increased fare an ordinance was passed to that effect, to become effective on Oct. 1. A referendum petition was filed during the week ended Oct. 5, which made the ordinance void pending an election if it was found that sufficient qualified voters had signed. The city secretary has found that the number signing the petition is sufficient and he will so report to the Council. It then becomes the duty of the Council to call a special election or repeal the ordinance.

Six Cents for Montgomery.—The Public Service Commission of Alabama has rendered a decision providing for a fare of 6 cents on all lines of the Montgomery Traction & Light Company, Montgomery, Ala. The order of the commission also requires that transfers be given to and from all lines and that a safe and adequate service be established. The company, under the order, must continue its present rules relative to the hauling of children of certain ages, and the granting of cut rate tickets to school children. The order was made effective as of Oct. 5. The company first applied to the City Commissioners for a 7-cent fare. This was granted, but the Public Service Commission set the rate aside, holding it alone had jurisdiction. That commission then authorized a 6-cent fare.

Increase in Fare Averted.—John Scott, electric railway commissioner, Franklin County, Ohio, found that the Westerville interurban line of the Columbus Railway, Power & Light Company was on the tax duplicate for a valuation of $1,100,000, while the valuation on which the franchise is based was $300,000. He went to the Public Utilities Commission and the tax valuation was reduced to $350,000. The company had been setting aside $900 a month to pay the tax for 1918. Under the reduction in valuation only $325 a month is required. The point with Mr. Scott is that the sinking fund, used as a barometer for the rate of fare, had fallen below the required $15,000 and an increase seemed imminent. The surplus saving through the reduction of the tax value, however, makes the fund more than $20,000 and the threatened increase in the rate of fare has been averted for the present. Operation under this franchise after it had been in effect a year was described in the ELECTRIC RAILWAY JOURNAL for Aug. 10, page 230.

Personal Mention

New Vice-President

R. L. Warner, Boston Banker, Succeeds Murray Carleton as Vice-President of United Railways, St. Louis

At the meeting of the board of directors of the United Railways, St. Louis, Mo., held on Oct. 8, the resignation of David R. Francis, Jr., who has entered the army, was accepted. In his place R. L. Warner was elected a director of the company. Murray Carleton resigned as vice-president of the company and Mr. Warner was elected vice-president in his place. Mr. Warner will begin his duties with the company as soon as he makes his arrangements to move to St. Louis. He will devote his attention principally to the finances and public relations of the company.

Mr. Warner was born in Kansas City, Mo., in 1869, and was graduated as a mechanical engineer at Cornell University in 1892. He then entered the service of the Westinghouse Company and was with that company for fourteen years, engaged in manufacturing, engineering, selling and management. He was for several years the New England manager, resident at Boston. In 1906 he formed a partnership with Randolph F. Tucker in the banking firm of Warner-Tucker & Company, Boston. He will terminate his connection with the firm and move to St. Louis.

During his connection with the Westinghouse Company and later with Warner-Tucker & Company, Mr. Warner has been connected with the organization, construction, financing and operation of various electric railways, more particularly in Connecticut and Massachusetts. He has also been active in the development of a number of water-power and other public service enterprises in New England and in the South, and one steam railroad—the South Carolina Western. This steam railroad is now consolidated with the Seaboard Air Line. His work in the various enterprises with which he has been connected has had largely to do with the construction, financing and reorganization of properties.

G. W. Van Derzee, for the last five years assistant to S. B. Way, vice-president and general manager of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., will also continue as assistant general manager with little change in his present duties.

J. H. Lucas, formerly assistant to H. A. Mullett, superintendent of rolling stock of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has been appointed superintendent of rolling stock of the company to succeed H. A. Mullett, who has become assistant general manager of the company.

C. E. Haygood, manager of the railway department of the Manila Electric Railroad & Light Company, Manila, P. I., is visiting the United States on a vacation and for the purpose of consulting with the officers of the J. G. White Management Corporation, New York, N. Y., the operating managers of the Manila Company. He expects to return to the Philippines before the first of the year.

H. A. Mullett, formerly superintendent of rolling stock of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has been appointed assistant general manager of that company. He will generally assist S. B. Way, vice-president and general manager, and assume such other duties as may be assigned to him. Mr. Mullett has been with the company twelve years, seven years of which he spent as superintendent of rolling stock.

Samuel E. Smith has resigned as general manager of railways of the Reading Transit & Light Company, Reading, Pa., effective on Oct. 31, to accept a similar position with the Mobile Light & Railroad Company, Mobile, Ala. Mr. Smith has been manager of railways of the Reading Transit & Light Company since last January. Before that he was superintendent of railways of the company. He entered business as a cash boy in a department store in Reading. He next became connected with the dispatching and storehouse department of the Philadelphia & Reading Railroad. He left railroad work to enter the service of the Holophane Glass Company in New York. About a year later he joined the forces of the Atlantic Refining Company. His next position was with the Monticello Company at Reading and Trenton, dealers in brick. His connection with the Reading Transit & Light Company followed six years later. His first work for the company was as purchasing agent. Subsequently he became claim agent of the company. With the change in control of the railway and light property at Reading Mr. Smith was made superintendent of railways.

Dressel D. Ewing, who for the last five years has been connected with the department of electrical engineering at Purdue University, has been made professor of electric railway engineering. He is a graduate of Ohio Northern University where he specialized in electrical and mechanical engineering. Upon completion of his course in 1906 he spent a short time in cable work, but soon entered the railway field as rodman in the maintenance-of-way department of the Missouri Pacific Railway at St. Louis, Mo. After serving as transit man and assistant engineer on this railway he became assistant division engineer of the Hocking Valley Railway at Logan, Ohio, where he had charge of the field and office engineering incident to the reconstruction of some 50 miles of track, which had been damaged by a heavy flood, and to the construction of a large new classification yard in the mining district. In the fall of 1907 Professor Ewing returned to Ohio Northern University as professor of electrical and mechanical engineering. In 1912 he went to Purdue for a year's graduate work, specializing in railway electrification. At the end of the year he was appointed assistant professor of electrical engineering and later was made associate professor of electric railway engineering. In connection with his college work he has done some consulting engineering along general lines and has spent several summers in the railway project section of the general engineering division, Westinghouse Electric & Manufacturing Company, where he was engaged on railway electrification work. For the past three years he has spent a considerable portion of his vacation time in editorial work for the ELECTRIC RAILWAY JOURNAL.

Obituary

R. M. Dixon, president of the Safety Car Heating & Lighting Company, New York, N. Y., died of heart disease at his home on Oct. 16. Mr. Dixon was one of the trustees of the United Engineering Society. He was also treasurer of the New York Railroad Club.

William Allis, son of the late E. P. Allis, died on Oct. 10 at the age of sixty-nine years. Mr. Allis succeeded his father as president of the E. P. Allis Company, Milwaukee, Wis., and continued in that position until the consolidation which resulted in placing the Allis-Chalmers Company at the head of the largest engine-building corporations of the world. He then became chairman of the board of directors.

Joseph Parkin, who was the responsible operator and one of the receivers of the Seattle, Renton & Southern Railway, Seattle, Wash., the predecessor of the Seattle & Rainier Valley Railway, Seattle, Wash., is dead. Mr. Parkin was the first superintendent after the construction of the road, and from 1893 to 1897 he was superintendent of the Seattle-Everett Traction Company. For eight years prior to his appointment as receiver of the Seattle, Renton & Southern Railway in 1912 he was employed in the United States Engineering Department in connection with the Puget Sound fortifications. Mr. Parkin was forty-five years old.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS
FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES • MARKET QUOTATIONS • BUSINESS ANNOUNCEMENTS

Railroad Conditions Improving in New England

Approach of Winter, However, Makes it Advisable to Secure Shipments as Soon as Possible

Electric railway purchasing agents are at present enjoying much better railroad service than was common in the Northeast a few months back. Deliveries are now being handled extremely well, despite the shortage of labor in so many lines of industry. Within the factories conditions are unfavorable to prompt filling of orders, even with the necessary priority classification; but once shipments enter New England their movement to their destinations is reported to be better than for some time past.

CASES OF SHIPMENTS GOING ASTRAY REDUCING IN NUMBER

To be sure, there are some cases of stray shipments, a prominent purchasing agent stated in a recent conference, but probably not many more than in normal times. It is rarely necessary at this time to detach tracers from electric railway office staffs in order to follow up supply shipments on New England rails, and this releases skilled labor for other important work where it is greatly needed.

The railroads are heavily taxed with business and the approach of winter with its threatened embargoes makes the present a highly desirable time to utilize existing facilities to the utmost. An enormous traffic in coal is moving into New England in anticipation of cold weather demands, and the requirements of our overseas forces in rolling stock and motive power are so heavy that there is little certainty of the winter's passing without a good many trying embargoes.

Now is clearly the time for purchasing bureaus to follow up factory production and deliveries as closely as possible, so that all the material which can be shipped before snow flies may be sent into the consumer's territory. "A few dollars spent in follow-up work now may save the loss of hundreds or thousands of dollars later when the non-arrival of important rolling stock parts or other supplies cuts down the available car units on the system below the point of efficient schedule handling.

A good deal of way and roadway maintenance material is being purchased, and the necessity for replacing tracks and other worn-out equipment with available supplies from scattered sources makes it important to watch shipment dates very carefully. Follow-up work by wire is meeting the present situation reasonably well, so far as relations with the railroads go.

With the increasing employment of women in the offices of purchasing agents, it is desirable to bring out the important aspects of the railroad shipment problem for future action if need be. This applies to other sections of the country as well as to New England.

Rush shipments are occasionally made by motor truck where the completion of an important construction job requires it, as in the extension of central station power plant facilities in which electric railways are to share the benefit; but in general, it appears unnecessary to resort to expensive methods of shipping supplies where the railroad trunk line service is being as well handled as in New England.

The really weak spot in the delivery chain is in the factory producing the supplies and equipment needed, and for six or eight weeks more it is expected that the railroad conditions will continue reasonably favorable to the consignee, considering the load which the transportation companies are carrying and that which is in sight for the end of the year.

St. Louis Car Labor Award

National War Labor Board Renders Decision Raising Day Rates 25 Per Cent

On Friday, Oct. 11, the National War Labor Board rendered its decision and award in the controversy between the St. Louis Car Company and its employees. The case has been pending for five months. A preliminary agreement was reached on May 15 and conferences were held but the two parties could not reach a final agreement. The case was therefore again submitted to the National Board.

The decision just handed down provided for a 25 per cent increase in day work rates over wages in effect on June 15, piece rates to be adjusted by a conference between the company and employees. A guaranteed minimum hourly or daily wage rate is provided for but it is not to operate so as to reduce anyone's pay. The increased wages are retroactive from June 15.

Working hours and overtime are discussed with the latter fully defined. For plain overtime work time and a half is allowed but for Sundays and holidays double time.

The award is to remain in force for the period of the war but provisions are made for application for adjustments at semi-annual periods.

Standardization Resulting from War Conditions

Large Numbers of Types and Sizes of Electrical Goods Now Being Eliminated

In a few ways the entrance of the United States into the war has been a blessing in disguise. Not the least of these pertains to the standardization of electrical supplies. It has in the past been more the rule than the exception to hunt for something special when a new use arose than to employ a standard article. In certain lines it was felt to be almost necessary to add every so often new devices to an already large number that would do equally well.

In some lines that have been closely controlled standardization of product has progressed far. In lines less closely controlled it has been difficult to get the manufacturers to agree on standards. The Associated Manufacturers of Electrical Supplies has done considerable in the different sections. By a free exchange of ideas and opinions a number of standards have resulted and many special designs have been removed from catalogs.

Now, however, that raw materials are so necessary for purely war purposes, standardization is virtually forced on a willing industry. By a sweeping curtailment in the number of types and sizes of appliances and supplies, almost all of the special equipment is put aside. Those styles and sizes that remain, it would be natural to suppose, will be those for which the greatest demand exists and which satisfy, and can be used in the greatest number of instances. In other words, they will virtually become the standards.

The manufacturer has had to take such action but the benefits that will result so far as he is concerned are apparent. By being reduced to a standard output he would under normal conditions be able to produce more cheaply and his operation should show less waste in material. He will have no worry about a competitor getting out a special product. He will be able to save in his catalog and in his sales expenses. Besides these benefits, there are others.

The only question that arises is to what extent the styles and sizes that have been eliminated will again be placed on the market when the supply of raw material becomes easier. It is doubtful if they will all come back under any circumstances, as many of them have not been especially active.

Car Cord Very Scarce and High in Price

Although Cotton Has Dropped 20 Per Cent There Are No Indications That Cord Will Follow

Conditions in the braided cord market have been getting very unsatisfactory from the buyer's point of view for some time. While prices have not advanced for over two months, they are very high. Cords such as are used by electric railways were quoted this week at $1 per pound. This is an increase of somewhat more than 150 per cent in two years. The price then was 38 cents per pound. This was increased to 85 cents and finally to the present price of $1.

Even at this price, however, it is almost impossible to obtain any quantity of cord. No stocks of any appreciable size are apparent and deliveries are very poor. It is probable, however, that roads can obtain sufficient for their immediate needs either by utilizing some different grade of cord or else shopping around and perhaps paying a premium for immediate shipment of what they want.

The situation in the basic cotton market, of course, is at the bottom of the whole thing. The high price of cotton necessitated an advance in the price of cord. However, now that cotton has dropped off some 20 per cent from its recent peak price there is no indication that cotton cord will follow downward. What small amount of cord there is now available was probably fabricated from high-priced cotton and the same is true of that cord which will be available for some weeks. It is improbable with the shortage of cord in the market that the manufacturers will accept any less on their high-priced cotton and therefore it seems natural to expect that present prices will prevail for some time.

Coal Production Suffers Slump

Bituminous Output Falls Off 3.6 Per Cent and Anthracite Slightly

The output of bituminous coal during the week ended Oct. 5 decreased 462,000 net tons or 3.6 per cent compared with the week preceding but exceeded production during the week of Oct. 5, 1917, by 1,774,000 net tons or approximately 16 per cent, according to the regular weekly report of the Geological Survey. Estimates placed production (including lignite and coal made into coke) at 12,585,000 net tons as compared with 13,047,000 net tons during the week ended Sept. 28 and as against 10,811,000 net tons during the corresponding week of 1917. The average production per working day during the current week is estimated at 2,097,000 net tons, 78,000 net tons lower than the daily average during week of Sept. 28, but 295,000 net tons in excess of the daily average of the same week last year.

The production during the week of Oct. 5 while considerably lower than the week preceding, exceeded the weekly requirements by 4 per cent and the weekly requirements to make up the past deficit by 3.2 per cent.

Production of anthracite during the week ended Oct. 5 is estimated at 2,052,000 net tons, a slight decrease compared to the week preceding and the same tonnage as produced during the corresponding week of last year. Daily average is estimated at 342,000 net tons as compared with 338,000 net tons for the coal year to date and as against 331,000 net tons during the same period of 1917. The total production for the coal year to date is estimated at 53,703,000 net tons, an increase of approximately 2 per cent over last year.

Specifications for W. M., B. & F. C. St. Ry. Cars

Specifications on the three new motor cars ordered by the Webster, Monessen, Belle Vernon & Fayette City Street Railway, Charleroi, Pa., as reported in the ELECTRIC RAILWAY JOURNAL of Oct. 12, are as follows:

Number of cars ordered	3
Name of road	Webster, Monessen, Belle Vernon & Fayette City Street Railway
Date order was placed	Aug. 20, 1918
Date of delivery	Oct. 8, 1918
Builder of car body	Cincinnati Car Co.
Type of car	Semi-convertible
Seating capacity	31
Length over all	32 ft., 0 in.
Width over all	8 ft., 3½ in.
Body	Wood
Interior trim	Cherry
Roof	Monitor
Car trimmings	Curtain Supply Co.
Control	West K-11-A
Hand brakes	Cincinnati Car Co.
Heater equipment	Consolidated
Headlights	Incandescent
Motors	Westinghouse No. 68
Seats	Hale & Kilburn
Trucks	Peckham No. 7-D

NEW YORK METAL MARKET PRICES

	Oct. 3	Oct. 17
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	28.75	28.75
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.35	9.05
Tin, Chinese*, cents per lb	......	......
Aluminum, 98 to 99 per cent., cents per lb	†33.10	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Oct. 3	Oct. 17
Heavy copper, cents per lb	23.50 to 24.50	23.50 to 24.00
Light copper, cents per lb	21.00 to 21.50	20.50 to 21.50
Red brass, cents per lb	22.00 to 23.00	23.00 to 24.00
Yellow brass, cents per lb	15.50 to 16.00	15.00 to 16.00
Lead, heavy, cents per lb	7.50 to 8.00	7.50 to 8.00
Zinc, cents per lb	7.50 to 8.00	7.50 to 8.00
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.25	$16.96

ELECTRIC RAILWAY MATERIAL PRICES

	Oct. 3	Oct. 17
Rubber-covered wire base, New York, cents per lb	34	34
Weatherproof wire (100 lb. lots), cents per lb., New York	34.40 to 36.75	38.75 to 40.00
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 37.72	35.00 to 39.00
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S' C. E. standard), 500 ton lots, per gross ton	$63.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, girder (grooved), cents per lb	4¼	4¼
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents erp lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	5	5
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	4.90
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	5.80
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	3.95
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	15 to 25	15 to 25
Waste cotton (100 lb. bale), cents per lb	13 to 13½	13 to 13½
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.90	‡1.80
Linseed oil (boiled, 5 bbl. lots), New York, per gal	$1.92	‡1.82
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	64	64

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* Government price. † These prices are f. o. b. works, with boxing charges extra.
‡Bid price, no quotation.

Franchises

San Diego, Cal.—A temporary permit has been granted by the City Council of San Diego to the Emergency Fleet Corporation to lay street car tracks from Thirty-second Street to the shipyard site, pending the granting of a franchise. While the tracks and the franchise will be held in the name of the Emergency Fleet Corporation, cars will be operated to the plant by the San Diego Electric Railway.

Bridgeport, Conn.—The Public Utilities Commission of Connecticut has granted the petition of the Connecticut Company for its approval of the method of construction of a single-track electric railway in Bridgeport for a distance of about 3400 ft., together with a 300-ft. turnout east of Noble Avenue. The construction of this railway is made necessary by war emergencies, and the company presented its petition to the commission at the request of the United States Housing Corporation.

Newburyport, Mass.—The Bay State Street Railway has been granted permission by the Board of Aldermen for the relocation of its tracks on State Street from High Street to the Newbury line.

Bellaire, Ohio.—The Wheeling Traction Company has been granted a five-year franchise by the City Council to operate cars within the city limits of Bellaire.

Trade Notes

Tri-City Railway Company of Illinois, Rock Island, Ill.—The Public Utilities Commission of Illinois has denied the petition of the Tri-City Railway Company of Illinois for permission to construct an extension in Moline. The commission found the extension justified, but held that the shortage of labor and materials is such that it cannot be done at present.

Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md.—A contract has been awarded by the Washington, Baltimore & Annapolis Electric Railroad to the Union Switch & Signal Company, Swissvale, Pa., for block signaling to be installed on its double-track line between Naval Academy Junction and District Line near Washington. This is the second section of signaling to be recently undertaken on the main line of that road between Washington and Baltimore. The new signaling will protect 36 miles of track and thirty-seven switches with twenty blocks on a headway of approximately three minutes under caution and six minutes under clear signals. The signaling has been laid out to reduce this running time one-half by the later addition of intermediate signals when future traffic warrants. The apparatus will be similar to that employed in the first installation, involving continuous alternating current track circuits, style "N," color light signals, mounted on iron pipe posts and model 15 vane-type relays. The switch indicators will be of the light type with push-button attachment, and will be used in all switches. Power at 2200 volts, 25 cycles, will be secured from the railroad company's power system at Naval Academy Junction.

New York Municipal Railway Corporation, Brooklyn, N. Y.—The Sixtieth Street subway tunnel under the East River was "holed through" on Oct. 14. This tunnel is the one through which the line of the New York Municipal Railway Corporation, connecting Manhattan with Corona and Astoria, L. I., will be operated. This tunnel is the deepest of the five new tunnels under the East River. The construction work is being done by P. McGovern & Company, New York, under the supervision of the Public Service Commission for the First District of New York. It is expected that the tunnel will be completed early next year. When it is placed in operation trains will run through it from the Long Island City terminal to Seventh Avenue, thence to Times Square, New York, and south over the Broadway line now operated by the New York Municipal Railway Corporation.

Lebanon & Franklin Traction Company, Dayton, Ohio.—The Lebanon & Franklin Traction Company, which operates a line between Lebanon, Red Lion and Franklin, has applied to the Public Utilities Commission of Ohio for permission to discontinue the service and abandon the line.

Levis (Quebec) County Railway.—A report from Levis County Railway states that reconstruction is under way of 11½ miles of track. The company has completed 3 miles on the Quebec Bridge division and expects to complete 2 miles more before winter. The remainder will be completed next year.

Moose Jaw (Sask.) Electric Railway.—The City Council of Moose Jaw recently passed a resolution recommending that the Moose Jaw Electric Railway build a line from Fourth Avenue, S. W. and Coteau Street, west to Ninth Avenue, S. W., thence north on Second Avenue to Lillooet Street, thence along Lillooet Street to Fourth Avenue. If the company agrees to build this line at once the Council will submit a by-law to the ratepayers, providing for a straight 5-cent fare, will indorse the one-man car proposals for the duration of the war and will defer the collection of taxes for 1917 and 1918.

Virginia Railway & Power Company, Richmond, Va.—It is reported that the Virginia Railway & Power Copmany contemplates the double-tracking of its Bay Shore Line to the Naval Base.

Power Houses, Shops and Buildings

United Railways & Electric Company, Baltimore, Md.—A contract has been awarded by the United Railways & Electric Company to Frainie Brothers & Haigley, Baltimore, for the construction of a waiting station at Columbia Avenue and Putnam Street at a cost of about $10,000.

Long Island Railroad, New York, N. Y.—A contract has been awarded by the Long Island Railroad to the Austin Company, Cleveland, for the construction of a building, 60 ft. x 225 ft. at Jamaica, N. Y., to cost approximately $40,000.

Pacific Power & Light Company, Portland, Ore.—Additional equipment is being installed by the Pacific Power & Light Company at its reserve power plant in Astoria, consisting of a 700-hp. steam engine and a General Electric 750-kva. generator, the two being direct connected. The increased equipment will give its reserve plant a capacity of 1600 kw. The Hammond Lumber Company, Astoria, has ordered equipment for a steam-electric plant to produce power which will be sold to the Pacific Power & Light Company, and which the latter will distribute to shipyards and other industries in the vicinity. The equipment comprises Erie City boilers of the combined capacity of 1800 hp. and a General Electric 1500-kw. turbo-generator; also a Beyer barometric condenser, a 3000-hp. Cochrane feed-water heater and the necessary circulating and other auxiliary pumps.

Duquesne Light Company, Pittsburgh, Pa.—Preparations are being made by the Duquesne Light Company, which furnishes power to the Pittsburgh Railways, for the construction of an electric generating plant at Cheswick, to develop not less than 120,000 kw. The cost of the proposed plant is estimated at about $16,000,000, of which amount about 35 per cent will be contributed from federal funds.

West Penn Power Company, Pittsburgh, Pa.—Work has been begun on the construction of a large electric generating plant at Springdale by the West Penn Power Company, which is controlled by the West Penn Railways. The cost is estimated at $5,000,000. Contracts, it is understood, have been placed with the Westinghouse Electric & Manufacturing Company for two turbo-generators.

Virginia Railway & Power Company, Richmond, Va.—It is reported that the Virginia Railway & Power Company will install two boiler units to increase the capacity of its power plant at Norfolk.

New Advertising Literature

Sanford Riley Stoker Company, Worcester, Mass.: Bulletin No. 31 describing operations of Riley underfeed stokers.

W. S. Barstow & Company, Inc., New York, N. Y.: A sixty-one page booklet containing the latest financial and operating statistics for the various railway and other utility properties in which they are interested.

Beaumont Manufacturing Company, Philadelphia, Pa.: Catalog 37, giving descriptions, illustrations and dimensions of standard Beaumont gates for controlling the flow of granular materials from bunker. The design of ash pits under boilers and the correct gate to use for this purpose are illustrated.

Rolling Stock

Gary (Ind.) Street Railway is in the market for five motor and five trail cars.

United States Housing Corporation, we are advised, is in the market for twenty-five cars.

Cameguay (Cuba) Electric Company is reported to be in the market for six open passenger cars.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., reports that it is in the market for ten cars.

Springfield (Mass.) Street Railway has added a new style gravel car and trailer to its equipment. Both the operating car and the trailer are equipped with independent brake devices, while the trailer likewise has its independent equipment for dumping the cars.

Bangor Railway & Electric Company, Bangor, Me., has purchased from the Stone & Webster Company of Boston a freight and express car with a capacity of 30 tons. The company has also purchased from the American Car Company in St. Louis, three large one-man cars and their arrival is expected daily.

Virginia Railway & Power Company, Richmond, Va., it is reported will purchase twenty-five street cars of the latest improved type. It is understood that the money for the purchase will be advanced by the government to the traction company in the form of a loan. The cars will be used on the Norfolk lines.

San Francisco-Oakland Terminal Railways, Oakland, Cal., as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 5, has been delayed on account of the difficulty in securing necessary material, in the construction of the ten trail cars building in the company's own shops, but the work is now well under way.

Trade Notes

Chicago (Ill.) Pneumatic Tool Company announces the appointment of A. G. La Pierre as traffic manager and F. O. Southbrook as manager of the order and production department, with headquarters in the home office of the company, Fisher Building, Chicago.

Boston Woven Hose & Rubber Company, Boston, Mass., at its last annual meeting, elected George E. Hall president. Mr. Hall was formerly vice-president and general manager and succeeds Henry B. Sprague, treasurer, who served as president during a portion of the past year, pending the annual election. Mr. Sprague continues as treasurer and assumes the additional duties of vice-president. Mr. Hall has been associated with the company for eleven years.

Elliott Electric Company, Cleveland, Ohio, announces its removal from 322-328 Champlain Avenue to 813-815 Superior Avenue, N. W., where it occupies the entire five floors and basement. The first floor is occupied by the retail store and supply department office. The second floor is devoted to the general office and the machinery department office. The repair shop for the repairing of motors is on the fourth floor. The remaining floors and basement are utilized to accommodate the large stock of motors and electrical supplies.

Allen & Peck, Inc., Syracuse, N. Y., formally announce the retirement of C. Loomis Allen from the firm and the change of the firm name to Peck-Shannahan-Cherry, Inc. The business conducted is that of engineers and managers of public utilities, and offices will be maintained at rooms 412-413-414 Syracuse Savings Bank Building, Syracuse, N. Y., and at 601 Maryland Trust Building, Baltimore, Md. The members of the firm are: Edward F. Peck, J. N. Shannahan, T. C. Cherry, Milford Badgero, William J. Harvie and C. D. Porter.

Robert C. Byler, for nearly four years advertising production man for the SKF Ball Bearing Company, of Hartford, Conn., has been appointed advertising manager of the SKF Administrative Company of New York City and will direct the advertising of the SKF Ball Bearing Company, of Hartford, the Hess-Bright Manufacturing Company, of Philadelphia, and the Atlas Ball Company of the same city, all of which are controlled by the SKF Administrative Company. Until arrangements are made in New York City Mr. Byler will remain with SKF Ball Bearing Company, if Hartford, Conn.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, October 26, 1918 *Number 17*

Congratulations, War Board, On Universal Car!

YOU have made good the trust that Uncle Sam expressed in you when he asked on Aug. 19 through his Bureau of Industrial Housing and Transportation for a car that could be operated one-man, two-man, all-around-the-town, on 'most any city track. You wasted mighty little time in discussing the most esthetic location of rivets or the relative advantages of Prussian blue and Bulgarian yellow. You just tore off your coats, smashed through all the old-time barb wire of association procedure and came over the top with two complete cars in less time than it used to take to standardize a thumb tack! This at least is one benefit brought about by the war.

How Shall Our Engineers Be Trained?

SATISFACTORY construction and successful service of electric railways as well as other utilities depend to an increasing extent upon the engineer. He has to do primarily with the design, installation and maintenance of track and other structure, rolling stock, power generating and distributing system, signals, etc. But he also finds an opportunity, if he is a real, all-round engineer, to assist in solving operating and other administrative problems. The electric railway manager is therefore interested in anything that tends to improve the qualities of the engineers whom he employs; hence he will not want to overlook the report on engineering education which has just been completed for the Carnegie Institution on the Advancement of Teaching and is reviewed briefly elsewhere in this issue.

Every employer of young engineers has experienced some difficulty in fitting them into his organization. This he has blamed upon the technical schools, undoubtedly with some reason. At the same time he appreciates in part the handicaps under which the educators labor. He may not perhaps have realized the extent to which his dissatisfaction, or the reverse, is affected by those personal qualities with which technical education has not greatly concerned itself in the past, nor which in all cases it can greatly affect. The schools must admit, however, that in future more attention should be given to the training of faculties upon which depend success in the handling of men and materials. Possibly there will be less time for the academic variety of training.

The railway manager has little to do with the educational side of this subject, but he can hold a sympathetic attitude with respect to it. He may possibly have a son who wishes to become an engineer. He certainly must depend largely upon engineers for results.

Why Has the Administration Forsaken the Electric Railways?

WHY does the federal government persist in leaving electric railways to the far from tender mercies of local authorities? Mere querulousness does not prompt this inquiry. We sincerely desire to know, in the nation's interest, why electric carriers must suffer from the withholding of that direct relief which has been bounteously bestowed upon other industries little, if any, more essential to public welfare.

The details of government intervention in production and price-fixing in many lines are too well known to require enumeration here. Take simply one example—that of the steam railroads. Starved for years by one set of government agencies until, as Mr. McAdoo recently said, there existed "adverse conditions [which], coupled with the extreme difficulty of borrowing money, would probably have resulted in the failure of some of the most important railroads in the country to meet their obligations under private management," the steam railroads had to be placed under the control of a new government agency. Under the exigencies of war, the result has been an economic rather than a political treatment of such carriers. With almost startling rapidity the Federal Railroad Administration has adopted the common business practice of increasing rates to cover higher costs of operation.

Direct federal operation was necessary for the adoption of this economic principle in the case of the steam lines, in view of the co-existent object of securing unified operation with a minimum of competition. The electric railways, however, must simply be saved from destruction. Direct federal operation is not needed. The means for adequate public control already exist, although functioning too often along the wrong line. Hence to insure obedience to a sound economic principle the federal government needs only to exercise the same supervision over electric railway rates as it has been prompt to assert over electric railway wages. Why does not the administration recognize its responsibility in this regard?

It has been hinted that electric railway situations are political "hot potatoes," and that the federal government is reluctant to handle them in any way. Wherever such cases exist, they are almost invariably due to the fact that politicians refuse to let die campaign issues upon which they can appeal to the public on the basis of misrepresentation and passion instead of justice. Since the administration demands that politics be adjourned during these trying days, however, this ascribed reason cannot be the controlling one in government circles.

Rather does it seem that the federal government places implicit trust in state and local authorities to treat electric railways as the national interests demand. But regulation of the steam railroads had to be improved on its rate-making side; that of the electric lines needs similar treatment. The war has done much to broaden the American mind, but it has not removed the demagogue, or local prejudice, or the secret selfishness of the public in dealing with that inanimate object, the corporation. A situation that makes possible the Buffalo fiasco is hardly conducive to perfect confidence in a speedy and fair settlement of traction difficulties at the hands of the localities concerned.

Some publics, some cities, some commissions will perform their full duty to the nation; others will not. The probable percentage of delinquents nobody knows. But why should the government think it safe to gamble with the future on this point at the expense of part of a vitally essential industry?

Navy Publicity Tour Shows Practicability of Long-Haul Electric Freight

THIS journal has consistently advocated an intensive development of freight handling by interurban electric lines. The need for such development has been accentuated by war conditions. There are reasons why some lines have not found it possible or advisable to develop this class of business, but we feel sure that it will be of interest to all to note, from an article on the recent navy publicity trip through the Central West, with what facility through carload freight could be handled between Chicago and Detroit, Mich., Columbus and Dayton, Ohio, Louisville, Ky., and many other points, entirely by electric railway. In this case the freight was composed of replicas of a submarine, a destroyer and a submarine chaser, accompanied by a party of fifty sailors from the Great Lakes Naval Training Station. The trip was, of course, far from being intended to demonstrate the possibilities of interchange of through freight. Its purpose was the education of the public concerning the work of the various branches of Uncle Sam's fighting forces and a patriotic support of the government's request for money and of the various institutions working to make life more pleasant for our boys "over there." Nevertheless the success of the experiment goes to show on how extensive a scale freight could be handled on our interurban lines with a sufficient amount of equipment available.

The cars used on this trip were equipped with standard M.C.B. wheels, which have a deeper flange and wider tread than most interurban and city car wheels. For this reason a little trouble was experienced in paved streets, but the difficulties were readily overcome. It must be borne in mind also that in this case the cars were purposely hauled into the heart of the cities, while in handling freight such sections of road would be carefully avoided.

A point of further interest in connection with the navy publicity train is the patriotic service which was rendered by the electric railway of the Central States, which carried the train over their lines free of charge, interrupting traffic to permit its transport to the heart of the city, advertising the event in advance, etc. We believe that any other electric lines would feel honored in rendering similar service, although few have a chance to give such conspicuous assistance, or even to serve shipbuilding, munitions or other immediate war industries. If, however, each property renders the best service possible under existing conditions, with the smallest consistent consumption of energy, coal and man power, does all in its power to obtain a rate which will permit such a quality of service to be given and conscientiously backs the government in its demands and requests, it is doing much to help win the war, although it may not be decorated with the Cross of Honor.

Auto versus Car in Checking Devices

A HIGH-CLASS automobile costs say $5,000. Its annual run may average 15,000 miles. Frequently, the owner of the car is the operator. Naturally, he has a personal interest in operating his car as economically as possible. For all that he does not trust his own good intentions but instals the following checking instruments on his automobile:

A mileage register to give the number of miles operated; a speedometer to indicate the various speeds while operating; a gasoline gage to tell the amount of fuel in the tank; an oil gage to show if proper circulation of lubricant is being obtained; a volt-ammeter to measure the current and voltage of the batteries; a temperature indicator to indicate danger should the supply of cooling water fail, and a clock on the dasher so that the driver can learn the time without fumbling for his watch.

It is true that the automobile could be run without these devices, but they are used because the owner wants to know what service he can get from his tires and other vital parts, when fuel should be added and when more lubricant is required to avoid damage to the mechanism.

Now let us contrast this practice with that in vogue on more than 90 per cent of the electric railway cars of America!

An electric railway car costs from $4,500 to $30,000 or more, and prices are still soaring. It may average 45,000 miles per annum or three times that of the pleasure automobile. It is always run by an employee, who seldom has any definite incentive to run the car as economically as possible. If this car were to be provided with the corresponding checking instruments, the line-up would be as follows:

A watt-hour meter to show the energy consumed; a coasting recorder to check coasting time; a power-on recorder to check power-on time; a device to check the unnecessary use of the brake; a temperature indicator to warn the motorman when motors, bearings or other running parts are nearing a high temperature; gages to show brake cylinder as well as main reservoir pressures; a speedometer to enable him to know whether he is maintaining his schedule speeds; ammeters in the operating circuit to show the motorman what peaks he is obtaining so that he can operate to avoid them; a clock with the second hand interlocked with the operation of the car in order to record the duration of the stops, and a distance counter to integrate the mileage made by the car during its full moving time and also during the shorter power-on time. We do not say that all of the foregoing devices should or could be installed forthwith. Nevertheless, this parallel of checking devices on private automobile and electric railway car warrants the repetition of that fine old admonition: "Think it over."

Rate-Making Viewed in The Light of Common-Sense

A STINGING rebuke has been given by Justice Swayze of the New Jersey Supreme Court to the municipal advocates who during the last year have been fighting not with facts but with wind the plea of the Public Service Railway for financial relief. The case arose through the efforts of the League of Municipalities to prevent the recently approved 7-cent fare from being put into effect.

The chief point which city counsel tried to make, as noted elsewhere in this issue, was that the New Jersey Board of Public Utility Commissioners had no power to increase the fare because it was without evidence of the value of the property. Justice Swayze, however, shows little sympathy with this argument. As he tersely puts it, the determination of a just and reasonable rate is a business question, depending for its answer upon many factors besides physical property. With the old 5-cent rate long accepted as standard, and with no proof of its unreasonableness presented by the cities, the addition of an amount to cover the wage awards of the War Labor Board surely does not result in an unjust and unreasonable rate. Justice Swayze is repressive, but his inability to see how the New Jersey commission could have drawn any other conclusion renders further characterization of the cities' argument unnecessary.

As for the suggestions that the railway seek relief in curtailment of service or in receivership, the court seems reluctant to take the municipal counsel seriously. The plea, too, that franchise rates are immutable in New Jersey is met with the reminder that this court and the highest court of the State, the Court of Errors and Appeals, have in the Collingswood and Atlantic Coast Electric Railway cases ruled in favor of State paramountcy in rate-making.

Justice Swayze has done a thorough job in showing up the lightness of the arguments presented by the city counsel. They may learn; time will tell. Already they are talking of securing appeals *ad infinitum* and of revoking all franchises because the 5-cent fare clause has been disregarded by the State. On this latter point let us add a jolt. The theory of controlling decisions in this regard is that franchises are binding as between the contracting parties, the cities and the companies, but that such instruments cannot operate to prevent the State from exercising its sovereign rate-making power when it so wills. An intelligent man, therefore, should hardly expect the courts to permit the wholesale abrogation of franchises simply because the municipalities are not allowed to exercise a power which is not theirs.

The Proposed Chicago Franchise Possesses Many Signal Advantages

ASSAILANTS of the pending Chicago traction ordinance have been using two favorite arguments in their contention that it should not be approved at the coming referendum. They say that it will pave the way for increased fares and that it should not be submitted to a plebiscite while so many of the male voters of the city are fighting for their country in the lands across the sea.

It is true that the proposed franchise would give the trustees authority to change the basis of fare to meet costs of service whether the new fare be higher or lower than the existing rate. This provision, however, merely substitutes a local board (the trustees) for the State commission which already has such authority. The Chicago Elevated system has now been heard on an application for a 7-cent fare, and the Surface Lines management has announced its intention to seek more revenue through the Utilities Commission. The chances are that both systems will be able to satisfy the State authorities that a higher fare is necessary to meet increased costs of operation that are unavoidable in this present critical period.

If the new unification ordinance were now in effect, the combined system could undoubtedly furnish transportation at a lower cost than the competing companies can. Reduced overhead charges due to the combination of facilities and the less operating cost of carrying passengers on an enlarged elevated system will make this possible. It is, therefore, clear to any unprejudiced mind that the prospects of a high rate of fare would be less on the proposed unified system than under a continuation of present conditions.

As to the other argument, the best answer is given by those who point to the fact that the ordinance if approved will call for the expenditure of $100,000,000 within six years and will give employment to thousands of men, including those who will be seeking work after their return from France. This will meet one of the most serious conditions that must be faced on the conclusion of the war—namely, the readjustment of the economic balance. War industries gradually must subside, and the men thus thrown out of work must look to other occupations for their subsistence. The public utilities, representing the industry of both war and peace, will be a considerable factor in helping to stabilize conditions.

If the men and women at home who have the chance of voting during war times overlook an opportunity like the Chicago situation to provide work for the returning soldiers and sailors, it would appear that they have not at heart the best interests of these absent men. The more opportunities of this kind that are offered, the quicker will the general economic readjustment take place and the less likelihood will there be of a serious financial disturbance to complicate the problems of reconstruction.

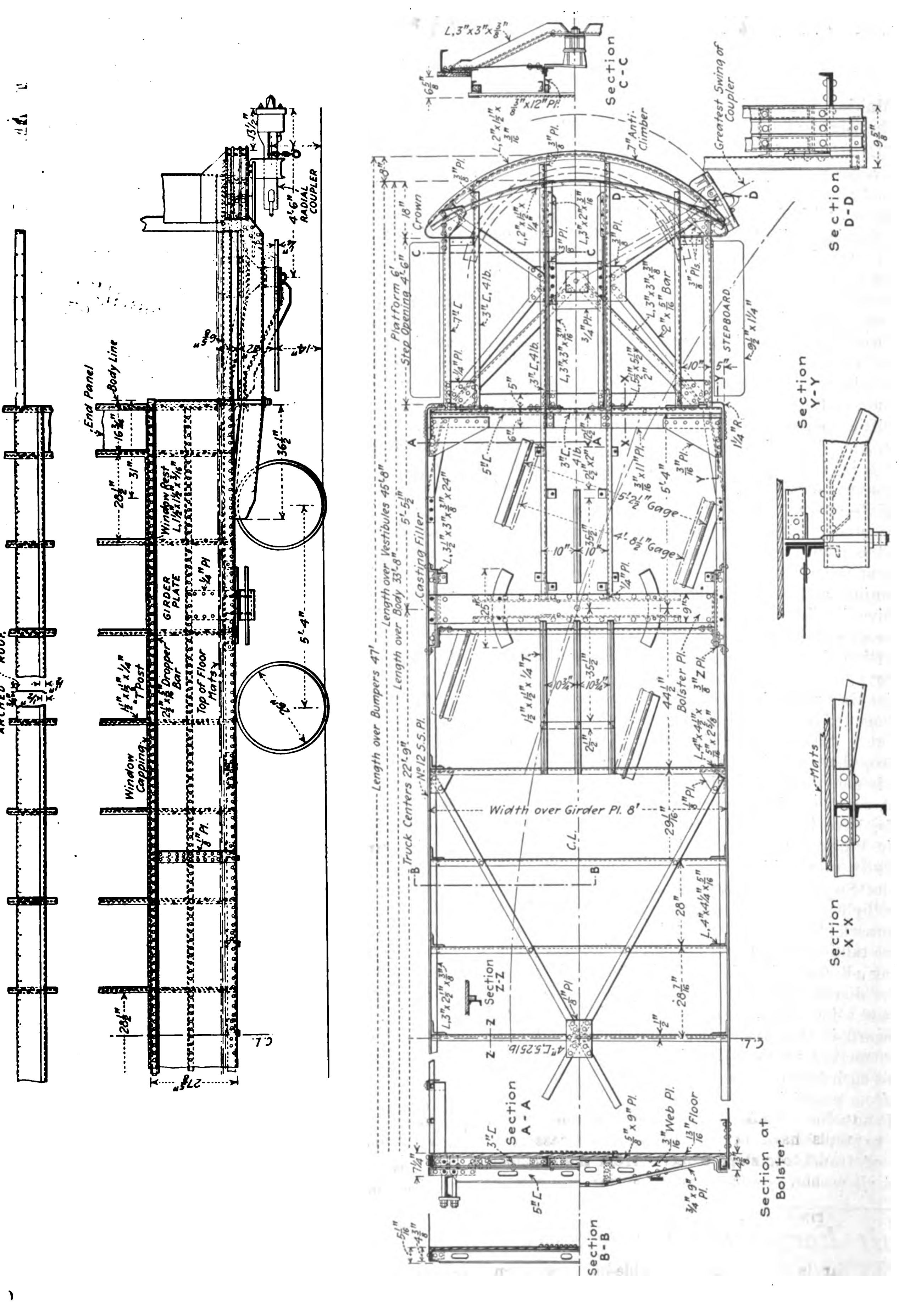
Don't Forget the Conference

[*See Page* 749 *for Program*]

Place—29 WEST THIRTY-NINTH STREET, NEW YORK

Date—NOVEMBER 1, 1918

Time—ALL DAY, BEGINNING AT 9.30 A. M.


L,3"x3"x3/8"
Section C-C
6 5/8"
3/4"x12" Pl.
Greatest Swing of Coupler
9 5/8"
Section D-D
7" Anti-Climber
Crown
18"
Platform 6'
Step Opening 4'6"
Length over Vestibules 45'8"
Length over Bumpers 47'
Length over Body 33'8"
5'5 1/2"
Casting Filler
Truck Centers 22'9"
No. 12 S.S. Pl.
Width over Girder Pl. 8'
C.L.
STEPBOARD
8 1/2"x1 1/4
1 1/4"R
Section Y-Y
Section X-X
Mats
5'2 1/2" Gage
4'8 1/2" Gage
5'4"
Bolster Pl.
3/8" Z Pl.
28"
Section Z-Z
4" L 5.25 lb.
Section A-A
Section B-B
Section at Bolster
3/16" Web Pl.
13/16" Floor
5/8"x9" Pl.
3/4"x9" Pl.
3" L
5" L
7 1/4"
13 1/2"
4'6" RADIAL COUPLER
End Panel
Body Line
36 1/2"
5'4"
Window Rest
GIRDER PLATE
Dropper Bar
T Post
Top of Floor
Mats
Window Capping
ARCHED ROOF
Leg cut off for each Post
20 1/2"
31"
16 3/4"
27 7/8"

Underframe and Side Frame Details of Type A Car Submitted by A. E. R. A. War Board

The First Universal Car

Preliminary Details of the One-Man, Two-Man, Prepayment and Postpayment Car Submitted by War Board to Housing Bureau—Provides Latest Labor-Saving and Time-Saving Devices and Is Suitable for Either Single or Two-Car Operation under Great Variety of Conditions—Cars Have No Drop Platforms and Are Unusually Light

As NOTED in the ELECTRIC RAILWAY JOURNAL for Oct. 19 the War Board of the American Electric Railway Association on Oct. 17 suggested two types of cars for use by the United States Bureau of Industrial Housing and Transportation, following a request for designs and specifications from Otto M. Eidlitz, director of the bureau.

Both designs, which are known respectively as designs A and B, were prepared by C. O. Birney in co-operation with several car builders and other manufacturers of electric railway equipment. Both cars are arranged for either single or train service, for operation by either one or two persons, and for either prepayment or pay-as-you-leave operation, single-end or double-end control. Type A is the one selected. With type B it is shown on the accompanying supplement.

DIMENSIONS, OPENINGS AND STEPS—NO DROP PLATFORMS OR RAMPS

Type A is 47 ft. 9 in. long over all and 8 ft. 2 in. wide overall. It is expected that these limiting dimensions will take care of any clearances in the cities where this car is likely to be used. The end platforms are 4 ft. 6 in. over the dashers with a clear entrance of 30 in. The side door has a clear opening of 48 in. The platform floors are on the same plane as the body floors, thus calling for three entrance steps as follows when a 26-in. wheel is used: From ground to first step, 14 in.; from first step to second step, 12 in., and from second step to floor, 6⅝ in.

The exit steps at the side are as follows: From the floor to first step, 8⅝ in.; from the first step to the second, 10 in., and from the second step to street, 14 in. These latter steps are fixed and within the car.

As it was the intent of the bureau to get a car for average rather than for exceptionally congested conditions, a comparatively short platform is used. From a constructional standpoint, this would mean a reduction in weight and maintenance; nor is the shorter length an operating disadvantage because, after all, the throat of the platform at the fare box and the seating arrangement are more important than the width of the steps. Weight and cost are also saved by the use of flush platform floors.

Further to save weight and reduce accidents, all ramps and wells have been avoided. The passenger who uses the side door steps directly from the car-floor level to the exit steps on the side of the car.

HIGH SEATING CAPACITY—PNEUMATIC DOOR AND STEP CONTROL

Since the car is arranged for double-end operation, the seating plan necessarily is symmetrical although the car may be used on both the pay-as-you-enter and pay-as-you-leave plans. The seats adjacent to the platforms, both end and side, are longitudinal while the rest are transverse. Folding seats are provided in staggered relation at the side doors, one for three passengers and one alongside for two. Other folding seats, including those of the motorman, are available according to the direction of running.

As a single-end, one-man car, the seating capacity would be sixty-one since three permanent seats could be added to the rear platform; as a double end, one-man car, the seating capacity is fifty-eight; as a single-end, two-person car, the seating capacity is fifty-six and as a double-end, two-person car, is fifty-three.

Because of the public's preference, transverse seats have been applied wherever they could be used without interfering with the flow of traffic. While the seats themselves are 32 in. over all, their actual seating space is 35 in. because the seats are set 3 in. from the wall of the car. Through special construction, comfortable knee-room is established with a centering of but 28½ in. Should the cars be used in a climate demanding no heat insulation, the aisle width between the cross-seats would be 26 in.; otherwise, 24½ in. The seats will be made of wood, steel and rattan.

All doors will be of the folding type, air operated, hung on ball-bearing type hinges. The end doors will be of the single folding type with two leaves and the center doors of the double folding type with four leaves. All doors will have rubber cushions and lower panels glazed in wireglass. As the cars are of the open-bulkhead type, no other doors are used. Among the reasons for operating the doors by air are the elimination of manual labor, the quicker action of the doors, the increased efficiency of fare collection and the decreased likelihood that cars will ignore would-be passengers.

ANY CHARACTER OF FARE COLLECTION POSSIBLE

The foregoing arrangement of steps, doors and seats is adapted to any kind of fare collection desired. For example, if the car is used for heavy terminal loading at a prepayment area, passengers are at liberty to enter through one front and two center passageways, totaling 6 ft. 6 in. If used as a pay-as-you-leave car, passengers would enter via the front platform and pay as they passed the conductor stationed just forward of the center door. The arrangement differs from the usual pay-as-you-pass type only in permitting transverse seats in both sections because the car is double-ended. In this character of operation, the rear platform is locked. In emergencies, however, every door on the car or two-car train, could be unlocked. Inasmuch as these cars are likely to be distributed among different companies, no attempt has been made to specify the mechanical details of fare collection.

The total weight of Type A, completely equipped, is estimated at 34,700 lb. using four 40-hp. motors, multiple-unit control, couplers and other train-operating apparatus; or 30,700 lb. if equipped with four 25-hp. motors and arranged for single car operation only. In view of the decreased weight of these cars compared with preceding types of like capacity, their schedule speed with motors of the capacity mentioned will tend to run about 10 per cent higher. The air brakes will include safety control equipments whereby control, brakes, doors, steps and sanders will be interlocked as on the standard one-man safety car. Electric heating and thermostatic control are specified, the number of heaters to vary with climatic conditions, but usually ranging from eighteen to twenty-four. Ventilation will be provided through sixteen exhaust ventilators of approved type. The lighting circuit will comprise five circuits of 23-watt mazda lamps, with two circuits so ranged that either headlight can be turned on or off from either end of the car. Push-button buzzer signals will be available for the passengers.

Buttons will also be provided in all control stands for signaling between the motorman and the conductor or conductors. All wiring will be placed in a flexible, featherweight conduit.

CONSTRUCTIONAL FEATURES

The car will have straight sides, round vestibules, arch roof, all floors on one plane, folding doors and steps on right-hand side of each platform, folding doors and stationary steps on each side of center of car, open bulkheads and two sashes per window opening with top sash stationary and the lower sash arranged to raise. The general construction of the body is steel of commercial shapes with wood finish. Side posts and carlines will be formed as continuous pieces from sill to sill. The roof boards will serve as the ceiling.

The underframe will consist of standard commercial shapes. Two center sills will extend from the body bolster to the bumper. Because of this through construction, a sectional end sill reinforced underneath with a channel iron will be used, all being tied together with a gusset plate. Diagonal braces will extend from the gusset plates to the ends of the vestibule. Diagonal braces will also be used between the drawbar fulcrum and side sills of the car. If drop platforms were used, the center sills would have to be bent down under the end sills, entailing much additional weight. The ends of the car will be fitted with anti-climbers.

The reinforcement at the side openings consists of the usual cross-sill plus a channel iron which forms an arch from side sill to side sill. The pier panels at the side doors are reinforced inside with an extra plate. The letterboard is made of steel reinforced at the top with angle irons to give the necessary strength. The side girders are of No. 12 sheet steel, riveted to the side sills, seat rest and window rest angles and to the T-posts. At splices there is a plate on each side. The dropper bar is riveted through the window rest angles. The inside of the car will include a truss plank extending from the floor to the seat-rest angles, and a composition board will be placed between posts extending from the seat-rest angle to the window-rest angle. An air space is provided between the truss plank, the composition board lining and the outside steel girder. As the cars must be adapted to the greatest variety of overhead clearances, it was thought advisable to keep the roof low. Hence the proper height of trolley base, where necessary, is to be obtained by using the elevated stand of angle iron now so familiar through its common use on the safety car. The use of the stand also tends to reduce the noise of the trolley and saves the roof ventilators from being damaged by trolley poles.

Single-thickness car flooring of yellow pine will be used, with ⅝-in. maple floor strips on the platforms and in the aisles. Besides their use on all steps, safety treads will also be set in flush in the flooring at all door openings.

The trucks will be of the swing bolster type, having an interposed spiral spring above the plate spring and provided with a bolster guide. The wheelbase will be 5 ft. 4 in. and the wheels 26 in. Type A cars will have truck centers of 24 ft. 5 in. and type B, 22 ft. 9 in.

It may be interesting to note that practically all of the constructional features are based upon the experiences of Stone & Webster on a large number of properties in cities varying in population from 20,000 to 400,000. In fact, many cars built according to these principles have already been in use for nine years, which period has been ample to prove their merit from the standpoint of economical maintenance.

TYPE B, NON-SIDE-DOOR CAR

Type B, the alternate design submitted to the Bureau of Industrial Housing and Transportation, does not differ materially in construction and equipment from type A, but is intended for conditions where it might be more desirable to operate with doors on both sides of the platforms instead of using the end and side-door combination of type A. This car, as shown in the accompanying plans, is 47 ft. long, but has 6-ft. platforms with 4-ft. opening in the clear. This type is also intended for either one-man or two-man operation. The seating plan is a combination of longitudinal seats at the openings and cross-seats elsewhere. As a single-end, one-man car, it would seat fifty-nine; as a double-end, one-man car, fifty-two; as a single-end, two-man car operated near-side, fifty-seven; and as a double-end, two-man car, fifty-two, inasmuch as the conductor would be on the rear platform. The weight of this car completely equipped for train operation with 40-hp. motors would be 33,700 lb. and for single-car operation with 25-hp. motors and no drawbars, 29,700 lb.

Energy Consumption on British Tramways

At the recent annual conference of the Municipal Tramways Association of Great Britain J. M. McElroy, general manager Corporation Tramways, Manchester, said that the tramways of the United Kingdom use 620,000,000 kw.-hr. of energy annually, or about one-fourth of the total output of the country. Of this 79 per cent is used by municipal and 21 per cent by company undertakings. Of the total number of 176 British tramways thirty-eight have their own power stations and 138 purchase their energy. With regard to total consumption, however, 50 per cent of the electrical energy generated is used by tramways which produce their own power and 50 per cent is purchased from central stations.

Engineering Education Should Increase Production

MORE than three years ago the Carnegie Foundation for the Advancement of Teaching selected Prof. C. R. Mann, then connected with the University of Chicago, to make an exhaustive study of technical education in the United States. The results have now appeared in the form of a report which is being published.* In this work Dr. Mann has had the co-operation of the national engineering and other societies and of the technical schools generally. His purpose has been, first, to determine the present status of engineering education with respect to the needs of industry, and, second, to suggest principles and practices which would appear to be needed to improve this status. A very brief review of the report is presented here, not as a summary but rather to indicate its general plan and scope.

In collecting data for this report, among other plans used, circular letters were sent to engineers throughout the country, asking them what they considered the most important factors in determining probable success or failure in engineering. In the replies received personal qualities were mentioned seven times as frequently as knowledge of engineering science and the technique of practice. Of six groups of qualities headed respectively character, judgment, efficiency, understanding of men, knowledge and technique, the summarized votes of more than 7000 engineers placed character at the head of the list by 94.5 per cent and technique at the bottom by an equally decisive majority. This condition must, of course, be kept in mind by educators in planning their curricula and methods of conducting courses.

The plan of co-operative education, first introduced by the University of Cincinnati and later adapted elsewhere in principle if not in form, impressed Dr. Mann as containing the fundamentals of the ideal technical education. The plan was described in an original article in the issue of this paper for April 15, 1916, page 724, in its application to electric railway work, by a member of the faculty. About 100 of the industries of Cincinnati and vicinity are now co-operating with the university. The companies represent every important phase of engineering, so that the university is able to arrange the work schedules in such a way that each student progresses regularly through every phase of his specialty, from the crude and rough work to the more difficult and responsible positions.

Financially, this co-operative plan is very economical both for the university and for the students. The university has access without expense to shops and shop equipment that are worth millions of dollars and are never allowed to deteriorate or become antiquated. The total cost to the university per student per year is about $130, compared with $250 to $600 at schools of equal grade. The money earned during shop periods makes possible an engineering education to many a boy who could not otherwise afford it.

In addition to the financial advantage, however, Dr. Mann points out many educational advantages. The work, he says, has three marked points of superiority over that done in college shops: (1) It is real commercial production that must succeed or fail on its merits; (2) the variety is much greater than is possible in any college shop, and (3) the student is thrown in personal touch with workmen.

Of the ideas which Dr. Mann offers as necessary ingredients of a new method of training engineers, one of the most important is the adoption of testing and grading methods which will not only eliminate from admission to the schools those not qualified to pursue engineering studies, but will reveal throughout the course the progress of the student—progress not with reference to purely academic ideals, but to the equipment he will need in active professional life. Such objective testing and grading methods, he contends, will not only eliminate the unfit at the start, and insure progress having a relation to the needs of engineering practice but will furnish a sound test of abilities of teachers and spur them on to creative teaching work.

The method Dr. Mann proposes for the actual formulation of the courses is to have in each school a standing committee which shall decide what he calls the "common core" of all engineering education, no matter what the specialty. This "core" being defined with reference to the needs of the engineer, the committee would determine the time necessary to cover it adequately and would shape the courses accordingly, instead of arbitrarily parceling off to the different departments the time predetermined as available and letting each department crowd as much as possible into its allotted time. The common core would have studies under four main heads: (1) Participation in real industrial work; (2) engineering laboratory work, including drawing and descriptive geometry; (3) mathematics and science and (4) humanistic studies. Participation in industrial work would best be interwoven with the three classroom and laboratory divisions of the student's work. At the beginning of the course and while giving the common-core studies, the testing and grading methods already referred to would be applied.

In addition to the standing committee to take care of the "common core" studies, there should be additional committees, one for each of the semi-specialties offered at the school, such as civil, electrical and chemical engineering. Here the same method would apply: that is, the committee, having a clear-cut conception of the demands of present-day engineering, would determine first the equipment needed by young graduates and then the time required to obtain that equipment, and would develop the courses accordingly. This semi-specialized work would follow the "common core" studies, and again grading and testing methods would be used which would indicate the relationship between academic attainments and the qualities needed for success in engineering work.

As soon as it is possible, says Dr. Mann, to measure the results of teaching by impersonal means, successful teaching will be as easy to recognize as profitable research. Objective records of achievement have been found in industry to be one of the best incentives to creative work. Hence the line of progress in education does not lie in the direction of making arbitrary distinctions between research and teaching, but rather in the direction of removing the limitations placed upon the spirit of inquiry, so as to encourage its expansion to include education and human relations generally.

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*Carnegie Foundation for the Advancement of Teaching, 576 Fifth Avenue, New York City, "A Study of Engineering Education."

Peccavimus

[We have sinned]

Harsh days and Heavy have fallen upon us.

In our Careless Youth we covenanted with the Devil of Flat Fares to sell Our Soul forever and ever for Five Cents.

Then carefree we went our Heedless Way until Intake was met and overcome by Outgo.

Now like unto Hagar in the desert we wail aloud for Help.

And naught but the Mocking Echoes answer.

Many may Hear, but few Listen.

Even those who Listen dare not help because of the Swamp of Prejudice that lieth between.

Ah, had we but drained this Swamp in years agone with the dredges of Courtesy, Salesmanship, Frankness!

Yet, if there be solace in the thought, not we alone have committed Grievous Errors.

Yea, verily, every industry worth while hath Done the Same.

Before this Armageddon, what American banker believed that the People would buy Baby Bonds by Billions?

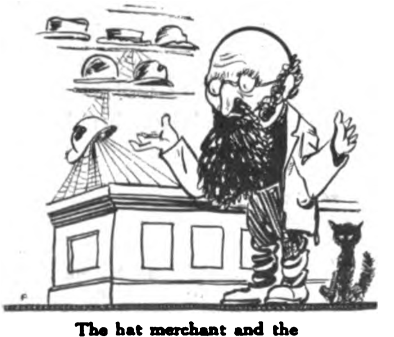
Who careth that we have sunk great sums in Unwise Policies or in Improvements long since Forgot?

Doth the Public plop Tears over the plight of the Hop-Grower, the Brewer and the Distiller?

If we be fit for this day and age, we must Prove it by Good Works: not by Cries for Succour.

Through our Own Neglect in days of Old to set aside enough from Earnings to replace track and plant as they Wore Out, and cars as they became Obsolete, we now lack the wherewithal to give good Service through the lean days of War.

So to the burden of higher wages, higher material cost and higher fuel cost, must be added the Loss of Travel from operating with Misfit Equipment.



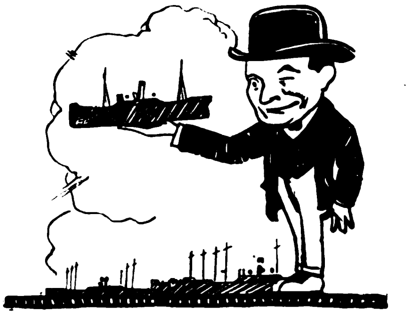
The hat merchant and the 1898 head covering

Who would patronize a merchant whose latest Head Covering was of the vintage of eighteen ninety-eight?

Therefore, is it meet that we should expect the People to rush to the aid of the Electric Railway which operates dingy, unkempt chariots that are but a Laughing and a Scorn alongside the Jitney glorying in Sheen and Speed?

Honest, sincere publicity hath its Merits, but New Cars are of greater worth than a fulsome flock of Publicity Patterers with their camouflaging bunk, as it hath been rightly called.

But, brethren, even bright, quick-acting comfortable cars must not be expected to do all the Selling of Transportation. Though a Good Cigar may sell itself, yet doth the Cigar-Store Conductor rich in wisdom say "Thank You."



Ships are standardized, why not cars?

Never let us forget, and never must our Man-servants or Maid-servants forget, that the Electric Railway hath Competition both a-wheel and a-foot.

If the Electric Railway, perchance, is no more of these days than is the Camel, then is there no Law mighty enough to bring Salvation from the Jitney or the Bus.

Happily, it is not the Electric Railway but the Nineteenth Century point of view that is not of this Time.

Is it just that we ask the People to shoulder in the Future such burdens as these:

Prodigal prices for girder rails because nearly Every Company wanteth its own particular Section rolled to its Individual Specification?

Failure to drive forth fuel-wasting power-house equipment, duplicate pole lines and needless copper because we will not co-operate with our brother Central Station?

Deliver up a $10,000 car unto a Motorman who draweth without stint on a Million Dollar Power House because a power-saving device costeth a few Shekels and involveth the Care and Trouble of checking?

But, verily, that which is Worst of All, is never to adopt a car already used elsewhere; and seldom, if ever, to duplicate one's own car.

Who hath said that this is but as the Babble of Dreams?

So mocked the Old Shipbuilders at the thought of the Standardized Ship. Yet see what the Shipping Board hath made to come to pass with the Standardized Ship!

Whilst we keep on making electric cars Different with each order, we do but dissipate our Substance.

Yea, even the Safety Car is but the first step toward the Promised Land, for its cost per seat is twofold that of the Humble Ford that cluttereth the Highway.

Were we but as Wise as the Builders of the Automobile, the cost of our cars would not have risen One hundred to One Hundred and Fifty Per Cent compared with a Ten to Fifteen Per Cent in autos.

And yet it is Automobile steel, rubber and the like—not Cast Iron—for which our Government doth cry most loudly.

Brethren, blame not the Builder of Cars for this waste.

We, the customers, who always desired something somewhat different, are the Sinners.

Standardized street cars should be turned out ready to run at one-third their cost of To-day.

They who have so hardened their hearts as to keep to their own way in cars, in rails or other things should Pay the Price.

Let us judge a car as the Artificer judgeth a Machine Tool, namely, by its Work.

The Work of a car is to produce Revenue Miles. Let the standard car, then, have the Wherewithal to put forth such miles—be it air brakes, air doors, motor-driven fare boxes, recording fare registers or any other device that Saveth the Second.

If this new car be good for Five Hundred Thousand Miles, let us extract its Worth in Ten years or less instead of Twenty.

While running this car, let us Set Aside from its Earnings enough to buy a new car after it hath run its course.

Thus if a car cost Fifty-five Hundred Dollars new, putting by but one cent a mile and Five Hundred Dollars Salvage value of the first car will pay for it.

But in the meantime we will save far more than this in lower Operating Cost alone.

One car for all our Land?

Verily, no, but for at least Half the Mileage one car will do, and the other half can be provided for by two or three other standards.

The Confessions of an Electric Railway Operator

By JOHN A. BEELER

For the first half, the One-Man Safety Car equipped with all the latest Life, Labor and Time-saving Devices is the answer.

It saveth the Hire.

It saveth the Man.

It saveth the Accident.

It saveth Power which meaneth Coal.

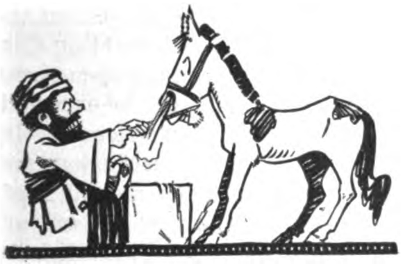
It saveth the Maintenance of the Way.

Its speed and short headway overcome the Jitney, entice him who otherwise would walk to pay fare, and even cause the Rich to cease a large part of their riding in automobiles.

And, to-day, he who preferreth this car unto the auto showeth forth true love of country for he Conserveth Gas.

Who are they that object to a car that maketh the Lemon even as the Melon?

The Platform Men, the People?



"'Tis easier to lead a horse to water——"

Not a Tithe as much as We with our prejudices and Groundless Fears!

Good money will not be thrown after bad by Bondholders and Stockholders, but there is always a way to get Money when we are going to Make Good.

Hearken not to the Tempter who saith it is easier to get a Five, a Six or a Seven-Cent Flat Fare.

Brethren, as it is easier to lead a Horse to Water than to make him Drink, so it is easier to Charge a higher fare than to make the public Pay the same.

Hundreds of railways have Obtained the higher flat fare.

How many are Satisfied with a plan that driveth off him who rideth but a Brief Span and retaineth him who exacteth the uttermost service?

For most cities, the increased flat fare with no improvement in service is but as membership in the Suicide Club.

The increased flat fare giveth away apace to thoughts of the Zone Fare.

Why should we not, like the Wise Merchant, sell according to Quantity and Quality?

Let us base our fares on distance, density, time of day and other matters that govern cost.

Let us not think in terms of High Fares for hauls of Great Length but let us think in terms of Low Fares and Short Hauls.

Then it will come to pass that we Attract customers; not Repel them.

When sales in the large package lag, the wide-awake merchant provideth a smaller one that turneth the trick.

Applied to our business the moral is that we need the Zone System, where everyone payeth for what he Getteth in the quantity that he desireth.

Let not the fear of fare collection complications stand in the way of Zone Fares. Hath the gathering of the flat six or seven-cent fare proven simple?

Cannot the Electric Railway afford to give up the Toe-hold of perpetual franchises if the Municipality will let go the Stranglehold of the flat Five-cent fare, good to carry the passenger to the uttermost parts of Creation, reduce taxation, abolish unjust Paving Burdens and regulate the Impious Jitney?

When we commune with ourselves and ask whither the Electric Railway goeth, let us conceive how we would plan Transportation for any given city, regardless of Existing Conditions.

Would it be by autos, buses or cars?

Autos verily no, because of the high ratio of man power to passengers, of extravagant and dangerous use of streets and of inability to Serve Satisfactorily in every kind of weather.

Buses, perhaps, to a limited extent on broad, well-paved streets where the People are willing to pay the Higher Fares necessary.

Cars everywhere else, but frequently, with very Different Routing.

We would include new Traffic Rules to fit the change from the horse carriage and horse car to the automobile and electric car.

In all these matters let us work With our Public Service Commission instead of Against it.

Because it beareth most of the People most of the time, the street car deserveth Precedence and Preference.

Let us try likewise for the Staggered Hour plan for business. It will do Much for us as well as for the People. For us it meaneth two or three trips per car during the Rush Hour instead of one, fewer extras and lesser carrying charges on trippers. For the People it will go far toward the ideal of a seat for every passenger every time.

This car doth leave no room for the jitney

Where communities cannot or do not co-operate let us urge the justice of an Extra Rate of Fare during the rush hour to keep people on non-essential business away. Surely, in these days the Worker doth receive enough to pay any Just increase.

But these changes and readjustments can come Only when we are willing to throw into the Pot all that has gone before.

Make us to realize there is no fabulous Pot of Gold at the foot of the Traction Rainbow.

Let us then seek Forgiveness for coveting in olden days the flesh-pots of Egypt when we feasted on Short Hauls and Low Wages.

And covenanted in Perpetuity for the Five-cent fare, whereby the present shrunken and attenuated nickel must be Accepted for a ride from Dan to Beersheba.

Throw old ideas into the melting pot

Let us seek protection from the Pitfalls of Higher Flat Fares that sink us in Deeper Misery than before.

Help us to help ourselves and enable us in a spirit of due Humility to become satisfactory Public Servants.

Let each of us become an Efficient Laborer that is worthy of his Hire.

Yea, though we have Sinned, good works will open the Gates of Salvation.

How Public Service Railway Is Helping Build Ships in Newark Vicinity

A Two-Mile Extension, Connecting Track, Prepayment Terminals, Carhouse and New Cars Help Haul the War Workers — The New Facilities Cost More Than $800,000

THE marshy meadowlands bordering on Newark Bay, east of Newark, N. J., and included in the tongue of land between the Passaic and Hackensack Rivers, have changed almost overnight from the breeding place of the famous Jersey mosquitoes to shipyards, army quartermasters' and engineers' depots and other works devoted wholly to war-time activities. This change has thrown a considerable burden upon the local electric railway system, the Public Service Railway. In some instances the problem of providing local transportation was particularly difficult because of the distance of the new and rapidly-growing industries from the old railway lines. The railway company has been further handicapped by the difficulty of securing operating crews because of the high wage rates prevailing in the war-industry plants. Of the shipbuilding plants the largest is that of the Submarine Boat Corporation. This plant, which is controlled by the Emergency Fleet Corporation, is next in size to the great Hog Island shipyard. It has ways for twenty-eight ships and employs about 12,000 men. Its location is indicated in the lower right-hand corner of the accompanying map as the terminus of a new extension to the existing lines of the Public Service Railway. Two other important shipyards are those of the Foundation Company and the Federal Shipbuilding Corporation, both located on the narrow tongue of land between the Passaic and Hackensack Rivers at the head of Newark Bay. These plants are near the Lincoln Highway over which the railway company's double-track line to Jersey City passes. More than two-thirds of the employees of the Submarine Boat Corporation live either in New York or at some other place east of the Hudson River. The same is true of about 85 per cent of the employees of the other two shipbuilding companies. The employees of these companies are carried eastward over the Lincoln Highway and are delivered either to the nearest terminals of the Hudson & Manhattan Railroad or to the ferries from which they are distributed to various points in Manhattan and the other boroughs of the City of New York. As was noted before, no direct means of local transportation was at first available to the employees of the Submarine Boat Corporation, and until recently their transportation either directly to their homes or to the Newark terminal of the Hudson & Manhattan Railroad, has been dependent upon workmen's trains operated over an extension of the Central Railroad of New Jersey, buses operated by the Public Service Railway, private jitneys and a ferry operated in the morning and evening between the shipyard docks and New York. While the other two shipyards are located near an existing street railway line, the loading of the 4500 employees of the Foundation Company and the 7500 employees of the Federal Shipbuilding Corporation in the open street was, as might be expected, a difficult problem involving much confusion and delay to the regular traffic. The problem of furnishing transportation to these shipyards has been further complicated by the large number of other manufacturing plants engaged in war industries, whose peak loads have to be handled simultaneously with those due to the shipyards. Among these plants may be mentioned the International Arms & Fuse Company employing 9020 workers and located in northern Newark, the Singer Sewing Machine Company, employing 6500 workers, and the twenty-two companies of the Waverly Manufacturing Association, an association of manufacturers including such widely diversified interests as the Weston Electrical Instrument Company and companies engaged in the manufacture of leather goods.

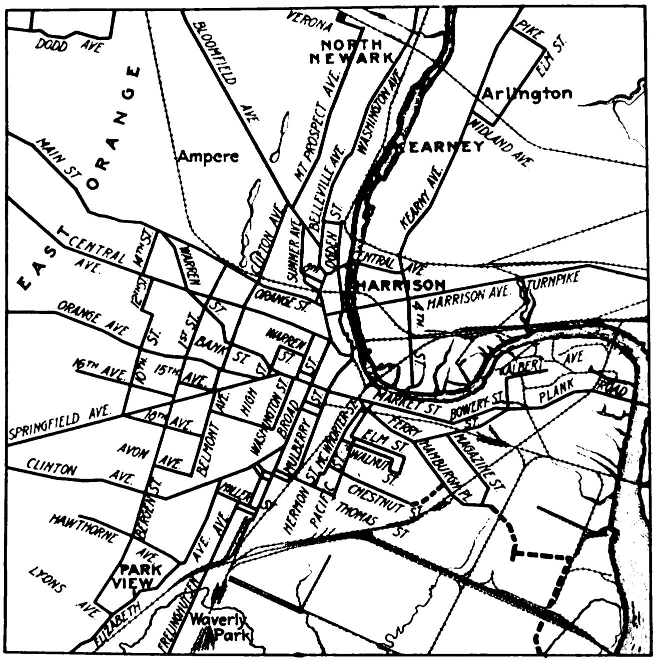

DODD AVE
VERONA
NORTH NEWARK
BLOOMFIELD AVE
EAST ORANGE
MAIN ST
Ampere
MT PROSPECT AVE
BELLEVILLE AVE
WASHINGTON AVE
PIKE
ELM ST
Arlington
MIDLAND AVE
KEARNEY
KEARNY AVE
CENTRAL AVE
12TH ST
WARREN
CLINTON AVE
SUMMER AVE
ORDEN ST
CENTRAL AVE
HARRISON
HARRISON AVE
TURNPIKE
ORANGE AVE
ORANGE ST
4TH ST
10TH ST
1ST ST
ST
BANK ST
WARREN ST
ST
16TH AVE
15TH AVE
HIGH
WASHINGTON ST
ST
ALBERT AVE
PLANK ROAD
MARKET ST
BOWERY ST
SPRINGFIELD AVE
10TH AVE
BELMONT AVE
BROAD
MULBERRY
MC WHORTER ST
FERRY
ST
ELM ST
MAGAZINE ST
HAMBURGH PL
AVON AVE
CLINTON AVE
WALNUT ST
ST
BERGEN ST
MILLER
HERMON ST
PACIFIC ST
CHESTNUT ST
THOMAS ST
HAWTHORNE AVE
AVE AVE
PARK VIEW
LYONS AVE
ELIZABETH
FRELINGHUYSEN
Waverly Park

FIG. 1—MAP OF NEWARK AND VICINITY

The problem of providing sufficient crews for operating the extra cars required at the shipyards during the rush hours was solved, as in a number of other instances noted in recent issues of the ELECTRIC RAILWAY JOURNAL, by the shipyards furnishing men who had had previous railway training. At present the Foundation Company is furnishing five crews and the Federal Shipbuilding Corporation sixteen crews. As at other shipyards furnishing similar service, the railway pays for the platform time of these men at the

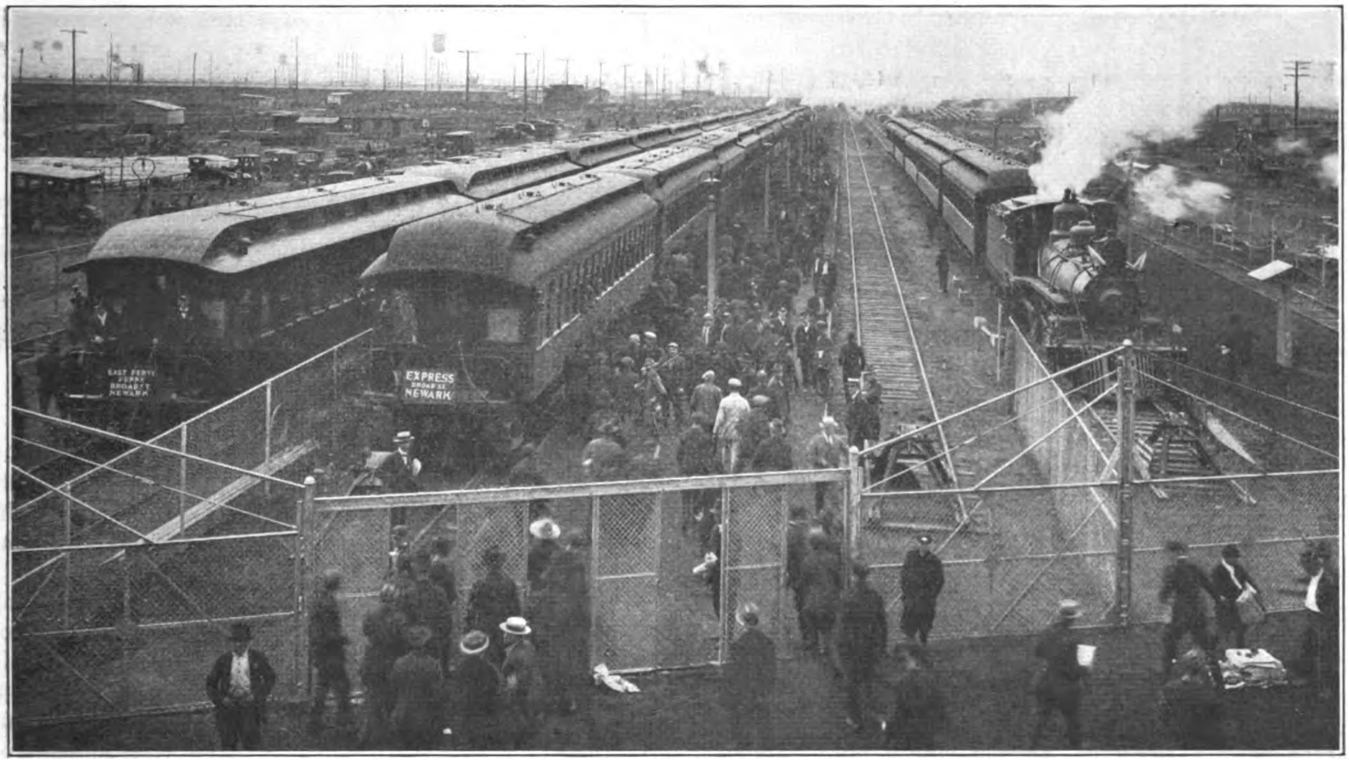


FIG. 2—CONDITIONS WHICH MADE THE NEW LINE NECESSARY

minimum rate paid platform men, the difference between this rate and that prevailing at the shipyards being paid by the Emergency Fleet Corporation.

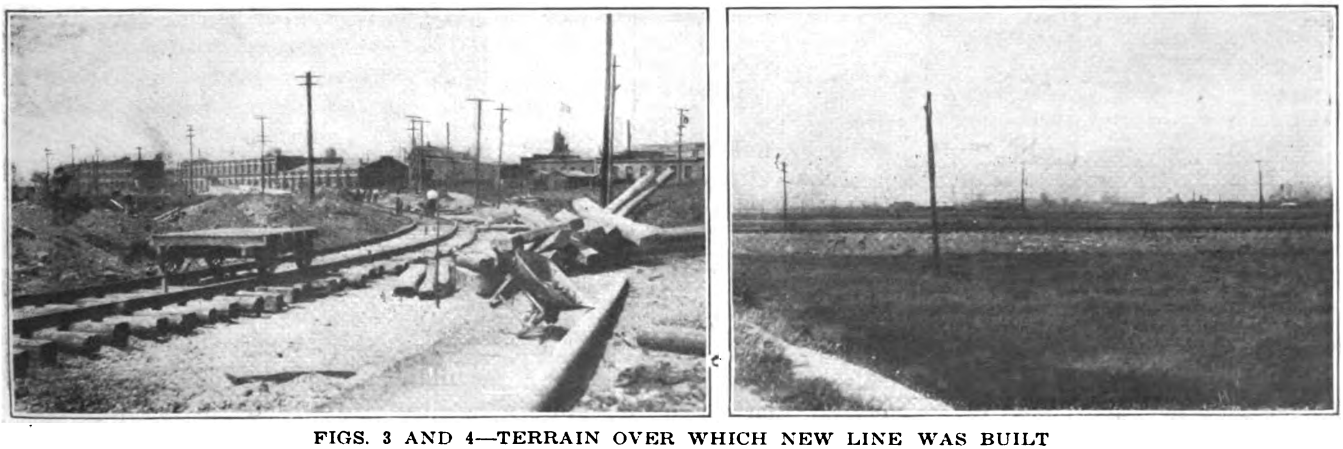
NEW FACILITIES WILL COST NEARLY $1,000,000

To insure adequate transportation for the shipyard workers, the Public Service Railway Company, in cooperation with the Emergency Fleet Corporation which is financing the new work, has either completed, or has in process of construction the following: An extension from its present line at Wilson Avenue (until recently Hamburgh Place) and Avenue L to the Submarine Boat Corporation shipyard at Avenue R and Port Street on Newark Bay; a connecting line on Gotthardt Street connecting the existing tracks on Chestnut Street with those on Wilson Avenue; a prepayment loading terminal at the plant of the Federal Shipbuilding Corporation, and a new car shop. The available rolling stock is also being increased by the purchase of eighteen new cars. As was noted in the ELECTRIC RAILWAY JOURNAL for Aug. 3, 1918, page 188, these additions to the physical equipment of the railway will cost in excess of $800,000.

With these added facilities in full operation the workers at the shipyard of the Submarine Boat Corporation will have direct and convenient trolley transportation to the Newark terminal of the Hudson & Manhattan Railroad as well as to all parts of Newark vicinity. The present difficulties in fare collection and traffic congestion at the plant of the Federal Shipbuilding Corporation will also be eliminated.

HEAVY CONSTRUCTION IS A FEATURE OF THE NEW EXTENSION

Of the new additions, by far the most important is the double-track extension to the Submarine Boat Corporation's shipyard. This extension is being built over land which, while within the corporate limits of Newark, is part farm land and part marsh. The illustrations in Figs. 3 and 4, taken while the construction work was in process, give some idea as to the nature of the terrain. While the extension is only about 2



FIGS. 3 AND 4—TERRAIN OVER WHICH NEW LINE WAS BUILT

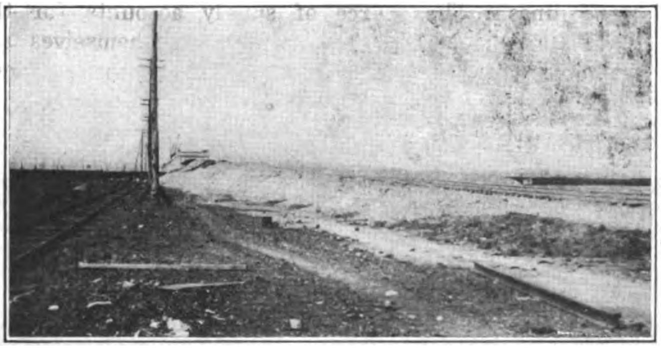


FIG. 5—THE FILL AT THE SOUTH APPROACH OF THE OAK ISLAND VIADUCT

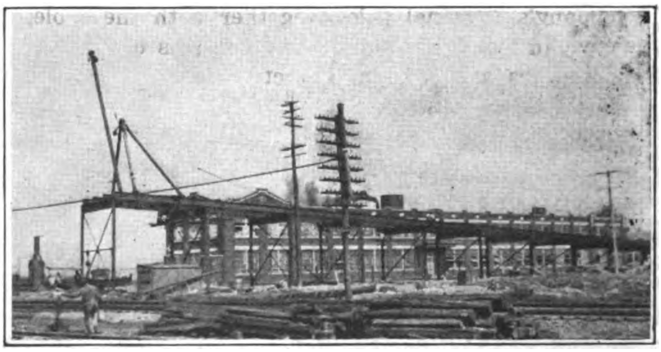


FIG. 6—ERECTING THE STEEL ON ONE OF THE VIADUCTS

miles long, it is of interest from an engineering standpoint because of the amount of heavy construction work necessary and the uses made of available material, new material being difficult to obtain notwithstanding the necessary character of the work.

The route of this extension is indicated by dash lines on the map in Fig. 1. Starting from the intersection of Wilson Avenue and Avenue L, where the company already had in place a two-track stub, the extension runs along Wilson Avenue to a point a few hundred feet beyond Doremus Avenue, and thence on private right-of-way to the intersection of Doremus Avenue and Avenue R. From this point it follows Avenue R to the shipyard. As beyond Doremus Avenue, Wilson Avenue was only a country lane, the city authorities had to condemn land to make the street wide enough for the car tracks and driveway. For about two-thirds of the distance the private right-of-way runs over a salt marsh, and to bring this to grade necessitated a fill of about 25,000 cu.yd. This fill was made of cinders, the grade being such that at high tide the tracks are about 1 ft. above the water level.

Another construction difficulty was encountered due to the fact that the great Passaic Valley sewer with a bore of 12 ft. 6 in., runs down the center of Wilson Avenue. When the back fill was placed over this sewer, a corduroy of planks and scrap timber was placed over the top to afford a foundation for the roadway. As will be noted in Fig. 3, some excavation was necessary to the preparation of the subgrade on this avenue. The corduroy greatly increased the difficulty of making this excavation, although it was made with a steam excavator. The material removed was used to fill the lower part of the approaches to the viaduct over the Central Railroad of New Jersey.

Three steam railway crossings are encountered on the route of the extension; the Central Railroad of New Jersey, the Oak Island yard of the Pennsylvania Railroad and the Lehigh Valley Railroad, and the shipyard tracks of the Pennsylvania Railroad. As none of these is a grade crossing, an exceptional amount of heavy viaduct construction has been necessary.

ONE VIADUCT REQUIRED 140 TONS OF STEEL

The viaduct crossing the eight tracks of the Central Railroad of New Jersey is of steel. The clearance over the steam road tracks is 22 ft. 6 in. and the approaches are each about 600 ft. long and are on a 5 per cent grade. The beginning of each approach consists of an earth fill held in place by a monolithic concrete retaining wall. The steel work included in the viaduct and in approaches is 1000 ft. long and includes one 110-ft. through truss span and one 50-ft. through girder span. In all 140 tons of steel was required for this structure. A view of the last approach in process of erection is shown in Fig. 6.

One of the interesting features in connection with this construction was the fact that the eighty-wire line of the Western Union Telegraph Company had to be cabled to clear the steel work. One of the Telegraph

FIGS. 7 AND 8—CONSTRUCTION VIEWS OF THE OAK ISLAND VIADUCT

company's terminal poles, together with the cable, are shown in the foreground. The columns of the viaduct approaches are of 8-in. H-sections. Built-up columns support the trusses and girders. The floor beams are of 24-in. Bethlehem I-sections, while the track stringers are of similar cross-section but 20 in. in height. The bents on the approaches are spaced 25 ft. apart. As part of the footings for the columns came over the sewer mentioned above, special care had to be taken in their design so as not to exceed the safe load which could be imposed upon the sewer. For these footings the loading is 1000 lb. per square foot. The approach retaining walls required 300 cu.yd. of concrete and 600 cu.yd. was used in the footings for the viaduct columns. This viaduct carries only the electric railway tracks and was built by the Public Service Railway.

THE AVENUE R VIADUCT CROSSES A RAILROAD YARD

Avenue R is a new street being opened along Newark Bay by the City of Newark. As this avenue crosses the large Oak Island classification yard belonging to the Pennsylvania and Lehigh Valley Railroads, a long viaduct involving some heavy construction work has been necessary. The avenue is designed for vehicle as well as street railway traffic, and the subgrade work has been done by the municipal authorities. The viaduct construction has been done jointly by the two railroads, the Lehigh Valley being responsible for two-thirds of the construction and the Pennsylvania for the remainder. The material for the fill at the north end of the viaduct was secured from the great heaps of rubbish dumped on the meadows years ago by the City of New York. This material was loaded into wagons by means of steam shovels and hauled to the site of the dump. The south approach, a view of which is given in Fig. 5, was built for the city by the Pennsylvania Railroad. The sand used for this approach was brought from Perth Amboy in scows to the shipyard docks, where it was loaded into dump cars which were then hauled to the site of the fill. Owing to the marshy nature of the subsoil, considerable difficulty has been experienced because of the subsoil flowing out from under the fill. About 500,000 cu.yd. of material was required for the two approaches.

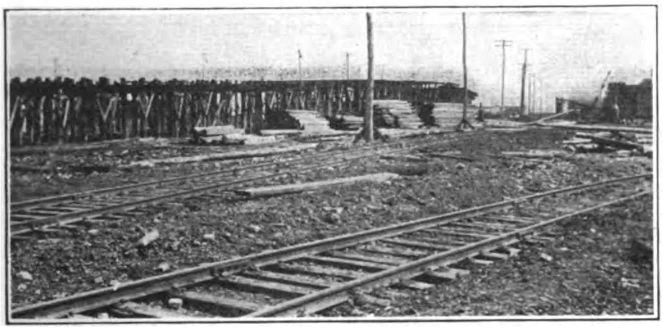


FIG. 9—PILE TRESTLE AT THE SHIPYARD

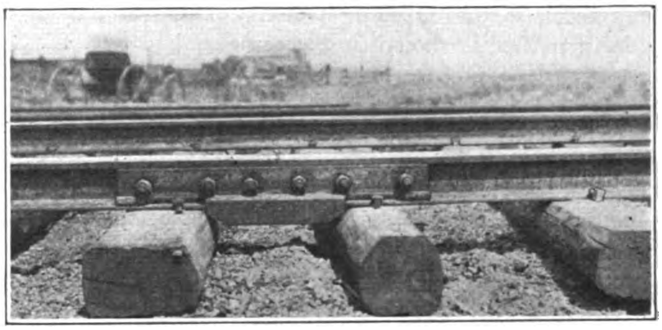


FIG. 10—DETAILS OF THE RUSSIAN RAIL JOINT

Views of this viaduct taken while it was under construction are shown in Figs. 7 and 8. As will be seen from these illustrations, the steel work, which consists of through girders, rests on concrete piers. Owing to the difficulty of getting steel work delivered in time for the purpose, the girders used are of a miscellaneous lot gathered up by the railroads from elsewhere on their lines. The source of supply accounts for the variety in girder designs. The piers themselves are supported on concrete-capped pile foundations. They are spaced, depending on the arrangement of the yard tracks, from 40 to 90 ft. The viaduct carries both the double-track way of the electric railway and the highway. The tracks are placed on one side of the viaduct floor. The floor itself is of plank spiked to wooden stringers which in turn are supported by the steel floor system.

Both the railway tracks and the highway are carried into the terminal of the Submarine Boat Corporation over a wooden-pile trestle. This trestle also affords a crossing over the shipyard tracks of the Pennsylvania Railroad. The trestle approach starts part way up on the fill made to the Oak Island viaduct. Some idea of the magnitude of the trestle work can be gained from the statement that it consists of seventy-nine bents, in the construction of which about 1000 piles were used. The trestle approaches are on a 3½ per cent grade.

The tracks are laid with so-called Russian rail. This rail derives its name from the fact that it is a part of the large order which was rolled for the now defunct imperial government of Russia and as it could not be delivered it was taken over by our government. It weighs 67½ lb. per yard, is T-section, but has a lighter head than our standard T-rails of approximately the same height. The angle bars which were manufactured to go along with this rail are of peculiar construction. A view of one of the joints is illustrated in Fig. 10. It will be noted that the bar has a projection downward over the foot of the rail. Two similar shorter projections located on the ends of the angle bar, as shown in the view, have been burned off with an oxy-acetylene cutting tool so as to permit the placing of the ties. The rails are laid to the standard gage, 4 ft. 8½ in., with a devil strip 5 ft. in width. The ties are of chestnut, 6 in. x 8 in. x 8 ft., and are spaced 18 in. apart on cinder ballast.

The connecting link on Gotthardt Street is 2000 ft. in length and is also double-track line. It is laid with 116-lb. Public Service standard grooved rails on chestnut ties, which in turn are carried on rock from the company's own quarries at Fairview, N. J. The paving is of stone block with the voids filled with grout. The street was already paved and the new construction involved the removal of practically all of the old paving. The concrete foundation of the old paving was unusually thick and strong and could not be broken up with a steam shovel. It was broken into pieces small enough to handle by the use of drills, sledges and levers.

To facilitate the loading of the passengers and to insure fare collection, a prepayment loading terminal has been constructed on the premises of the Submarine Boat Corporation. This, as is shown in Fig. 11, is a stub-end terminal projecting well back into the shipyard. The platforms are long enough to provide ample storage space for the cars while they are loading, and crossovers permit the transfer of cars from the incoming track to the outgoing track. The arrangement of the turnstiles is shown in greater detail in Fig. 12.

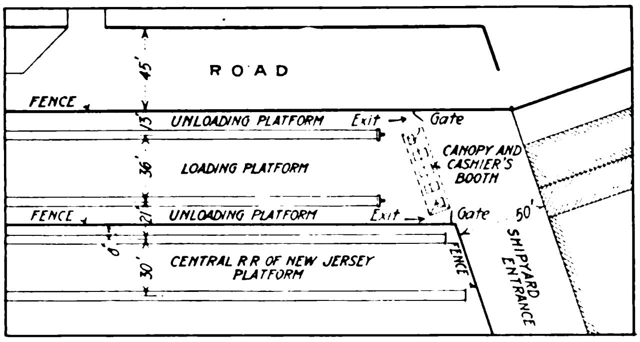


FIG. 11—PLAN OF THE PREPAYMENT TERMINAL AT THE SHIPYARD

OVERHEAD LINE CONSTRUCTION

With the exception of that on the steel viaduct over the Central Railroad of New Jersey, all of the overhead work, including that on Gotthardt Street, is of the usual span-wire construction. Most of the overhead line hardware and fixtures, such as trolley frogs, pull-offs, cross-arm chairs, etc., were either made in the company's own shops or after designs furnished by the company. On the major part of the private right-of-way, the poles had to be set in the marsh, where the ground, while firm enough to permit digging, was so low that the holes filled with water as soon as they were dug. To keep the poles in position they were concreted in at the top and bottom of the holes and set with a rake of 18 in. All of the iron poles were set in concrete.

The method used for supporting the poles on the steel viaduct is illustrated in Fig. 13. A stirrup made of steel plate is riveted to the floor beam and braced to the upper chord of the viaduct with an angle iron. A circular casting over which the bottom of pole fits is bolted to the bottom of the stirrup, and at the top of the floor beam the pole is held in place by a band which in turn is fastened to the double angle-iron bracket shown in the illustration. Figs. 14 and 15 illustrate the pole fastening employed on the Oak Island viaduct, the circular castings there being anchored to the concrete piers.

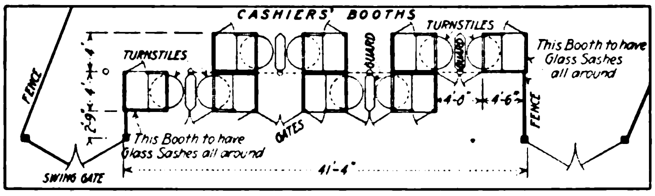


FIG. 12—ARRANGEMENT OF THE TURNSTILES AT THE SHIPYARD TERMINAL

The power supply comes from Newark substation which is located near the Passaic River well up in Newark and nearly 2 miles from the nearest end of the extension. From the substation, two 1,000,000-circ.mil paper-insulated, lead-covered cables are carried underground to McWhorter Street. Here they are connected through 1200-amp. switches inclosed in wooden switch boxes to two 1,000,000-circ.mil triple-braid weatherproof aërial cables, which are carried to the new extension. Some details of the use of aërial cables by Public Service were given in the issues of this paper for June 22, 1918, page 1182, and June 29, 1918, page 1229.

One of these feeders stops at the beginning of the extension, while the other is carried to the Newark end of the Oak Island viaduct. From this point a 500,000-circ.mil cable is carried to the shipyard terminal.

The feeders are tapped into the trolley wire every 500 ft., and at each second tap a Westinghouse MP lightning arrester is located. There is a similar arrester at the point where the cables change from underground to overhead construction. The taps to the trolley are made by using a copper span wire insulated from the poles by strain insulators and connected at one end to the feeder and along the span to the trolley wires by means of feed yokes.

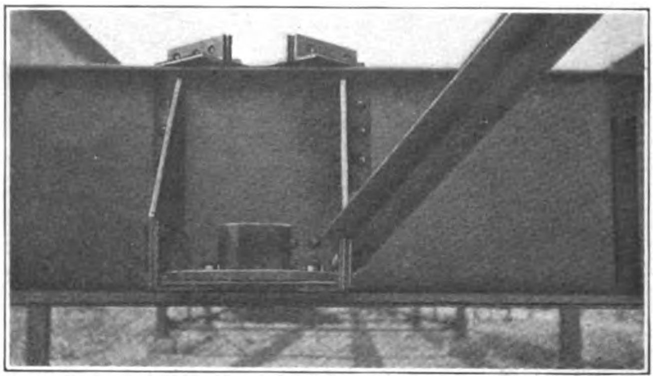


FIG. 13—SUPPORTING THE POLES ON THE STEEL VIADUCT

A better idea of the amount of copper required can be gained from the statement that for the extension alone 3200 ft. of 1,000,000-circ.mil paper-insulated, lead-covered cable, 24,000 ft. of 1,000,000-circ.mil triple-braid weatherproof cable and 4000 ft. of 500,000-circ.mil triple-braid weatherproof cable was required. To supply the Gotthardt Street connecting link, a 300,000-circ.mil aërial cable is carried along the track. This is connected into the existing feeder system, which has been reinforced by a 500,000-circ.mil cable running back to Newark substation. The feeders are supported on glass cable insulators mounted on locust N.E.L.A. standard pins, except at the curves where composition insulators and iron pins are used.

The rails are depended upon for the return circuit and are bonded with 8-in. No. 0000 gas weld bonds. Cross bonds are placed every 1000 ft. To render the bonds less conspicuous they were given a coat of dark paint.

The eighteen new cars purchased to augment the rolling stock of the company are similar to those described in the ELECTRIC RAILWAY JOURNAL for Jan. 15, 1916, page 115. They are 50 ft. 2 in. over vestibules and are equipped with longitudinal seats with a seating capacity of fifty persons. They are of the prepayment type, with rear-end loading and rear and front-end unloading. The folding doors and steps are operated manually by a mechanical device, developed on the Public Service Railway, which is so designed as to insure the steps being in the lowest possible position before the doors are opened wide enough to permit a passenger to pass. The electrical equipment of the cars consists of H-L-D control and four Westinghouse 514 motors mounted on the Standard Motor Truck Company's 0-50 trucks.

SUPPLYING ADDITIONAL SHOP FACILITIES

The greatly increased traffic and the additions to the rolling stock have necessitated an increase in the shopping facilities. This is being secured by constructing a new maintenance shop along the Lake Street side of the Bloomfield Avenue and Lake Street car storage yard. The new building is of brick, and is one story in height and 50 ft. wide by 162 ft. long. The shed roof is supported by steel roof trusses. The roof itself consists of wooden sheathing which supports a Barrett specification, five-ply paper-and-slag roof covering.

As will be seen from the general floor layout indicated in Fig. 16, provisions are made for three tracks, the center one being equipped with a wheel-changing jack and the other two with car hoists. Except for a short distance from the front along the walls the main floor consists of a 6-in. reinforced-concrete slab supported above the pit floor on concrete pillars. The front door openings are 16 ft. in height and are provided with double, hinged doors. At the back end of the shop a range of small rooms are taken up by the heating plant boiler, the oil storage, the storeroom and washroom. The machine shop is conveniently located in the space between the ends of the pit tracks and this range of smaller rooms.

In addition to the large windows in the side walls six skylights, arranged in two symmetrical rows, provide daylight illumination. The shop is heated by an indirect steam system, air being drawn by a blower through the heating coils over the boiler and forced through for main distributing duct. Two of these are under the floor platform between the tracks and the other two are carried along near the side of the building on the lower chords of the roof trusses.

The new construction at the plant of the Federal Shipbuilding Corporation consists of a two-way connection to the existing tracks of the Public Service Railway on the Lincoln Highway and a prepayment terminal loop on the shipyard property. As the shipyard abuts on the highway, the connecting tracks are short. However, to reach the highway they must cross Morris Canal. As this canal is still in use, a hydraulic lift bridge will be constructed over it. The terminal is so arranged that the unloading platform is directly in front of the entrances to the shipyard, while the loading platforms are located on the other side of the loop. Access to the latter platforms can be gained only by passing through the prepayment turnstile-equipped gates. Of this new work, that in the highway is being done by the Public Service Railway, and that in the bridge and the work within the yard by the shipbuilding company, after plans which were furnished by the railway company.

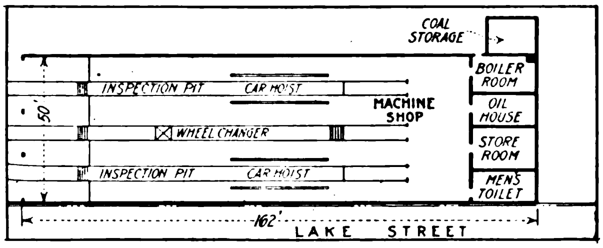
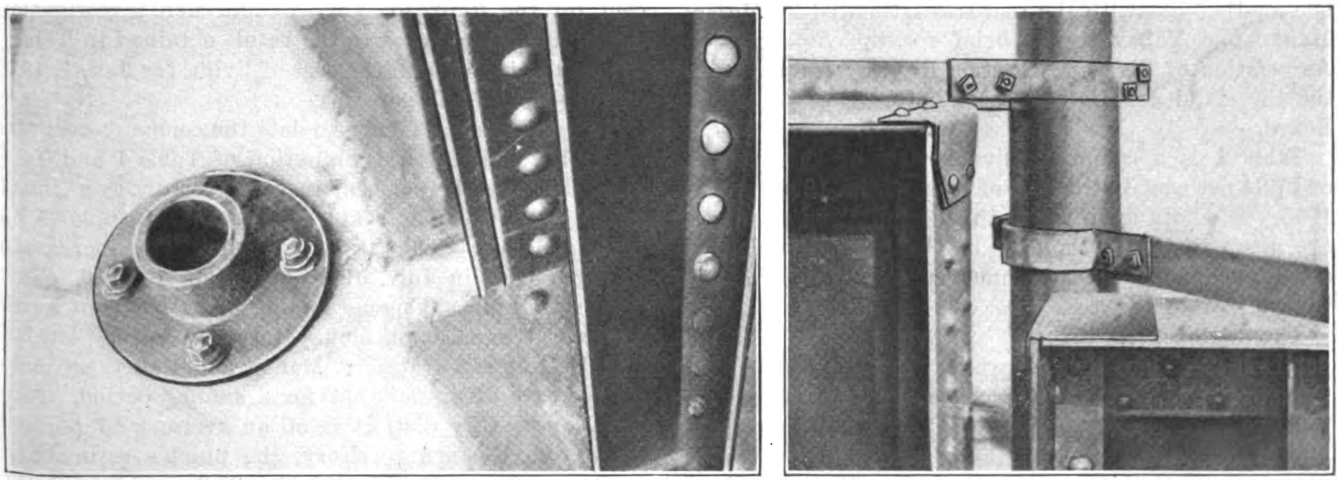


FIG. 16—GENERAL LAYOUT OF THE NEW CAR SHOP

This terminal was requested by the Emergency Fleet Corporation and is being installed under the inspection of the transportation division of that corporation, of which A. Merritt Taylor is director. The work on the Port Newark extension had been started before the organization of the transportation division of the Emergency Fleet Corporation and the federal supervision is in the hands of Admiral Francis T. Bowles of the United States Shipping Board.

The overhead work in all of the new additions has been done by the regular line gangs of the railway company's distribution department. The railway has been responsible for the construction of all of the track work on Gotthardt Street and the new extension to Port Newark, with the exception of that within the shipyards.



FIGS. 14 AND 15—HOLDING POLES ON A VIADUCT WHEN THE GIRDERS ARE UNEQUAL IN HEIGHT

Wages Up Faster Than Living Costs

Data Presented by the Kansas City Railways to the War Labor Board Show 81 Per Cent Rise in the Cost of Living Since 1900 but 146 Per Cent Advance in Wages

EVIDENCE presented to the National War Labor Board by the Kansas City (Mo.) Railways indicates that the wages paid since 1899 have certainly increased at least step by step with the rise in the cost of living. In other words, they allow a standard of living equal to that enjoyed by electric railway employees in Kansas City for the last twenty years.

The general conclusions advanced by the company at the recent hearing before the board were stated in the ELECTRIC RAILWAY JOURNAL of Oct. 5, page 629. In the belief, however, that the supporting data will be of value to other companies now dealing with such matters, this paper is presenting herewith some of the material. All of the data cannot be published here, but sufficient matter is printed to indicate the detailed character of the company's very relevant evidence.

TRUE TEST MUST BE OVER A LONG PERIOD

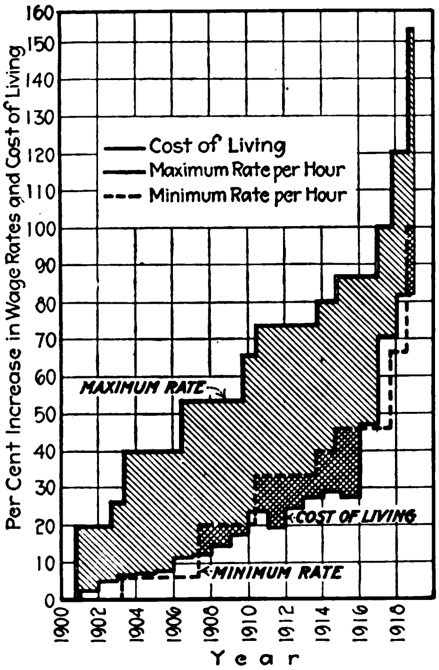
In the opinion of the Kansas City Railways, it is impossible to arrive at any true relation between wages and the advance in living costs by taking a short period as the basis of comparison. Especially is this true of the years during which abnormal war conditions have caused abrupt transitions. The true test is to show over a long period of time the standard of living or the margin between the advance in the cost of living and the advance in wages which any industry has afforded.

The company began its case, therefore, with the presentation of tables showing the increase in the cost of living during certain periods from 1900 to 1918. The year 1915 was used as one division point because the investigation of the Railroad Wage Commission began at this time. The publications of the United States Bureau of Labor Statistics, the report of the Railroad Wage Commission and an inquiry in the Kansas City situation supplied the data upon which the tables were based. The results check very closely, not only with one another but with the increase estimated by Messrs. Mahon and Vahey in the brief for the Amalgamated Association of Street & Electric Railway Employees in the Cleveland and Detroit cases before the War Labor Board.

Table I is a comprehensive review of the increase of 27.94 per cent in the cost of living from 1900 through 1915. The data upon which this computation was based are given in the footnotes. The table was weighed in accordance with the recommendations of Mr. Mahon in arbitration cases.

The increase in the cost of living since 1915 was determined from the report of the Railroad Wage Commission with such corrections, as for rent, as applied to Kansas City. The report, it is said, is recent and authoritative, and has been used both by various railways and the Amalgamated Association in the hearings before the War Labor Board. Table II, taken from this report, gives the commission's method of weighing, which varies slightly from that used by Mr. Mahon. This table indicates the advance in prices for the principal items of expenditure for the Eastern, Southern and Western I. C. C. classification groups and for the entire United States, from December, 1915, to January, 1918.

It will be noted that the increase in the cost of living for the Western territory for this period is 34.72 per cent, as compared to 39.4 per cent for the Eastern territory and 38.12 per cent for the entire United States. This shows that the increase in the cost of living for Kansas City is 3.4 per cent less than for the entire United States, and 4.7 per cent under that of the Eastern territory. Table III shows the increase in the cost of living for Kansas City for the same period—January, 1916, to January, 1918—with these differences. The weights are those proposed by Mr. Mahon, and no increase is allowed for rents. This method gives a 33.5 per cent increase for the period as compared to 34.72 per cent for the Railroad Wage Commission investigation. Applying this increase to the result obtained in Table I brings the increase in the cost of living for Jan. 1, 1918, over 1900, to 70.88 per cent.



Relative Percentage Increases in Cost of Living and in Maximum and Minimum Wage Rates of Kansas City Railways from 1900 to July, 1918.

To bring the data down to date the company exhibited Table IV, which is a combination of Table I and Table III. It shows the per cent increase in July over Jan. 1, 1918, to be 6.34 per cent; over Jan. 1, 1916, 41.9 per cent, and over 1900, 81.63 per cent. The increase of 41.9 per cent in July, 1918, over Jan. 1, 1916, checks very closely an analogous finding of 41 per cent by the Railroad Wage Commission. Moreover, in the Cleveland and Detroit cases Messrs. Mahon and Vahey estimated an increase of 42 per cent for a similar period. Since the Kansas City district is on an average 4.7 per cent under the Eastern territory, the union's estimate reduced by this amount would give 37.3 per cent.

The company then took up the question of the rela-

TABLE I—INCREASE IN THE COST OF LIVING IN KANSAS CITY FROM 1900 TO 1915, INCLUSIVE

	Food *Weight 46.5		Clothes and Clothing *Weight 14.5		Rent Weight *21	Fuel (Coal) *Weight 4.9		Cooking and Lighting (Gas) Weight *2.6	Sundries Weight *10.5	Weighted Per Cent Increase						
Year	Index Number 1915 Base	Per Cent Increase Since 1900	Index Number 1915 Base	Per Cent Increase Since 1900	Per Cent Increase Since 1900	Index Number, 1915 Base	Per Cent Increase Since 1900	Per Cent Increase Since 1900	Per Cent Increase Since 1900	Food Per Cent Increase Since 1900	Clothes and Clothing Per Cent Increase Since 1900	Rent Per Cent Increase Since 1900	Fuel (Coal) Per Cent Increase Since 1900	Lighting and Cooking (Gas) Per Cent Increase Since 1900	Sundries Per Cent Increase Since 1900	Per Cent Increase in cost of Living
1900	64	0	89	0	0	91	0	0	0	0	0	0	0	0	0	0
1901	69	8	82	—8	0	91	0	0	1	372	—116	0	0	0	10	2.66
1902	72	12	84	—5	0	95	4	0	2	558	—72	0	20	0	21	5.27
1903	72	12	89	0	0	111	22	0	3	558	0	0	108	0	31	6.97
1904	73	14	89	0	0	102	12	0	4	651	0	0	59	0	42	7.52
1905	73	14	92	3	0	96	5	0	5	651	43	0	25	0	52	7.71
1906	76	19	98	10	0	95	4	0	6	883	145	0	20	0	63	11.11
1907	79	23	104	16	0	99	9	—75	7	1,069	232	0	44	—195	73	12.23
1908	84	31	95	7	0	99	9	—75	8	1,441	101	0	44	—195	84	14.75
1909	87	36	99	11	0	97	7	—75	9	1,674	159	0	34	—195	94	17.66
1910	92	44	100	12	0	99	9	—75	10	2,046	174	0	44	—195	105	23.74
1911	90	40	96	8	0	100	10	—75	11	1,860	116	0	49	—195	115	19.45
1912	96	50	99	11	0	100	10	—73	12	2,325	159	0	49	—190	126	24.69
1913	99	54	100	12	0	104	14	—73	13	2,511	174	0	69	—190	136	27.00
1914	102	59	99	11	0	102	12	—73	14	2,743	159	0	59	—190	147	29.18
1915	100	56	100	12	0	100	10	—73	15	2,604	174	0	49	—190	157	27.94

Food Prices: Changes in food prices are based on tables of relative retail prices of food for the North Central district, weighted according to the average consumption of food in workingman's families. (United States Bureau of Labor Statistics—Bulletin 156, page 382, and Bulletin 197, page 22.)

Clothing Prices: Changes in retail prices of clothing are based on tables of wholesale prices of cloths and clothing furnished by United States Bureau of Labor Statistics (Bulletin 200, page 12). These changes in wholesale prices correspond practically with changes in retail prices as shown by comparison of index numbers of wholesale and retail prices, except that wholesale prices fluctuate in greater degree and respond more quickly to change-producing influences.

Rent Prices: No advance in rentals is shown, in accordance with the following quotation from a letter from Ward C. Gifford, executive secretary of the Real Estate Board of Kansas City, in reply to a request for information: "It is my opinion, based on information from real estate men, members of our board, who have been in the rental business for the past twenty years, that there has been no appreciable advance in rentals for detached houses in Kansas City during the period from 1900 to 1918. This situation is not true, however, as I understand it, in other cities."

Fuel Prices: Changes in retail prices of fuel are based on retail prices of bituminous coal for the North Central district, furnished by the United States Bureau of Labor Statistics (Bulletin 197, page 29). Changes prior to 1907 are based on changes in wholesale prices of bituminous coal furnished by the United States Bureau of Labor Statistics (Bulletin 200, page 217). Wholesale prices correspond in a general way with the retail prices for corresponding years, though the percentage of fluctuation is greater. Changes in price from 1911 to 1915 were checked against actual prices in Kansas City secured from dealers and are correct.

Lighting and Cooking (Gas): Changes in retail prices of gas used for cooking and lighting are based on data furnished by the Kansas City Gas Company.

Sundries: According to the Railroad Wage Commission, this item includes the following, weighted as indicated: Insurance, 14; Organization dues, 10; religion and charity, 6; house furnishing, 13; books and papers, 4; amusements and vacations, 10; liquors and tobacco, 15; sickness and death, 11; all other items, 17; total, 100. The items vary with the standard of living and with one or two exceptions increased little if any during the period from 1900 to 1915—prior to the war. As indicated by wholesale price lists of the United States Bureau of Labor Statistics, household furnishings decreased over 8 per cent (Bulletin 200, page 13); tobacco increased approximately 14 per cent (Bulletin 200, page 266), and costs of illness (gaged by the price of drugs) increased 16 per cent. There is little or nothing to show any increase in the cost of other items in the period prior to the war. In fact, many of them, such as amusements and papers, decreased. Based on the foregoing an arbitrarily estimated increase of 15 per cent was allowed in the cost of sundries. This is not intended to cover any advance in the standard of living.

* Weights used (recommended by W. D. Mahon, international president Amalgamated Association of Street & Electric Railway Employees), correspond practically with weights established by the Railroad Wage Commission's investigation of 265 family budgets for families with incomes up to $1,000, both in 1915 and 1917, for the Western District. The Mahon weighting will tend to show a greater increase in the cost of living on account of the heavier weight given "food," which item shows the greatest advance.

tive increases in the cost of living and in wages. The comparison naturally fell into two divisions, from 1900 to 1917, and from 1917 to the present time. The reason for this is that in 1917 collective bargaining and negotiations with the men established a base for comparison.

The fact that living costs were covered by wages in 1900 and thereafter, the company averred, is shown by several indications. During this period, for example, it at all times was able to maintain a sufficient force for its operations. There was a steady stream of applications at the employment office, showing that the wages paid were continuously sufficient to attract men from other occupations. Of the employees in train service who had been with the company longer than one year, 70 per cent had been in the service for more than five years.

From 1910 to 1915 the average number of resignations per month fell from seventy-seven to twenty-six.

TABLE II—RELATIVE INCREASES IN PER CENT, IN SPECIFIED ITEMS OF EXPENDITURE AS DETERMINED BY THE RAILROAD WAGE COMMISSION

	December, 1915, to January, 1918			
	Eastern	Southern	Western	United States
Food	52	56	47	52
Rent	15	5	7	10
Clothing	43	50	41	44
Fuel and light	37	25	27	31
Sundries	35	35	35	35
Cost of living increase weighted for incomes from $600 to $1,000	39.4	39.22	34.72	38.12
Cost of living increase weighted for incomes from $1,000 to $2,000	38.35	38.15	34.08	37.15

TABLE III—INCREASE IN KANSAS CITY COST OF LIVING FROM JAN. 1, 1916, TO JAN. 1, 1918

Item	Weight (Mahon)	Per Cent Increase	Weighted Per Cent Increase
Food	46.5	47	21.87
Rent	21.0	..	.....
Clothing	14.5	41	5.94
Fuel and light	7.5	27	2.02
Sundries	10.5	35	3.67
Per cent increase in cost of living over Jan. 1, 1916			33.50
Per cent increase in cost of living over 1900			70.88

TABLE IV—INCREASE IN KANSAS CITY COST OF LIVING FROM JANUARY, 1918, TO JULY, 1918

	Weight (Mahon)	Per Cent Increase	Weighted Per Cent Increase
Food	46.5	None	None
Rent	21.0	None	None
Clothing	14.5	20	290
Fuel and light	7.5	25	187
Sundries	10.5	15	157
Per cent increase in cost of living over Jan. 1, 1918			6.34
Per cent increase in cost of living over Jan. 1, 1916			41.9
Per cent increase in cost of living over 1900			81.63

Food: Comparison of food prices from January, 1918, to June, 1918, shows that the peak of high prices in the United States was reached in February, 1918, and after that prices fell off slightly. The last official figures published (May 15, 1918) showed prices still below those of January. Official Kansas City prices for May 15, 1918, were approximately 1 per cent lower than in January.

Rents: Detached houses showed no increase in rent.

Clothing: An estimated increase of 20 per cent in clothing is allowed from January to July, 1918, based on a 15 per cent increase from the spring price of trainmen's uniforms ($26.50) to the fall price ($30.00). This is thought to be liberal, as it is based on the price of woolen clothes. Shoes are said by a representative clothing firm to have advanced approximately 15 per cent in the same period.

Fuel and Lights: Cherokee lump coal, one of the most commonly used bituminous coals in Kansas City, advanced from $6.55 for 1917-18 to $6.85 in July, an increase of 5 per cent. Gas, which may be used to make approximately 20 per cent of the fuel and light budget, advanced 100 per cent. Fuel and light advanced approximately 25 per cent.

Sundries: A 12 per cent advance in the price of sundries is allowed, bringing the total advance in sundries since the beginning of the war up to 50 per cent. This estimate is corroborated by other investigations.

Owing to the draft and war conditions, these resignations increased in the early part of 1917 to 115 per month, but since the wage increase of July 16, 1917, they have fallen to an average of eighty-five per month. The number of applications has risen from an average of 325 for the six months preceding July, 1918, to an average of 612. In other words, the recent wage increase was sufficient to attract an increase of almost 100 per cent in applications in spite of labor conditions caused by the war.

As further evidence that living wages were paid in 1900 and thereafter, the company showed that more than 42 per cent of its employees either own outright or have an equity and are paying on real estate, and 33 per cent of them live in their own homes. Had the wages paid in the past been inadequate, such a condition would have been an impossibility.

The general record of the Kansas City wage and cost-of-living situation was presented in the form shown in Table V. This indicates that in the period from 1900 to July, 1918, wages were increased 146 per cent as compared to a corresponding rise of 81.63 per cent in the cost of living. Information of a similar sort, but showing the record for maximum and minimum wage rates, is presented in the chart on page 740.

Taking the increase of 41.9 per cent for the Kansas City district from January, 1916, to July, 1918, the company applied this advance to the wage scale in effect in January, 1916, and obtained results approximately the same as the present wage scale. In fact, the average calculated result was 37.03 cents an hour as compared the present actual average of 36.9 cents an hour. It was pointed out, too, that the increase of 41.9 per cent in the cost of living, while checking with the 42 per cent estimate of Messrs. Mahon and Vahey for Detroit and Cleveland, was too high on the basis of the geographic differential reported upon by the Railroad Wage Commission.

In connection with its case the company presented the results of a questionnaire which its 2782 employees filled out in August. Some of the matter, showing vital statistics and previous employments of trainmen, is published herewith in Table VI and Table VII.

TABLE V—COMPARISON BETWEEN INCREASE IN LIVING COST SINCE 1900 AND INCREASE IN KANSAS CITY RAILWAYS WAGES

Year	Per Cent Increase in Cost of Living Over 1900	Per Cent Increase in Wages Over 1900	Year	Per Cent Increase in Cost of Living Over 1900	Per Cent Increase in Wages Over 1900
1900	0	0	1909	17.66	49
1901	2.66	16	1910	23.74	60
1902	5.27	20.6	1911	19.45	60
1903	6.97	33⅓	1912	24.69	60
1904	7.52	33⅓	1913	27.00	67.3
1905	7.71	33⅓	1914	29.18	74
1906	11.11	41	1915	27.94	74
1907	12.23	43	December, 1917	70.88	112.6
1908	14.75	43	July, 1918	81.63	146

TABLE VI—RESULT OF CENSUS AMONG KANSAS CITY RAILWAYS EMPLOYEES IN AUGUST, 1918

	All Employees	Trainmen
Number reporting	2,782	1,342
Number single	745	294
Per cent single	26	21
Number married	2,037	1,048
Per cent married	74	79
Average number of children per family	2	2.6
Average number of children at home per family	1.4	1.6
Average size of family at home	3.4	3.6
Average number of children attending school per family	0.8	0.7
Number families reporting children employed	387	172
Number children employed	694	291
Average earnings of children employed per month	$44	$50
Average monthly complementary earnings per family with children employed	$79	$86
Average length of service (years)	6	6.9
Number owning homes	405	180
Per cent of total	14	13
Number paying for homes	521	255
Per cent of total	19	19
Average monthly payments	$18.35	$19.06
Number owning other real estate	271	184
Per cent of total	9	14
Number owning or paying for real estate	1,197	619
Per cent of total	42	46
Number renting	1,668	868
Per cent of total	60	64
Average monthly rent	$15.16	$15.60

TABLE VII—PREVIOUS OCCUPATIONS OF 1,000 TRAINMEN OF KANSAS CITY RAILWAYS

Farming	512
Clerks	102
Railroad work	73
Laborers	63
Teamsters	25
Chauffeurs	20
Carpenters	18
Mechanics	18
Soldiers	17
Draymen	16
Packing house	16
Firemen	16
Paper hangers and paperers	13
Waiters	11
Blacksmiths	10
Police	10
Millers	9
Electricians	8
Dairymen	9
Bakers	9
Barbers	7
Miners	7
Butchers	7
Mail service	4
Total	1,000

War-Time Changes in Living Costs

Taking into consideration all the factors of the problem, the National Industrial Conference Board, 15 Beacon Street., Boston, Mass.—a co-operative body composed of representatives of national industrial associations—concludes that for the great majority of American communities the average increase in the cost of living between July, 1914, and June, 1918, lies between 50 per cent and 55 per cent. This conclusion is supported by a detailed eighty-two page study, published in *Research Report No. 9* (price, $1).

In amplifying its conclusion the report states that clothing showed the most marked advance among the major items in the budget, the rise being 77 per cent. Quantitatively, however, this was less important than the 62 per cent increase in the cost of food, since food represents about 42 per cent of the average expenditure while clothing represents only 13 per cent.

In certain localities, particularly where there have been unusual advances in rent, the increase in the budget as a whole was somewhat greater than above noted. Since rent requires about 18 per cent of the ordinary family expenditure, each further increase of 5 per cent means an addition of 1 per cent to the budget. Thus the board's estimate can be adjusted to fit communities with unusually large rent increases. Similar adjustments to allow for local conditions affecting the cost of fuel, it is said, would not result in an important modification of the general average.

War Record of the Liverpool, England, Tramways

The Liverpool (England) Corporation Tramways had 2700 employees when the war broke out in 1914, and of that number 2200 have already left to join His Majesty's forces. Vacancies thus created have been filled as far as possible either by men incapable of military service or by women. Viewing the problem as a whole, the company feels that the new employees, especially the women, have rendered useful service to the community by coming forward at a time of great national stress and undertaking duties which, prior to this emergency, were considered to be unfit for them. Had this new class of employees acted otherwise, the tramway facilities throughout the country would undoubtedly have had to be materially restricted.

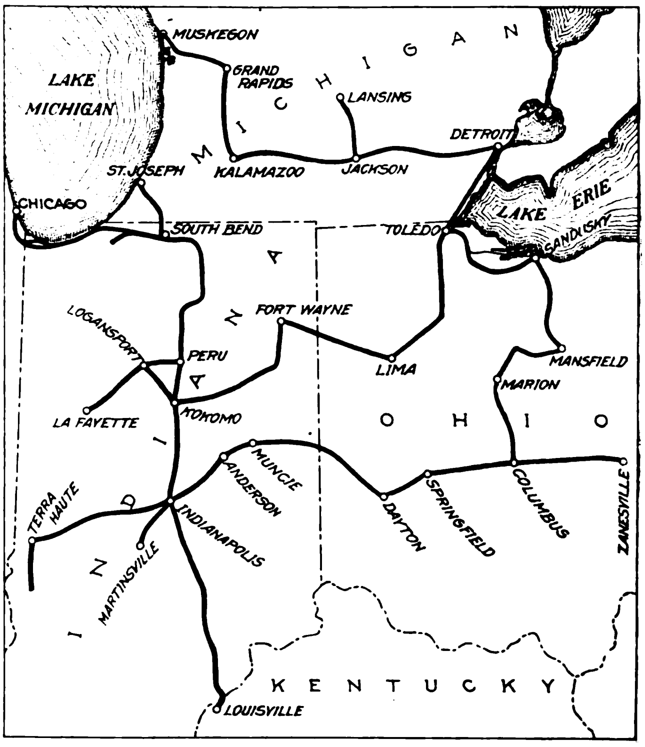
Co-operation Between Middle West Railways and U. S. Navy

Naval Train Travels 2500 Miles Over Thirty-Eight Electric Lines on a Tour of Patriotism and Propaganda

AN ILLUSTRATION of the desire of electric railways to co-operate with the government in every possible way is furnished by the tour, recently completed, of a special train fitted up at the Great Lakes Naval Training Station. The train consisted of three flat cars, loaned by the Chicago, North Shore & Milwaukee Electric Railway, Highwood, Ill., and fitted up at the station in replica with a submarine, a destroyer and a submarine chaser respectively. The train was originally built for use on a recruiting tour, for which purpose it proved very helpful. The later tour was undertaken as a patriotic publicity venture and in a period of six weeks 400 cities and towns, ranging in population from 300 to 500,000, were visited. The total distance covered was 2500 miles and the train was drawn over the lines of thirty-eight electric railways. The party accompanying the train was in charge of Lieut. H. B. Childs from the Chicago Naval Recruiting Station and consisted of a medical officer and a crew of fifty men from the Great Lakes Naval Training Station, including a band of twenty-six pieces, a drill squad and maintenance crew of twenty men, two speakers, a chief petty officer and a hospital clerk. Chief Yeoman L. R. Brown acted as advance agent, preceding the party by two or three days and making all arrangements with the railway companies, hotels, city authorities and newspapers. The public manifested great interest in the venture and thronged to hear the speakers and musicians.

On each electric line the company furnished a coach in which the party could ride and in general the train was drawn by a regular interurban motor car.

Although the three float cars were equipped with standard steam railroad wheels, comparatively few difficulties in operation were encountered. The most serious one was due to the fact that the deep flange of the wheels often caused the car to ride on the groove of the rails or on the paving, producing occasional derailment at switches, particularly at those of the spring type. In a few cases a sharp city curve gave a little trouble, but after a short time the members of the party learned how to extricate themselves from difficulty without much help from the railways.


MUSKEGON
GRAND RAPIDS
LANSING
DETROIT
LAKE MICHIGAN
MICHIGAN
ST. JOSEPH
KALAMAZOO
JACKSON
CHICAGO
SOUTH BEND
TOLEDO
LAKE ERIE
SANDUSKY
FORT WAYNE
LOGANSPORT
PERU
LIMA
MANSFIELD
MARION
LA FAYETTE
KOKOMO
INDIANA
OHIO
MUNCIE
ANDERSON
TERRA HAUTE
INDIANAPOLIS
DAYTON
SPRINGFIELD
COLUMBUS
ZANESVILLE
MARTINSVILLE
KENTUCKY
LOUISVILLE

OUTLINE MAP SHOWING ROUTE OF THE NAVY PUBLICITY TOUR

Comfortable Shelter at Pensacola

A neat shelter of brick, wood and tile was erected last year by the Pensacola (Fla.) Electric Company at Palafox and Gregory Streets, the passing point of several of its lines. It is furnished with comfortable park benches so that the prospective customer is not only shielded against sun and rain but can also wait for a car with more patience than if he had to stand. The shelter is in full harmony with the parked streets characteristic of this attractive Florida city.

NAVY PUBLICITY TRAIN OF DESTROYER, SUBMARINE AND SUBMARINE CHASER

Some Crying Needs of the Safety Movement*

The Author Visualizes a Wide Field in Humanity Conservation and Tells What is Being Done on His Home Property

BY R. N. HEMMING
Superintendent of transportation Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.

THE paramount question of the hour, to us as individuals and also as representatives of public service utilities and as a nation, is the conservation of humanity. Our government is spending $550 every second in the world war to make the United States and the rest of the world a safe place in which to live, and to teach all people everywhere the spirit of unselfishness. This same spirit should be that of every man, every public service industry, every political and civic organization, who should be working to promote safety first and the preservation of mankind. True, some progress has been made, but as a matter of fact we have only scratched the surface of this matter. The general attitude is indicated by the fact that 82 per cent of the value of combustible property is insured against fire, but only 7 per cent of the economic value of human life is covered by insurance.

Before safety first can be made a success there must be closer co-operation between transportation companies and industries of every character, the public and its official representatives. The public conscience must be awakened by the use of every known means of advertising, through which knowledge of the staggering aggregate of accidents can be spread.

ADVERTISING SAFETY MORE WIDELY

The article by Gerald Stanley Lee in the *Saturday Evening Post* of Aug. 10 has application in the safety field. Mr. Lee advocated winning the war three years sooner by the use of a national billboard. Imagine what could be accomplished in accident reduction through such a scheme. I want to suggest that we make a nation's safety-first billboard out of every theater curtain, program and billboard throughout the country. Every business card could carry a line or two on the subject, and every newspaper and periodical published could bring before its readers such material as is published by the National Safety Council.

We need volunteers who will gratuitously devote pages to safety, by means of reading matter and through illustrated cartoon bulletins, etc. Too much stress cannot be laid upon keeping the subject before the entire population of the country. Think of the millions of dollars being spent for advertising merchandise compared with the paltry sum being spent in accident prevention.

I think that safety museums should be established in all large cities, say in cities of 25,000 and more. Traveling museums on our railroads might also be effective. We also need a universal car stop sign which would be just as well known and symbolic as the Western Union or Bell Telephone sign. We need a standardization of traffic rules and regulations. We need in each community a local safety council consisting of members of various organizations, such as the chamber of commerce, the police department, the fire department, the automobile clubs, the electric railways, etc. Through the medium of an organization of this kind many local problems can be worked out. Such an organization should work in conjunction with the National Safety Council. We need some "ten-minute men" to preach the gospel of safety first; men in each community to visit factories, schools, churches, theaters, etc.

I believe that much can be accomplished in every community by a traffic survey of its accident problems, by classification of the various kinds of accidents and careful study of the data. Such records will be effective in dealing with the traffic departments of cities.

SAFETY ON THE FORT WAYNE & NORTHERN INDIANA

We have organized in the transportation department of the Fort Wayne & Northern Indiana Traction Company an organization for the purpose of furthering the movement in that department. We have appointed team captains on each of our city lines, and the interburban lines are divided up into sections with a team captain in charge of each. These captains have been appointed for six months, but later the trainmen will elect their own captains. Each team captain is to wear on his sleeve a diamond-shaped insignia with the letter "C" and it is his duty to watch for infraction of rules and safe practices. Periodical meetings are held with these team captains, and I find it very effective to mail periodically to their residences suggestions on safety first typewritten on Western Union Telegraph blanks. A sample "telegram" follows:

> CAPT. RICHARD ROE:
> The best safety device known is a careful man. Carelessness does more harm than the want of knowledge. Caution all of your men to make their foundation out of safety-first concrete, properly mixed with an abundance of common sense. Help us reduce accidents by getting your trainmen imbued with the spirit of safety-first and precaution.

Each line is competing against the other lines for a pennant to be awarded to the line having the fewest accidents. The pennant will be carried for thirty days until awarded for the next succeeding thirty days.

I have in mind staging in various theaters a living object lesson in safety first by securing the services of boys and girls who have lost arms, legs or eyes, or who have suffered other marks and visible disabilities through accidents, regardless of how they occurred. Each is to have a letter pinned in front, the whole spelling out "Safety First." Each will recite a stanza of appropriate character beginning with the letter which he carries.

"Knocking Down" Fares in Germany

According to the newspapers, great indignation has been aroused in Berlin by the decision of the Grosse Berliner Strassenbahn to install its own detective force for the purpose of catching passengers who endeavor to evade fare payments. The sleuths are to have the power to exact a fine on the spot for each offense. A German paper is quoted as follows: "The tramway monopoly only wants to enrich its already bulging treasury. It talks about the increased upkeep of rolling stock. We have to ride now in ramshackle old rattletraps called cars."

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*Abstract of paper presented before the Seventh Annual Safety Congress, St. Louis, Mo., Sept. 19, 1918.

Non-Essential Jitneys Must Go

Jitneys Are Declining but Nearly 6000 Still Steal Railway Business—Highways Transport Committee Disapproves of Wasteful Competition and Favors Fullest Use of Electric Lines for Passengers and Freight

TWO important developments have come to pass in the last few weeks—developments that have a most direct bearing upon the complete utilization of electric railway resources in the nation's interests. In the first place, the highways transport committee of the Council of National Defense has expressed its desire to co-operate closely with electric railways and other means in order to secure the most efficient, prompt and economical transportation. In the second place, there are evidences that this committee and various government agencies are beginning to realize the non-essential character of the jitney and to see that, although these are declining in number, no time should be wasted in suppressing entirely all useless competition with existing electric railways.

CO-OPERATION IS THE WATCHWORD

A short time ago the highways transport committee issued an organization plan which included as one of the statements of purpose the following:

> It is the aim of our committee to co-operate closely with railroad, electric railway and waterway transportation, and it is to be clearly understood that in no way is the committee encouraging competition between the various forms of transportation, but rather the carrying of any type of freight by the particular means which can do it the most efficiently, quickly and economically.

The Electric Railway War Board, in commenting upon this statement in a letter to Roy D. Chapin, chairman highways transport committee, said in part:

> Such a policy will meet with the approval of the Electric Railway War Board and is in line with what Mr. Willard was pleased to call "co-ordination of transportation." Before he left the advisory committee of the Council of National Defense, he outlined a plan whereby the electric railways could be utilized for relief of freight congestion.
>
> He also made reference to the ability of the motor truck to assist the electric railways by serving as a collector and feeder and jointly to perform a valuable service to the country in the relief of the steam roads and thereby facilitate transportation.
>
> We believe that the nation's transportation needs will be met only through the most effective co-ordination and functioning of all forms of transportation up to the limit of their capacity, and this board shall be pleased to co-operate in any movement aimed to bring this about.

As a result of this letter E. C. Faber, manager of the War Board, was invited to address the regional and state chairmen of the countrywide organization of the highways transport committee at their convention in Washington a few weeks ago. The following statement from the Oct. 12 bulletin of the committee illustrates the progress made since then:

> Our committee has been making a special effort to co-operate with electric railways. The Illinois State committee, for instance, has worked out a plan of co-operation with electric lines running out of Chicago. A regular service with motor trucks has been started to make deliveries until late at night to electric lines, which in turn make early morning deliveries in other towns.

The War Board has been endeavoring for the last few months to eliminate jitney competition with electric railways through some governmental action on the grounds that these competitors are non-essential to the winning of the war and are performing a service that is wasteful of man power and materials. With this in view the board appealed to the Provost Marshal General to have them placed under the "work or fight" order; it submitted data to the Fuel Administration showing that jitneys are wasting man power, gasolene and other essential materials, and it took up the question with the War Industries Board, the Housing Commission, the Shipping Board, the Motor Transport Committee, the Railroad Administration and the Secretary of Labor.

In accordance with a request for exact information, the War Board sent out a questionnaire, the results of which are being communicated to the various government agencies. The table on page 746 shows in detail the present status of jitney competition. The situation was well summarized in a letter sent by W. V. Hill, assistant manager Electric Railway War Board, on Oct. 21 to W. Champlain Robinson, director of oil conservation, United States Fuel Administration.

ALMOST 6000 NON-ESSENTIAL JITNEYS

The data received, according to Mr. Hill, show that there are in 153 cities 5879 jitneys performing non-essential duplicate service. These jitneys employ 8200 persons and consume approximately 21,093,330 gallons of gasolene annually. The amount of lubricating oil used by them is not estimated, but their gross earnings are estimated at $13,720,300. Jitneys numbering 855 are performing a needful service. Replies from 321 electric railways were received. Of these 115 reported jitney operation in their territory, and 206 reported a complete suspension of this class of utility.

At one time there were approximately 20,000 jitneys operating in competition with electric railways. The reasons for the decrease are the increased demand for labor which has enabled the jitney driver to obtain a wage in excess of what he could earn in the jitney business; the requirements of the draft; the increased cost of operation, and the various regulatory enactments by states and cities in some sections of the country.

The electric railways serving the territory where jitneys now operate have indicated that they are equipped to handle the additional traffic now going to the jitneys without appreciably increasing their service. This would result in releasing all those engaged in jitney operations for more essential pursuits and result in the conservation of gasolene, materials, etc.

Hence, Mr. Hill concludes, the jitneys are not essential to the public and should be discontinued entirely where they are performing duplicate service. The fact that they have been entirely eliminated in many cities justifies the contention that they are not considered essential to the public and that their continued operation in other sections of the country is unnecessary.

While the foregoing data were being compiled, the highways transport committee through its secretary,

R. C. Hargreaves, sent to the state and regional chairmen a letter reading in part as follows:

> It seems that when we are called upon by the Labor Department to assist in classifying essential labor, the matter of jitneys should receive careful investigation.
>
> It is, of course, the aim to avoid any duplication of transportation where there are already facilities that can handle such transportation. We can see no reason why our organization should declare essential jitneys which are operating on lines paralleling electric railways, where such railways could handle the passenger traffic.
>
> We realize, however, that there are many jitney lines which are of great benefit to the public because the transportation is the only form of transportation that can be had. In that event these jitneys are performing a very necessary service. Moreover, there are jitney lines which parallel the electric railways for only a short distance and serve a territory which is not served by the electric lines. Where these conditions exist they would not, of course, be considered in the same light.
>
> While our committee is called on to strengthen transportation resources, we must also help conserve the gasoline supply, so that some investigation should be made of this situation in your territory, with the view of bringing out a policy which is in harmony with not only the essential labor program but the conservation of gasolene.

No one in the highways transport organization, it is now said, has been found who is not willing to co-operate with the War Board and do everything possible to assist it. Some of the replies received from the state and regional chairmen indicate that the jitney is not a local factor. Jitneys have been eliminated, it is asserted, entirely in Nebraska, Utah and Wyoming, and nearly so in Ohio. In Oregon there are few lines that could be deemed in competition with established steam or electric carriers, and no encouragement is given to competition where railway service is satisfactory.

In Oklahoma jitneys are regularly operated in only two cities, and then by the city governments as necessities. In California jitneys are reported to be in a process of elimination, but the State highways transport committee is looking fully into the matter. The conditions in Texas are similarly under investigation. In Wisconsin the situation is not so bad as formerly, although it is admitted that jitneys in Milwaukee are probably adversely affecting electric railway revenues. The matter may come before the Legislature in January.

In Colorado the electric railways, it is averred, are in a better situation in respect to the jitneys than in any other state. So far as can be ascertained, not a single jitney is operating in Colorado in competition with electric railways in purely intra-urban traffic.

JITNEYS OPERATING IN UNITED STATES IN OCTOBER, 1918

	Number Operating on Routes Where Electric Cars Run	Estimated Number of Men Employed	Estimated Annual Earnings	Number Operating Where Electric Cars Do Not Run
Arizona:				
Douglas	50	55	$250,000	None
California:				
Southern Cities	166	350	650,000	88
Oakland	30	32	75,000	None
San Francisco*	250	300	500,000	None
Connecticut:				
Norwich	69	70	90,000	None
Waterbury	5	5	20,000	None
New Haven, Bridgeport and vicinity	579	700	1,856,000	*a* 49
Colorado:				
Durango	..	..	.....	*b* 25
Florida:				
Miami	15	25	16,000	None
Georgia:				
Columbus	20	30	72,000	None
Savannah	*c* 40	50	30,000	None
Augusta		..	....	*d* 50
Indiana:				
South Bend	*e* 27	50	112,000	None
Evansville	2	2	4,000	None
Kokomo	30	50	78,000	None
New Albany	31	31	56,500	None
Indianapolis	35	50	50,000	None
Terre Haute and vicinity	80	100	110,000	None
Anderson	38	39	105,000	None
Marion	25	27		
Muncie	12	13		
Elwood	4	4		
Fort Harrison	10	11		
Gary	76	100	130,000	None
Illinois:				
Rockford	40	60	200,000	*f* 360
Springfield	*g* 25	40	75,000	None
Chicago Hgts.	6	9	3,000	None
Iowa:				
Sioux City	12	12	40,000	None
Kansas:				
Lawrence	1	1	2,000	None
Wichita	8	15	86,400	None
Kentucky:				
Somerset	14	30	30,000	None
Louisiana:				
Algiers	3	3	3,600	None
Maine:				
Kennebunk	12	12	18,000	None
Showegan	..	.	.....	6
Portland	3	4	9,000	2
Bangor	..	..	.....	3
Maryland:				
Cumberland	..	..	.....	6
Baltimore—	..	..	.....	
Camp Meade	15	20	27,000	None
Kensington	3	3	5,000	None
Baltimore	*h* 34	50	63,000	None
Massachusetts:				
Springfield	120	200	110,000	10
New Bedford	161	200	500,000	None
Plymouth	3	4	9,000	None
[illegible]	10	16	5,000	None
Lynn	29	29	$84,000	None
Salem	29	29	112,000	None
Gloucester	1	1	1,400	None
Lowell	19	19	32,000	None
Lawrence	247	259	185,000	None
Haverhill	6	6	4,800	None
Brockton	168	176	108,000	None
Quincy	60	60	49,000	None
Hyde Park	2	2	7,000	None
Fall River	94	100	37,000	None
Newport	11	11	2,200	None
Woonsocket	3	3	6,000	None
Attleboro	10	10	20,000	None
Worcester	10	10	15,000	None
Michigan:				
Saginaw	7	10	20,000	None
Lansing	7	7	26,000	None
Battle Creek	50	50	80,000	None
Mississippi:				
Hattiesburg	...	...	....	*i* 50
Missouri:				
Kansas City	200	250	1,000,000	None
St. Joseph	50	75	250,000	None
Excelsior Spgs.	30	45	135,000	None
Joplin	150	170	450,000	None
Springfield	7	14	25,000	None
New Jersey:				
Asbury Park	1	1	2,000	*j* 1
Penns Grove	57	100	48,000	None
Atlantic City	100	100	200,000	*k* None
Newark and vicinity	507	1500	1,750,000	22
Morristown	15	15	30,000	5
Keyport	20	22	37,000	30
New York:				
Watertown	...	..	......	15
Schuylkill	2	2	4,000	None
Ossining	10	15	15,000	None
Albany	*l* 4	6	10,000	None
Buffalo	*m* 10	12	5,000	None
Huntington	4	5	14,000	3
Syracuse	..	..	......	2
Peekskill	20	20	30,000	None
North Carolina:				
Burlington	75	100	100,000	None
Raleigh	2	4	7,000	None
Durham	*n* 40	45	45,000	None
Asheville	10	12	30,000	None
Ohio:				
Tiffin	2	2	2,000	None
Alliance	3	5	9,000	2
Cleveland	*o* 2	2	6,500	None
Ashtabula	4	7	11,600	None
Lancaster	1	1	2,000	None
Springfield	5	5	20,000	None
Columbus	50	60	75,000	None
Pennsylvania:				
Milton	10	12	3,000	None
Punxsutawney	2	2	4,000	8
Danville	..	..	......	4
Williamsport	1	1	1,200	None
Wilkes-Barre	15	25	35,000	None
Harrisburg	69	75	75,000	None
Scranton	2	2	8,500	None
McKeesport	..	..	......	30
Rhode Island:				
Providence	143	175	$300,000	None
Pawtucket	90	110	125,000	None
Woonsocket	40	50	100,000	None
Central Falls	2	3	4,000	None
West Warwick	10	12	20,000	None
South Carolina:				
Charleston	*p* 20	25	......	None
Tennessee:				
Jackson	12	20	20,000	None
Chattanooga	100	125	182,500	None
Nashville	50	75	175,000	None
Texas:				
Paris	1	1	2,000	None
Port Arthur	40	40	18,000	None
Austin	50	50	70,000	None
Wichita Falls	20	35	18,000	None
El Paso	80	175	204,400	28
Temple	25	30	22,000	None
Houston	*q* 375	500	504,000	None
San Antonio	*150	160	275,000	None
Virginia:				
Charlottesville	4	4	8,000	None
Tasewell	3	3	6,000	None
Washington:				
Seattle	125	200	600,000	None
Everett	21	25	125,000	16
Grays Harbor	5	5	5,000	None
Centralia	*r* 4	4	10,000	None
Spokane	3	3	8,700	None
West Virginia:				
Charleston	4	4	10,000	None
Wisconsin:				
Milwaukee	80	85	200,000	None
Racine	10	15	25,000	15
Green Bay	3	5	7,000	None
Eau Claire	9	12	27,000	None
Waupaca	3	4	9,000	None
Total	5,879	8,200	$13,720,300	855

(*a*) These forty-nine jitneys operate a short distance on routes where cars run.
(*b*) Compete during fairs, etc.
(*c*) Operate mostly mornings and evenings.
(*d*) Operate to Camp Hancock.
(*e*) Operate directly ahead of cars.
(*f*) Serve Camp Grant, which electric cars do not reach.
(*g*) Three hundred operate during State Fair week.
(*h*) Owned by electric railway.
(*i*) Operate to Camp Shelby.
(*j*) Eight in summer season.
(*k*) Operate on parallel streets with electric railway cars.
(*l*) Parallel cars part of route.
(*m*) Operate on Sunday only.
(*n*) Charge 25 cents fare.
(*o*) Report of small road.
(*p*) Operate to Navy Yard.
(*q*) Two hundred and fifty cars operate to Camp Logan and aviation camp, both being served by electric lines.
(*r*) Operate between Centralia and Chehalis.
* Estimated.

Changing for Prepayment Operation 198 of the World's Best-Known Cars

IT IS perfectly safe to assert that the cars of the Los Angeles Railway are the best-known in the world, for who, from Africa to Greenland, has not seen them "butt" into many a movie tragedy or comedy?

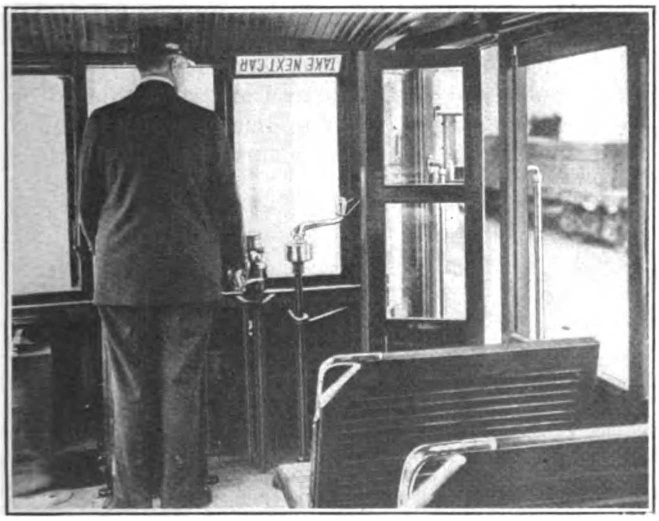
Most of the cars of this company are end-entrance California type—namely, open cross-seat compartment forward for smokers, closed longitudinal seat compartment center and open cross-seat compartment rear. Some 582 cars of this type are arranged for prepayment and are fitted with gates. About three or four years ago, also, the company added 183 center-entrance cars.

Of these cars 198 are now being altered by the addition of doors and side sheathing. These are of the three-compartment type but hitherto have not been operated with prepayment facilities.

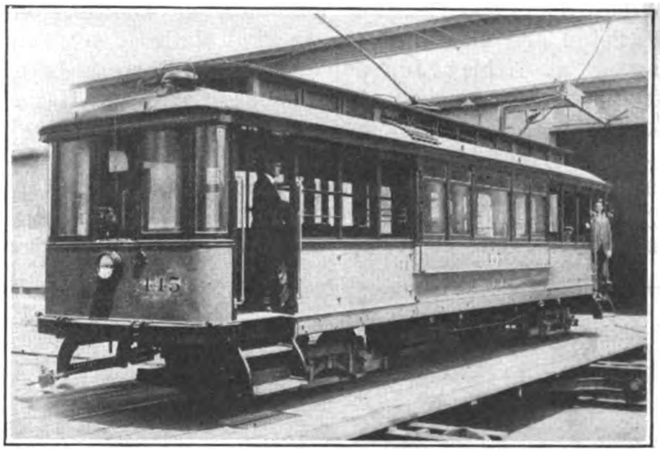
In detail, the changes begun in August, 1917, are as follows:

A two-leaf folding door is installed at both ends of the car and on both sides. In operation, the devilstrip-doors are closed all the time; the rear doors next to the conductor are open all the time for ingress and egress and the front doors to the right of the motorman are opened by him only to permit passengers to leave. Therefore, the only one door operating handle is in possession of the motorman. This handle is simply locked onto the squared top of the round rod which connects with the door levers. This rod is set in a frame directly behind the motorman's valve handle. The conductor now stands back of a rail in a place made by the removal of the last outside cross-seat. The double folding doors are of spruce instead of mahogany, the latter wood being now unobtainable.

The usual metal lattice or grill which formed the sides of the rear outside compartments is being replaced by $\frac{1}{16}$-in. metal sheathing carried up to arm-rest height and stiffened by 2-in. x 2-in. square wooden diagonals. This change will considerably increase the comfort of the rider in cool weather. Up to the present it has been customary to draw the Pantasote curtains down to floor level, but this was not very convenient. Besides, the curtains received a good deal of kicking, salivation and other abuse. Despite constant use and abuse since 1904 the upper parts of the curtains are in such good condition, that they have easily been salvaged to give perfectly good service on the same cars. The present master mechanic, attributes this longevity partly to the quality of the material and partly to the oiling it received regularly whenever the cars came into the shop for painting. As a curtain drawn only to arm-rest height it will receive less abuse and be serviceable for many years more.



TWO-LEAF FOLDING DOOR ADDED AT FRONT END TO PREVENT ENTRANCE



COMPLETE THREE-SECTION CAR WITH NEW SIDE SHEATHING

The foregoing changes in car construction, using doors ready-made from the company's own millroom, average ninety-six hours of labor per car.

The company is also removing the lattice work from forty-seven prepayment cars built originally in 1896 and converted during 1906 and 1908 when Pantasote floor curtains were installed. These curtains are also being salvaged.

Within the past two years, the Los Angeles Railway has painted some fifty cars with the modern enamel process, using both Sherwin-Williams and Pratt & Lambert materials. The saving over varnish is about $8.50 per car in material and seventeen hours in labor time.

Tank Sells Bonds in Allentown

THE greatest single factor in the successful prosecution of the Lehigh County campaign for the Fourth Liberty Loan has been the co-operation of the Lehigh Valley Transit Company, according to Chairman Reuben J. Butz, of the Executive Committee, Allentown. This co-operation assumed the form of supplying the Liberty Loan organization with a "Liberty Tank" and the services of a crew to operate the tank. Meetings were held every afternoon and evening in different sections of the county, and the tank invariably proved a magnet to attract a large crowd of people. Talks were made from the monitor decks of the tank.

The tank was built on a railway flat car, and painted a battleship gray. It was 41 ft. long, 8 ft. wide and 11 ft. high. It was equipped at either end with a powerful searchlight, and in the evening was ablaze with 300 25-watt lights. Cannon projected from the turrets on either side as well as in front. All in all, the tank made a formidable appearance, while the finishing touch was given by the likeness of a spunky cat on top, spitting out, "Treat 'Em Ruff." A large bell announced the approach of the Liberty tank.

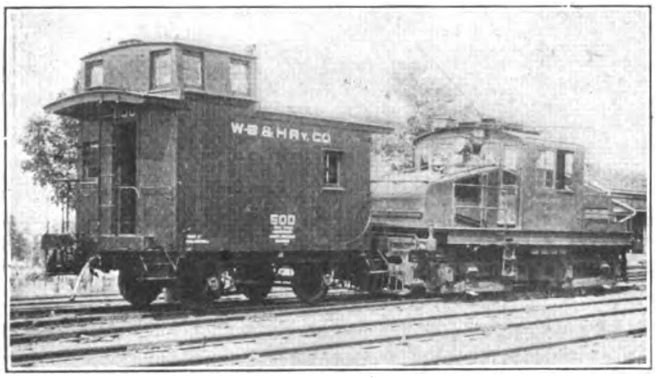
Electric Road Helps Relieve Freight Congestion

By James W. Brown

Superintendent of Shops, Wilkes-Barre & Hazleton Railway

The Wilkes-Barre & Hazleton Railway handles quite an extensive freight business in carload lots. It has a connection with the Lehigh Valley Railroad at the Wilkes-Barre and Hazleton junction about 4 miles from Hazleton and also with the Central Railroad of New Jersey at Ashley Junction in Wilkes-Barre. Local freight is also handled at the Wilkes-Barre and Hazleton terminals.

This freight is of a miscellaneous character such as is usually handled by the steam roads and is carried by the electric road in the night time. A 60-ton electric locomotive shown in an accompanying illustration coupled to a caboose is used for this service. This locomotive was built by the General Electric Company and the American Locomotive Company and is geared to handle heavy trains at low speed. It has a steel cab mounted on two articulated trucks. The equipment consist of four GE-69-C, box-frame, 600-volt motors and is of sufficient capacity to start a 350-ton train on a 3-per cent grade. General Electric type-M multiple-unit control is provided.



LOCOMOTIVE AND HOMEMADE CABOOSE USED BY THE WILKES-BARRE & HAZLETON RAILWAY FOR FREIGHT SERVICE

The four-wheel caboose used in this freight service was built in the shops of the Wilkes-Barre & Hazleton Railway. It is 21 ft. 9 in. from center to center of knuckle pins. It has a 9-ft. wheelbase and uses 33-in. cast-iron wheels mounted on M.C.B. 3¾-in. x 7-in. axles.

New Form of Gear Drive for Heavy-Duty Gasoline Trucks

A double-reduction gear drive for heavy-duty trucks has been put upon the market by the White Company, Cleveland, Ohio, as a substitute for the chain-and-sprocket drive formerly used. In this there is a first reduction through the bevel gear and drive pinion in the center of the rear axle, from which the power is carried by a live axle of the floating type through the center of the housing to a gear at the rear end of the live axle. This gear meshes with a second gear (carried on the housing of the live axle, but inside the hub case of the rear wheel), and this second gear, in turn, meshes with a ring gear attached to the wheel inside the hub case.

In this manner of applying power to the wheel a second reduction occurs between the three gears and the hub case very similar to the reduction which takes place between the sprocket wheels of the chain drive.

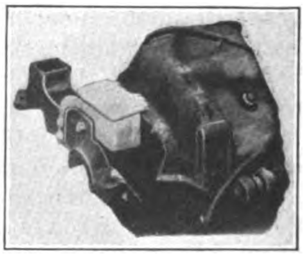
The double-reduction principle has been used with success in the lighter White truck, but a considerable engineering problem was imposed in applying it to shaft-driven heavy-duty trucks without using a large axle housing, without requiring an auxiliary axle, without increasing unsprung weight and without sacrificing simplicity.

Cast-Iron Oil Box Prevents Hot Bearings

By John B. Blaiklock

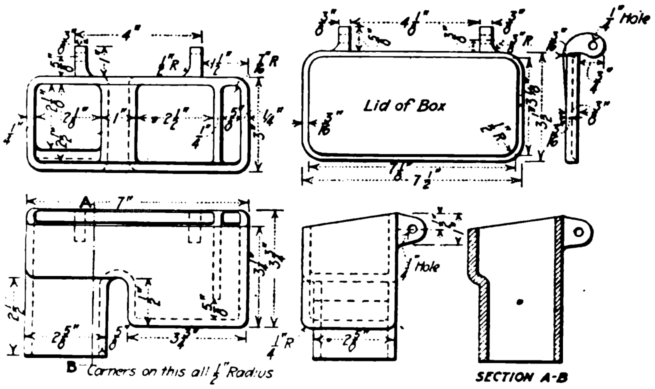
Master Mechanic Lincoln (Neb.) Traction Company

The Lincoln Traction Company has adopted a cast-iron oil box for use with the armature bearings of its GE-52 and GE-54 motors. The company has 168 motors of these types in service, and previous to the adoption of this type of bearing considerable trouble was experienced with hot armature bearings due to the inefficient oiling device of these motors. About sixty of these boxes are now in service and so far we have experienced absolutely no bearing trouble. Some of these motors have been in service with the new type of oil boxes for ten months.



OIL BOXES IN PLACE ON GE52 AND GE54 MOTORS

The idea of the box is not new, but its use with the GE-52 and GE-54 motors embodies some new features. The old oil holes in the bearings and bearing housings were ¾ in. x 3 in. These were enlarged to 2⅛ in. x 3⅛ in. The bearing shells were cut in a milling machine and the housings were cut out with an oxy-acetylene cutting torch. The box was made to fit snugly into the housing and is bolted thereto with two ⅜-in. machine bolts, and further braced and strengthened by a wrought-iron strap 1 in. x ⅛ in. in size, which is bolted to the side of the case. Accompanying illustrations show the construction of the box and its application to the motors. The box is packed with waste in the usual way and is able constantly to carry about 1½ in. of oil in the oil chamber. The boxes cost 70 cents each, and the machinery and mounting cost $1.50 per motor.



DETAILS OF OIL BOX FOR GE52 AND GE54 MOTORS USED AT LINCOLN, NEB.

American Association News

Program for New York Conference

The program for the conference of the American Electric Railway Association at New York, Nov. 1, has now been completed. It follows:

MORNING SESSION

Address by President John J. Stanley

Report of Electric Railway War Board

Topical Discussion

"*The Needs of the Interurban Electric Railway,*" by Arthur W. Brady, president Union Traction Company of Indiana

AFTERNOON SESSION

Topical Discussions

"*Light-Weight Cars,*" by H. G. Bradlee, president Stone & Webster Management Corporation

"*The Zone System,*" by Thomas Conway, Jr., Ph. D., Professor of Finance, University of Pennsylvania

"*The Higher Unit Fare,*" by L. S. Storrs, president Connecticut Company

"*Public Subsidies,*" by Homer Loring, banker, Boston, Mass

"*Public Ownership,*" by Richard McCulloch, president United Railways of St. Louis

"Meralco" Section Discusses Jitneys

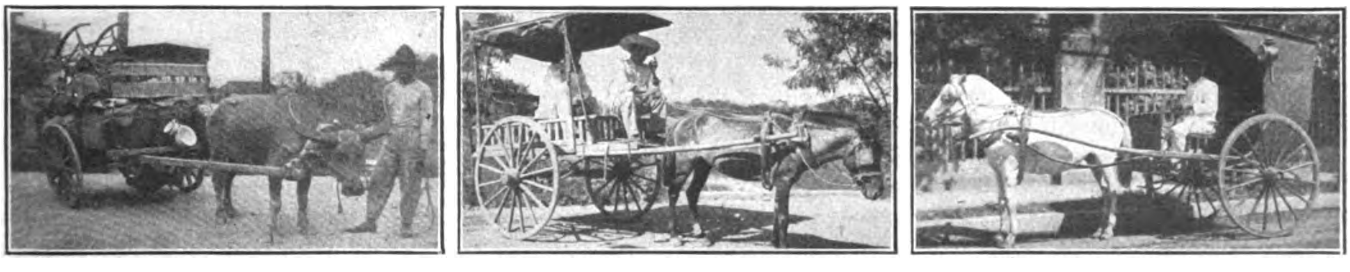
AT THE MEETING of the company section held in Manila on Aug. 6 a paper on "Manila Jitneys" was read by J. M. Bury, assistant superintendent of transportation, M. E. R. & L. Co. The paper followed somewhat along the lines taken up by C. Nesbitt Duffy, vice-president of the company, in the interview published in the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 20, 1917, page 114.

There are, said Mr. Bury, in Manila and suburbs approximately 4000 carromatas and carretelas (commonly called "street rigs"). These are run in competition with the electric railway and at least 3000 are in regular operation. These vehicles are shown in the accompanying illustrations. The rates by the hour are prescribed by city ordinance. but the drivers do not like this schedule. They are allowed to charge 10 cents for a haul of less than fifteen minutes' duration and are apt to leave their passengers if held too long. They have no regular routes or schedules, but are always to be found where the traffic is most dense. The carromata receipts are from $1.75 to $2.25 a day, and the carretela receipts from $2.25 to $2.75 a day. This totals for the city $6,750 per day, of which at least one-half is derived from traffic which could be conveniently handled by the electric railway. The expenses including driver are about 85 cents per day.

In the discussion of Mr. Bury's paper L. C. Bewsey, carhouse foreman, said that depreciation of horses and vehicles should be added to the cost estimates given, which would reduce the profit to $1.32 per day. His idea of the cause of competition of the sort described is that some people cannot bear to see a corporation making a reasonable income on the money invested. Where the jitneys have been compelled to bear their share of the expense which they cause, and to furnish a reasonable indemnifying bond, they have in many cases been obliged to retire from the field.

F. P. Santiago, assistant claim agent, expressed the hope that the carromata would continue in business, but that in its operation justice would be done to the street railway. The railway might go into the carromata business in competition with the present owners, but the wisdom of this would be questionable; a better way is to obtain co-operation with the city authorities for the regulation of carromata service. The local railway is not operating under any privilege gratuitously obtained from the city of Manila, and is paying a percentage of its gross receipts to the government in addition to several kinds of taxes. It is paving the whole track area for the benefit of the entire population, particularly of automobile and carromata owners. All that the carromata owner does is to pay an internal revenue tax, borrow new harness until it has passed the inspection of the internal revenue agent (using the old harness afterward) and pay a driver's personal tax of $1 a year.

Mr. Bewsey suggested the following requirements as reasonable for carromata owners: (1) Drivers to be not less than eighteen years of age. (2) Drivers to pass mental examination by police authorities and physical examination by a health officer. (3) Strict adherence to traffic rules. (4) Carromatas to be kept in reasonably clean and safe condition. (5) Carromatas to be repainted within reasonable length of time. (6) Carromatas for hire not to be allowed on the most congested streets during morning and evening rush


Buffalo Cart Carromata Carretela

THREE SOURCES OF COMPETITION WITH THE ELECTRIC RAILWAY IN MANILA, P. I.

hours. (7) At least one-fifth of 1 per cent of the gross receipts of the carromatas to be collected by the city and used for paving the street area now being paved by the railway.

Mr. Bewsey said there is no competition from the carromata on long hauls. The competition on short hauls can be met by furnishing more frequent car service, which can be done in the following ways: By the use of additional cars. By the use of "special" or "emergency-type cars." By increasing the average car speed. In addition better service would result from: Reduction in number of stopping points. Insistence upon observation of traffic rules by automobile and carromata drivers. Reduction in liberality of trainmen toward passengers who cause unnecessary delay to cars. Promptness by the conductors in giving of starting signals to the motormen.

Keeping Clinkers Off the Boiler Furnace Walls

OWING to the high temperature of the ash in modern boiler furnaces there is apt to be trouble with clinkering, particularly where the ash has a low fusion temperature. Clinker tends to adhere to the furnace walls, and when it does so operating efficiency is reduced and deterioration of the walls is made more rapid.

A plan which has been devised to prevent adhesion of clinker to the walls consists in causing air to emerge from the wall surfaces at the points where clinker tends to form. Where forced draft is used the air for this purpose can be diverted from the regular supply; where natural draft is used the air can be furnished from a fan of moderate size. Suitable passages are provided in the walls, connected with a "wind box" supplied from the air duct. The air, of course, keeps the side walls comparatively cool and thus prevents adhesion of the clinker.

In laying up the furnace wall a thin air chamber is built in back of the first row of bricks facing the fire, and air passages are provided through the brick walls directly into the fuel bed, preferably by proper spacing of the bricks in front of the chamber facing the fuel bed. The openings can be of graduated size so as to deliver the proper relative amounts of air. No openings are allowed above the fuel bed, and only small ones at or near the surface.

In addition to keeping the bricks cool this construction serves the purpose of supplying the fire with some pre-heated air at a point where such seems to be needed. A damper is usually installed at the intake to the chamber permitting a regulation of the flow of air through the openings. Just enough air is admitted to prevent clinker from sticking to the wall.

The plan described is known as the Bernitz method for which the following economies are claimed: (1) Fuel saving by eliminating the burning down of the fire before cleaning and the building it up after cleaning, by shortening the time spent on cleaning walls and dumping fires, by enabling the operator to burn the coke off the clinkers before dumping, by getting more complete combustion from the coal along the side walls on account of the greater cleanliness of grates, by reducing side-wall radiation and by reducing manual labor so that the work attracts a higher class of operators. (2) Increase in boiler capacity by permitting the furnace to be operated more efficiently. (3) Lengthening of period of active operation of boiler. (4) Reduction in strain upon the stoker by the elimination of obstructing clinker.

War-Utility Problems Discussed

THE conduct of utility business under war conditions was the topic of a one-day informal discussion by thirty delegates to the annual convention of the Kansas Public Service Association at Hutchinson, Kansas, Oct. 4. At the meeting it was decided to discontinue the holding of regular meetings throughout the coming year. Since the association will remain in this semi-dormant state it was thought best to continue the present offices in power.

The program included provisions for discussions of fuel costs, other operating expenses, rates and temporary increases, education of the public and new business. There was also considerable discussion on classification of accounts following a report on this subject presented by a committee appointed by the Kansas Public Utilities Commission. It was expected that a proposed classification will be submitted to the commission not later than Nov. 1.

It was reported that the utilities commissioners had expressed recently as the opinion of the commission that utilities in general should be permitted to increase their rates, but that the commission is not inclined to disturb present rates, preferring to add as a war measure certain percentages of increase to the present rates, planning to discontinue these increases six months after peace is declared. It appeared that a number of Kansas utilities will ask for increases on this basis.

On fuel costs it was the consensus of opinion that energy production costs in Kansas ran from 48 per cent to 61 per cent higher than in pre-war days. Taxes have increased an average of 30 per cent, and wages an average of 60 per cent. There was considerable discussion as to the effect of the taking by government employment agents of the labor necessary to the operation of utilities, and a committee was appointed to investigate this matter.

L. O. Ripley, vice-president Kansas Gas & Electric Company, spoke on the subject of public policy, stating that at this time there is an unusual opportunity to educate the public by explaining to the local clientele the conditions under which each utility operates. This, said he, is the time to combat socialistic tendencies by bulletins, talks and advertisements.

The officers who will continue in power for the ensuing year are: President, J. D. Nicholson, Newton, Kan.; secretary-treasurer, W. W. Austin, Cottonwood Falls; executive committee, A. M. Patten, Topeka; L. O. Ripley, Wichita; C. L. Brown, Abilene; H. W. Magruder, Liberal; L. S. Small, Concordia; Walter S. Grundy, Hutchinson.

At the Wolf Street (Syracuse) shops of the New York State Railways the mercury vapor lamps previously used for illumination have been replaced with 250-watt nitrogen-filled Mazda incandescent lamps. These are 150-volt lamps connected four in series on the trolley circuit.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Rhode Island Wage Accepted

Brief Review of the Conditions Fixed by the War Labor Board in Recent Decision

Immediately following the decision in the Rhode Island fare case referred to elsewhere in this issue, the Rhode Island Company, Providence, notified its employees that a new wage scale fixed by the War Labor Board would become effective at once and that the new pay would be found by the employees in the next pay envelope. The men voted unanimously to accept these conditions and show their satisfaction by courteous and unanimous service.

The award of the War Labor Board in this case, of which brief mention was made in the ELECTRIC RAILWAY JOURNAL of Oct. 12, in its general tenor was similar to the previous awards made by this body in the electric railway field. The board saw in the adjustment a matter of national necessity and repeated its previous statement to the effect that "overcapitalization, corrupt methods, exhorbitant dividends in the past are not relevant to the question of policy in the present exigency." It also recommended a reconsideration by the proper authorities of the fare which the company is allowed by law to collect from its passengers. The award as it affects the terms of service of the employees follows:

"The arbitrators are fixing these wages for the period of the war only, and therefore substitute for extended graduation of rates by years a shorter period for the increases.

FORTY-EIGHT CENT MAXIMUM

"The wage schedule to be paid all motormen and conductors shall be:

"For the first three months of service, 43 cents an hour; for the next nine months of service, 46 cents an hour; thereafter, 48 cents an hour.

"Wages of Other Employees—The wages of employees other than motormen and conductors, which are before the arbitrators for fixation, shall be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased by this award; provided, however, that if this percentage does not bring the wage of any adult male employee up to a minimum of 42½ cents an hour, he shall be paid said minimum of 42½ cents an hour, and provided further that where women are employed in the same classification as men they shall be paid equal pay for equal work.

"For the purpose of securing a proper interpretation of this award, the secretary of the National War Labor Board shall appoint an examiner, who shall hear any difference arising in respect to this award between the parties and promptly render his decision, from which an appeal may be taken by either party to the arbitrators making this award. Pending a final adjudication upon the appeal the decision of the examiner shall be binding.

AWARD RETROACTIVE

"This award is to take effect as of July 19, 1918, and shall continue for the duration of the war, except that either party may reopen the case before the arbitrators at intervals of six months, beginning April 1, 1919, for such adjustments as changed conditions may render necessary.

"The company shall be allowed until Dec. 1, 1918, to make the payments to its employees of the back pay due them under this award."

Strike on Ohio Electric Railway

Charles Bendheim, representative of the United States Department of Labor, arrived in Springfield, Ohio, on Oct. 18 to investigate the strike of motormen and conductors of the Ohio Electric Railway. It is the desire of some of those interested that the matter be placed before the War Labor Board, but this cannot be done while the men are on a strike.

All meetings of the men in the various towns touched by the road have been prevented by the health authorities, except at Lima, where they gathered on one occasion to discuss their troubles.

The men demand an increase in wages, improvement in working conditions and recognition of the union. Officers of the company who have received a committee from the strikers claim that recognition of the union has been made a necessary preliminary to the discussion of the other two complaints. They cannot see their way clear to yielding this point. A statement made by the company says:

"The company has not objected to any or all of its employees being members of any order, union or other society, but the company does not feel that the recognition of the Amalgamated Association is a necessary preliminary to fair dealing with its employees as committees or as individuals, or to an equitable adjustment of wages or other questions."

On Oct. 20 the company and its employees reached an agreement to submit the question of increased wages and better working conditions to the Federal War Labor Board for adjustment. The increase in wages which is asked amounts to about 15 per cent. Service was promptly restored in full.

Seattle Details Dragging

Progress Toward Municipal Ownership Slow, but No Insurmountable Barriers Appear So Far

As the last step in closing the deal for the purchase of the railway lines of the Puget Sound Traction, Light & Power Company in Seattle, Wash., the City Council is attempting to segregate the real estate of the company. When the city of Seattle offered to buy the lines for $15,000,000 the company accepted the offer for the railway operating property.

The company contends that certain real estate which city officials say should be included in the deed is not operating property. The disputed property includes the Massachusetts Street freight terminals, Madison Park property, property in Rainier Valley purchased for a right-of-way to build a line to compete with the Seattle & Rainier Valley Railway, but which was never used for that purpose, property on Beacon Hill obtained in the purchase of other railways, and a gravel pit of several acres at Green Lake.

SUITS MUST BE SETTLED

According to Walter F. Meier, corporation counsel, three important suits must be disposed of before the deal for the transfer of the company's property to the city can be made. Two mandamus suits to compel the company to pave between its tracks on certain streets were won by the city and appealed by the company to the Supreme Court. In the Fremont bridge case the city obtained a judgment against the company for $66,414 and an appeal is now pending in the Supreme Court. The third case is an action brought by the company to collect damages from the city on account of an ordinance providing for the sale of tickets on cars. The court decided against the company and an appeal is now pending in the United States Supreme Court.

Representatives of the local railway employees are telling city officials that unless some immediate assurance is given that the city will take over the property in a reasonable time and guarantee the union scale, it will be impossible to hold the men on the cars. The company agreed to pay the new scale from Aug. 1 to Oct. 15, by which time, it was believed, the city would have taken the property over. This agreement expired on Oct. 15 and the wages automatically dropped back from 50 cents and 60 cents an hour to 33 cents and 40 cents. Preparations have been made for an appeal of the wage question to the War Labor Board.

Cleveland's Terminal Problem

City Considers Broad Reorganization of Its Railroad and Interurban Transportation Facilities

The submission of a new railroad freight and passenger terminal plan to the people of Cleveland, Ohio, to accommodate all roads, including interurban electrics whose traffic would thereby be removed from the public streets to private rights-of-way, has brought the city face to face with the question of abandoning the long expected Union Depot along the Lake front at the foot of the Mall or Civic Center.

STATION ON PUBLIC SQUARE

The site of the new passenger station as proposed is next to and facing on the Public Square, while the old site contemplated a monumental passenger terminal building on the sightly bluff above the lake, this building completing the architectural plan of the Mall as originally designed by Messrs. Burnham, Carrere and Brunner and later partially carried out by the Cleveland Group Plan Commission by the erection of several monumental city and county buildings and the preservation of sites for others conforming to the original Mall plan.

The new plan contemplates not only union passenger facilities but also freight houses at the high level of the business district and the co-ordination of railroad entrances under one terminal organization. Cleveland already has voted in favor of the old site. It is now contemplated to place before the voters an initiated ordinance covering the new plan.

The questions involved are so conflicting that numerous civic organizations are studying the two plans and to this end the Chamber of Commerce recently retained Bion J. Arnold, Chicago, to report upon the important features of the controversy, covering an analysis of the comparative advantages and disadvantages of the two plans, the probable result in traffic congestion on the Public Square resulting from the concentration of seven or more stations into one union station, and the practicability of largely organizing the passenger and freight carrying roads and terminal facilities in Cleveland. The most important question propounded to Mr. Arnold for solution is as follows:

THE QUESTION PUT

"Is it practicable to adjust freight and passenger terminals in this city to the future requirements of a city growing at the rate at which Cleveland is growing and still keep the union passenger station on the Mall site?"

As both the city electric railway and steam passenger traffic are growing so fast as to double in about eight years or less the problem of meeting Cleveland's rapid growth is an important one. The Cleveland district is now estimated to hold nearly 1,000,000 persons and the great industrial expansion is already developing grave problems in housing. New freight facilities are already fully absorbed; their capacity is to be more than doubled, and it is contemplated in the new plan to direct all passenger traffic through Cleveland from the lake front tracks to a new interior right-of-way which is intended to be used also by the various interurbans entering Cleveland. These electric roads handle fully one-half as many passengers as the steam roads.

The city is also studying rapid transit and subway development, new viaducts across the valley of the Cuyahoga and the straightening of this crooked stream to facilitate much-needed harbor development.

The field survey and development studies of the Arnold investigation are already in progress, in charge of J. R. Bibbins, Chicago, and a preliminary report will be shortly made public at a conference in Cleveland at which city and railroad officials and others prominently identified with this railroad question will be present.

SURVEY ALONG FAMILIAR LINES

The survey conducted by Mr. Bibbins follows identical lines of similar investigations made in connection with reports of Mr. Arnold on terminal development problems in Chicago, Baltimore, Syracuse, New Orleans and Jersey City. In these studies, the fullest co-operation and unification of railroad facilities have been urged, not only for passengers but also for freight. It remains to be seen whether such a policy as recommended by Mr. Arnold can now be adapted to the special conditions brought about by Cleveland's topography and extraordinary growth.

Praises Washington Belt Line

Washington opinion about the proposed belt line referred to in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 713, is reflected in the following comment from the *Times* of that city:

"The *Times* felicitates the War and Navy Departments on their joint decision to accept what the city of Washington knows as the 'Beeler Belt Line.'

"The *Times* also felicitates John A. Beeler for his ability to institute a common-sense plan to eliminate the terrific street car congestion in Washington.

"For the first time in the history of the national capital a nationally known street car and traffic expert has been engaged for traffic purposes only. Mr. Beeler's achievements here will be an ever-present practical proof of the theory that street car companies should employ traffic experts for traffic problems.

"The 'Beeler Belt Line' will allow 40,000 government employees to get to their offices without passing through the much congested gateway at Fifteenth Street and New York Avenue. It is answer to the traffic problem here. This newspaper is proud of the fact that it has consistently fought for and supported the 'Beeler Belt Line' idea from its inception."

Buffalo Strike Settled

A Six-Cent Fare Will Go Into Effect Pending a Decision by the Public Service Commission

The strike of the employees of the International Railway was ended on Oct. 24 when the Council adopted the plan of Justice Marcus for a settlement. The plan provides for a 6-cent fare pending the determination of the rate question by the Public Service Commission. Rebate slips will be issued to passengers entitling the holders to a return of 1 cent if the 5-cent fare is upheld. The new rate to be fixed is to continue in force only until May, 1920. The platform men are paid the wage award of the War Labor Board immediately and are to receive backwages based on this scale amounting to $300,000, if the 6-cent fare is upheld. The action of the Council is subject to another referendum. The city will name eight members of the board of directors of the International Railway and the stockholders of the company will name eight. These sixteen men are then to agree upon a seventeenth member.

Justice Marcus of the Supreme Court of Erie County had asked the Council and the company officials to agree upon a plan suggested by him. The court's plan had the approval of the railway, and has since been formally accepted by the company. Its provisions have just been recited in connection with the terms of the settlement.

Another plan under consideration which had the tentative approval of the railway and of three members of the City Council provided that the Council pass a resolution allowing the Public Service Commission to determine what was a reasonable fare and permit the company to charge 5 cents for thirty days. Other features of this plan included that the company should be operated by an executive committee of three—one man to be named by four-fifths vote of the City Council, one by a majority vote of the Public Service Commission and one selected by the company's board of directors. The fare decided upon under this plan would also have continued until May 1, 1920.

In a signed statement to the Council, President Connette had put the strike question directly up to the Mayor. He told the Mayor that the company was willing to take all chances with litigation and would abide by the decision of the Public Service Commission as to rates of fare for Buffalo if the Council would pass an emergency ordinance.

Henry W. Killeen of counsel for the company, in a public statement said:

"It would be impossible for the company, no matter who owned or controlled it, to give efficient service for many weeks to come even if the present difficulties were settled immediately. More than half of the operators of cars have secured other jobs. If the Council had been willing to accept terms of settlement early in the strike before strikers got other jobs at higher wages, that might have been averted."

William A. Morgan, Buffalo, had secured an option on the properties of the railway because of the strike. Certain restrictions were attached to the option. He agreed to operate cars for a period of thirty days on a 5-cent basis with an automatic increase of 1 cent at the expiration of the thirty days with a 1-cent rebate slip to be given every passenger pending the decision of the Public Service Commission as to what would be a just fare. Mr. Morgan was said to be prompted solely by the desire to see local Buffalo interests in control of the company.

Cleveland Women Appeal

Rose Moriority, a National Figure, in Charge of Cleveland's Car Women's Interests

The women conductors of the Cleveland (Ohio) Railway working for a reversal of the decision of the Federal Department of Labor which would deprive them of their jobs on Nov. 1 have sent to Secretary of Labor Wilson a petition 446 ft. long, bearing 35,000 signatures and asking that their case be reopened. The women held their conferences, first at one carhouse and then another, to talk and plan for the overthrow of a conclusion which they believe is unjust to them and to the patrons of the road.

These women have never asked for the places occupied by men. They have sought only the vacant positions—the operation of the cars that were standing idle in the yards because there were no men to run them. The question they want answered is: Why do the men, members of the union, object to their employment in places long vacant; why do they object to women helping to win the war by filling up the gaps and operating the cars that are so badly needed by the public, and especially by the people who are working in the shops making munitions and war materials? They fail to see either justice or patriotism in such a stand.

The organization formed by the women has been christened "The Association of Women Street Railway Employees." Miss Rose Moriority, who has been conducting the fight for the women, has advised that all make application for membership in the Amalgamated Association. If this is refused, she said that a women's union will be formed. Miss Moriority was known for years as the "petticoat mayor" of Elyria, Ohio, as she held the office of assistant city clerk and took part in politics. Later she went to Cleveland where she was made assistant secretary and treasurer of the Champion Stove Company.

Boston Elevated Makes Another Statement

Public Trustees Now Find Themselves Confronted With Engineering and Labor Problems

In a public statement made by Mayor Peters of Boston on Oct. 18 the Mayor lay stress upon the serious situation confronting those responsible for the affairs of the Boston Elevated Railway and pointed out the direct interest of every taxpayer of the community in the solution of the problem before the company. It will be recalled that in passing the bill under which the company now operates the Legislature of last year very definitely provided what charges should be included in the operating expenses of the railway, and stipulated that any deficit in the revenue should be made up by taxation of the different towns served by the company. The duties of the trustees in charge of the property are of course now fixed by law.

WANTS CONSULTATION ARRANGED

In this connection Stanley R. Miller, secretary of the board of trustees for the public operation of the railway, has made a statement for the trustees. His memorandum follows substantially in full:

"It has been their aim from the outset to devise means of furnishing such reasonably good service as could be provided from the road's revenue without requiring a contribution from taxpayers in accordance with the law. War conditions may this year prevent the success of such plans. A committee made up of the kind of men which the Mayor of Boston can appoint might render invaluable assistance to the company in many ways and such help will be welcomed by the board of trustees.

"Nevertheless, one must constantly remember war conditions prevail, and have placed a heavy burden upon the company. The war's effect cannot from day to day be foreseen. Dr. Woodward, the Health Commissioner of Boston, is mistaken when he says, 'The remedy for congestion of the Boston Elevated system has been and always is in the company's own hands.' In order to increase the company's service, more power, more cars and more men are needed. No reasonable provision has been omitted by the company to secure all of them.

NEW POWER EQUIPMENT NEEDED

"The company's motive power is sufficient to operate only the surface cars now available for service. An accident last year to the company's 35,000-kw. turbine at the South Boston power station has not yet been repaired. The General Electric Company expects that it will be in operation shortly after Jan. 1, 1919, but not before because government war work has had to take precedence. A new 25,000-kw. turbine ordered from the Westinghouse Electric & Manufacturing Company for delivery in September or October, 1918, will not be installed until Feb. 1, 1919, notwithstanding the fact that the War Industries Board issued priority orders to facilitate to the utmost early delivery. Power will therefore for several months be lacking to operate additional cars and also any new cars unless they are used to replace some of the cars now in the company's service.

CAR DELIVERY DELAYED

"Nor are the new cars immediately available. The 200 new surface motor cars ordered by the trustees at their first meeting in July for delivery beginning between Oct. 15 and Nov. 15, 1918, have been delayed on account of government war work and will probably not be in service before early spring of next year. The fifty new trail cars have likewise been delayed by government war work so that they will not be in operation before next January. The remainder of the new Cambridge subway cars ordered in October, 1917, have been indefinitely delayed by government work so that there is no prospect of their delivery during the present calendar year. The same delay has occurred in much of the equipment which is needed for outfitting these same new cars upon delivery.

"The only way to facilitate the completion of turbines and equipment in less time would be for the government to consent to give the company priority over war work, which, of course, no one would want to occur.

LABOR A VITAL PROBLEM

"Labor is still a vital problem for this company. It was expected that the 28 per cent advance in wages awarded the blue uniformed employees of the company by the War Labor Board would attract a sufficient number of new employees to handle the present equipment of the company. That, however, has not proved to be the case. In spite of the widespread publicity which the company has given the attractive wage scale now paid by it under the award of Oct. 2, the net increase to date in the number of blue uniformed employees has been only sixty-eight.

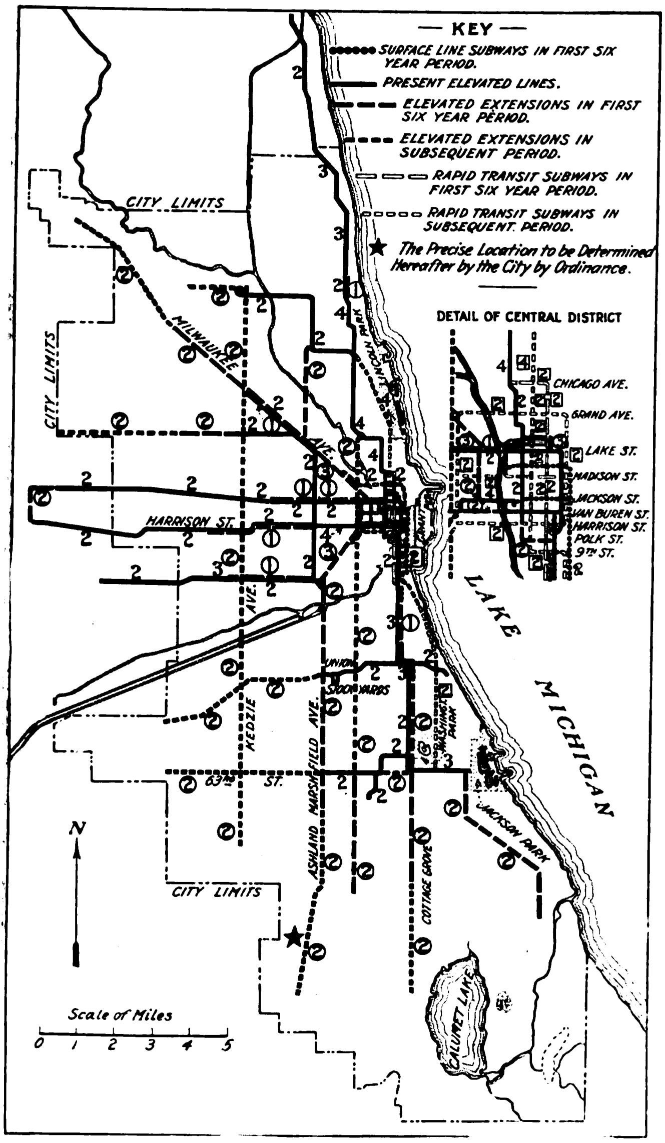
"The company has always stood ready to employ women as conductors in order that it might give the greatest possible service, but the local carmen's union has requested that the employment be postponed until the results of the increased wage scale were apparent. The trustees understand that, though the union has been loath to admit women to its membership, it now stands ready when the necessity exists to agree to the employment of women whenever they can be employed to release men for other positions. A conference at which the details incident to such an arrangement were discussed was held at the company's office on Oct. 19."

Proposed Chicago Extensions

Map Shows Scope of Work Intended to Be Done Under New Chicago Franchise

The map reproduced herewith was recently published by the citizens committee of the Chicago Association of Commerce, and placed in the mail boxes of Chicago residents. This association was one of the first of the many bodies to indorse the Chicago traction ordinance which has been discussed at length in the pages of the ELECTRIC RAILWAY JOURNAL and which comes to a public vote on Nov. 5. Since that indorsement the association has been conducting an educational publicity campaign to gain for the ordinance the support of the public.

The map shows all of the present elevated car lines, the proposed extensions during both the first six-year period and thereafter, and the proposed rapid transit and surface line subways to be built both in the first six-year period and thereafter. To simplify the map the present surface car lines have been omitted. It is stated that with the extensions indicated on this map rapid transit facilities will be furnished to 65 per cent of the people of Chicago instead of to 20 per cent as at present, and that the increase in facilities will give five rapid transit cars for each two now running.


— KEY —
SURFACE LINE SUBWAYS IN FIRST SIX YEAR PERIOD.
PRESENT ELEVATED LINES.
ELEVATED EXTENSIONS IN FIRST SIX YEAR PERIOD.
ELEVATED EXTENSIONS IN SUBSEQUENT PERIOD.
RAPID TRANSIT SUBWAYS IN FIRST SIX YEAR PERIOD.
RAPID TRANSIT SUBWAYS IN SUBSEQUENT PERIOD.
★ The Precise Location to be Determined Hereafter by the City by Ordinance.
DETAIL OF CENTRAL DISTRICT
CHICAGO AVE.
GRAND AVE.
LAKE ST.
MADISON ST.
JACKSON ST.
VAN BUREN ST.
HARRISON ST.
POLK ST.
9TH ST.
CITY LIMITS
CITY LIMITS
CITY LIMITS
MILWAUKEE AVE.
LINCOLN PARK
HARRISON ST.
LAKE MICHIGAN
KEDZIE AVE.
ASHLAND AVE.
MARSHFIELD AVE.
63RD ST.
COTTAGE GROVE
JACKSON PARK
WASHINGTON PARK
CALUMET LAKE
UNION STOCK YARDS
N
Scale of Miles
0 1 2 3 4 5

PROPOSED RAPID TRANSIT SYSTEM IN CHICAGO

Figures show numbers of tracks as follows: Plain black, present elevated lines; black in circle, elevated extensions; black in rectangle, rapid transit subways; outline figures, surface line subways.

Asks $4,825,380 from City

A claim for $4,825,380 was presented to the city of San Francisco, Cal., on Oct. 1 by officers representing the United Railroads.

Alleged injury received by the United Railroads through the construction of the Municipal Railways and the operation of cars of the San Francisco Municipal Railway on the outer tracks on Market Street, is the basis of the claim.

In the three months when the outer tracks were being laid on Market Street by the city, the operation of the United Railroads cars was obstructed, it is alleged, by the excavations for the municipal line. Since the operation of the city cars on the outer tracks, the business of the United Railroads has been injured, it is claimed.

Before building its line the city did not make any offer to buy out the United Railroads, it is claimed. The private property of the claimant has been taken and damaged by the city without just compensation. The tracks laid on Market Street, it is pointed out, are there in violation of the charter.

By reason of the methods pursued by the city the claimant has had operating expenses increased $1,320 a month. Since July 1 the United Railroads, it is claimed, has lost $4,620. It is specified in the claim of the railroad that the demand for $4,820,380 in no respect waives any right asserted in the lawsuit against the city, which was begun on June 12, 1916, in the District Court of the United States by the United Railroads, and now on appeal to the United States Supreme Court.

A Progressive Agreement

Employees at Kansas City Make Wage Adjustment Subject to Financial Condition of Company

A feature of the wage case of the employees of the Kansas City (Mo.) Railways now before the War Labor Board for settlement is the attitude of the men toward the matter. As stated briefly in the ELECTRIC RAILWAY JOURNAL for Oct. 5, page 629, the agreement for arbitration stipulated that any advance in wages granted should be limited by the financial ability of the company. Thus the articles of agreement clearly define the limits within which the War Labor Board can decide the case. In this connection *The Railwayan*, published by the company, said in part:

"Attorneys for the company took the position that the War Labor Board had the power in ordering a wage increase to at the same time order such a rate of fare as would insure sufficient revenue to pay the wages awarded. Both joint chairmen (Taft and Walsh) pointed out to the representatives of the company and the men who were present that as arbitrators they could scarcely be expected to make a decision which would go beyond the stipulated terms of submission assented to by the company and the union."

The articles of submission are in part as follows:

"Whereas, the company claims its financial inability to meet this wage request or readjust its schedules under its present revenues and has, pursuant to a fare increase of 1 cent allowed by the Missouri Public Service Commission, granted an increase of 5 cents an hour to all employees on an hourly basis, and from 10 to 25 per cent to all employees on a monthly basis receiving $2,400 a year and under, effective in Missouri on July 16, 1918;

"Now, therefore, it is agreed by and between Division No. 764 of the Amalgamated Association and the Kansas City Railways that the matter of wages and schedules shall be placed before the National War Labor Board for adjustment subject to the general financial condition of said company and its financial ability under present revenues or any future increases allowed pursuant to action or recommendation of the War Labor Board or otherwise to pay any wage increase which may be granted."

In commenting on the agreement *The Railwayan* said:

"In signing the articles of submission in the above form, the representatives of the union whose names appear above have taken a position in advance of that taken by any other local of the Amalgamated in the United States. They have shown that they do not expect a wage increase which is not justified by the financial condition of the company, nor do they request an impossibility, which would be the result had they demanded increased wages regardless of the company's income."

Staggered Hours in Denver

The Board of Health of Denver, Col., has adopted rules for opening and closing business houses in that city and fixing limits to the number of passengers to be allowed to ride at one time on a car of the Denver Tramway. These rules follow:

1. All retail stores in the business district open at 9 a. m.; close at 6 to 6.15 p. m.
2. All offices open at 8 to 8.30 a. m. or earlier; close at 4.30 to 5 p. m.
3. Only sixty-five passengers are allowed on a car at one time.

Increased Wages for Winnipeg

The report of the Board of Conciliation appointed to investigate the dispute between the Winnipeg (Man.) Electric Railway and its motormen and conductors was handed out at Ottawa on Oct. 15 by the Minister of Labor. It recommends an increase of 9 cents an hour in the wages paid during the first and second six months of employment, an increase of 11 cents an hour in the wages paid during the second year, and an increase of 12 cents an hour in the third year. The latter increase, which brings the rate up to 47 cents an hour, it is proposed to apply to the fourth and subsequent years of employment. The new scale, which is recommended by the board to go into effect from the first day of the present month, is as follows:

For the first six months, 39 cents an hour; for the second six months, 41 cents an hour; for the second year, 44 cents an hour; for the third and succeeding years of continuous service in the employ of the company, 47 cents an hour.

The board also recommends that the request of the men that they shall receive time and a half for overtime be granted. The decision was unanimous.

In order that the increased wages recommended may be paid, it is necessary, states the report, that the company should obtain an increased revenue. In this connection the board says:

"It appears by the evidence before us that the company has paid no dividend to its shareholderse since December, 1915, and at the present time, notwithstanding the elimination of the jitney competition, the operating expenses and fixed charges of the railway exceed by several thousand dollars per month the railway's actual earnings, and that there is no source of revenue from which increased wages can be paid. The Winnipeg Electric Railway's financial situation is not different from that of a great many other railways in the United States and Canada, and in justice to the company the public should pay an adequate war compensation for a service which cannot be rendered except for war prices."

It was reported from Winnipeg on Oct. 22 that the railway had notified the Dominion Government that it could not meet the wage award unless the city officials permit the company to increase its fare to 6 cents.

News Notes

Wage Increase in Springfield, Ill.—Trainmen of the Springfield (Ill.) Consolidated Railway have received an increase in wages. Men entering the service of the company will receive 32 cents, while others will receive 33 cents and 36 cents an hour. The increase amounts to a 3-cent flat raise and is the third increase granted by the company this year.

Patriotism Rewarded With Bonds.—The platform men in the employ of the Trenton, Bristol & Philadelphia Traction Company, Philadelphia, Pa., were called together recently at a dinner by the corporation and $1,600 in Liberty Bonds were distributed. The men obligated themselves a year ago to pay for the bonds, and as a mark of gratitude the railway duplicated as many bonds as the men had paid for.

Bad Faith Charged.—The Public Service Commission for the First District of New York has directed its counsel to begin mandamus proceedings against the Brooklyn Rapid Transit Company to compel it to obey the former orders of the commission to put on about 100 more cars. In a long opinion, upon which the action of the commission was based, Commissioner Travis H. Whitney accuses the company of bad faith in the dilatory tactics to obey the order to put on more cars.

Franchise Negotiations in Vancouver.—The British Columbia Electric Railway has presented to the City Council of Vancouver, B. C., proposals regarding the renewal of its franchise. The company demands a continuance of the 6-cent fare, with half fares for children, and promises an announcement of a reduction in lighting rates to be made coincident with the citizens voting on the new franchise by-law. The City Council and the officials of the company will shortly start joint negotiations.

$300,000 for Engineering Research.—Ambrose Swasey, Cleveland, Ohio, has just given the Engineering Foundation an additional $100,000 for endowment of engineering research. In 1915 he gave $200,000 for this purpose, so that his total gifts are now $300,000. Mr. Swasey's original gift made possible the establishment of the Engineering Foundation, representing the American Society of Civil Engineers, American Institute of Mining Engineers; American Society of Mechanical Engineers and American Institute of Electrical Engineers.

Mr. Duffy Leaves Manila Company.—C. Nesbitt Duffy has resigned as vice-president of the Manila Electric Railroad & Light Company, Manila, P. I., to accept the position of vice-president of the Visayan Refining Company, Manila, P. I. one of the largest cocoanut oil companies in the Philippine Islands. Mr. Duffy is to take over his new duties on Nov. 1. J. C. Rockwell, the present general manager of the Manila Electric Railroad & Light Company, is being placed in full charge of the affairs of that company in Manila by The J. G. White Management Corporation, New York, N. Y., the operating managers of the property.

San Diego Increases Wages.—The San Diego (Cal.) Electric Railway Company, through Vice-President and Managing Director William Clayton, announced on Oct. 7 that the new scale of wages for platform men would go into effect immediately, with back pay from Sept. 1. This new scale means 40 cents an hour for the first-year men and 45 cents an hour for the second-year platform men and older employees. Increases also will be given employees of the mechanical departments. This action was taken by the company in what it regards as its own best interests although the appeal of the company to the Railroad Commission for increased rates has not yet been passed upon.

Survey Parties Needed by Army.—The construction division of the army is without doubt the most colossal organization of its kind in the history of the world. The approximate value of construction projects so far undertaken by this branch of the government is $1,000,000,000. Its present urgent needs include fifty chiefs of survey party at $2,700 to $3,000 a year; fifty transitmen at $2,400 a year; twenty-five levelmen at $2,100 a year; 125 rodmen at $1,800 a year; 150 chainmen at $1,800 a year, and fifty topographic draftsmen at $2,100 a year. These positions are in the civil, not the military, service. Persons interested should apply to the United States Civil Service Commission, Washington, or to the secretary of the local board of civil service examiners in many of the large cities.

Wage Increase in Indianapolis.—The Indianapolis Traction & Terminal Company, Indianapolis, Ind., has increased the wages of conductors and motormen following the order of the Public Service Commission that a straight 5-cent fare be granted on condition that wages of the employees be advanced at least 50 per cent over the scale paid prior to the general increase of about July 1, 1918. Conductors and motormen who have been in the service of the company one year or less will receive 34 cents an hour; more than two years and less than three years, 36 cents an hour; more than three years and less than four years, 37 cents an hour; more than four years and less than five years, 38 cents an hour; five years and over in service, 39 cents an hour. The scale since July has been from 25 cents to 33 cents an hour. Before July 1 new men received 22 cents an hour.

Financial and Corporate

B. R. T. Net Drops

Owing to Higher Operating Costs, Taxes and Interest, Net Income Declines 20 Per Cent

The net operating revenue of the Brooklyn (N. Y.) Rapid Transit Company for the year ended June 30, 1918, showed a decrease of $367,909 or 2.88 per cent. As in almost all similar cases, this falling off was due to the burden of operating expenses. Although the gross operating revenues gained $1,002,478 or 3.40 per cent, the operating expenses advanced further to the extent of $1,370,387 or 8.19 per cent.

POWER PLANT COSTS UP TO 30.67 PER CENT

The largest item of increased expense, both in amount and in percentage, was power-plant operation. The expenditures for this increased $626,192 or 30.67 per cent. Other increases were as follows: Maintenance of equipment, $136,534 or 5.47 per cent; operation of cars — trainmen's wages, $174,574 or 3.11 per cent; operation of cars—other expenses, $286,351 or 14.48 per cent; and damages, $159,176 or 22.30 per cent. Maintenance of way and structures showed a decrease of $24,849 or 0.99 per cent.

Owing to a decline of $20,085 or 4.69 per cent in other income and a rise of $92,548 or 3.94 per cent in taxes and of $602,640 or 10.68 per cent in interest and rentals, the net income for the last year fell off $1,083,184 or 20.85 per cent. After appropriations of $935,761 for supercession and depreciation, as compared to $289,022 in 1916-1917, and of $2,233,659 for dividends as compared to $4,467,318, and other adjustments, there remained on June 30, 1918, a surplus of $12,812,581, an increase of $845,308 over that of a year before.

According to the company's report, the results of operation of rapid transit lines under contract with the city continue to be satisfactory, considering that only a portion of the Broadway subway has been completed. For the fiscal year the passenger revenue from the rapid transit lines increased $1,584,970; operating expenses, maintenance, depreciation, taxes and rentals increased $1,284,124, and net revenue (applicable to interest on new investment) increased $401,999.

Since the beginning of the pooling arrangement with the city on Aug. 4, 1913, the operating company has earned in full its first preferential of $3,500,000 per annum, and $2,104,296 toward its second preferential, leaving $1,443,028 to be made up out of future earnings. The interest to date paid by the city on its cost of construction of property placed in operation plus a sinking fund at the rate of 1 per cent per annum totals $4,985,850, making the total deficit $6,428,882. The deficit in the company's preferentials is to be made good from future net income before payment of the city's interest and sinking fund charges. The deficit in the city charges during temporary operation is to be added to the cost of construction of city owned lines, but after "initial" operation it is chargeable to the tax budget.

SURFACE EARNINGS FALL OFF

The passenger earnings on the surface lines fell off $565,851 or 3.3 per cent during the year. While part of this increase may be attributed to the competition of new rapid transit lines, it is said that any influence in this direction should have been overcome by the normal increase in traffic. The principal cause of diminishing revenue was the inability, on account of the shortage of men, to operate the full complement of cars.

The net capital expenditures for additions and improvements aggregated for the fiscal year $8,669,393, of which $8,518,566 was expended by the New York Municipal Railway Corporation on rapid transit lines pursuant to the provisions of its contract with the city. The total of such expenditures to June 30, 1918, is $58,499,877, divided, subject to redistribution as to certain classifications, as follows: On account of contribution to city owned lines, $11,160,501; on account of equipment of city owned lines, $11,245,213, and on account of additions, extensions and improvements of existing railways, $36,094,162. Less than half of this expenditure represented property in operation during the year.

RESERVE ACCOUNTS INCREASED

The reserve accounts were increased during the year as follows: Fire insurance, $62,581; amortization of capital, etc., $786,293, and employer's liability, $55,952—total $904,827. As against these increases the following charges were made: Retired property adjustments, etc., $120,549, and payments on account of employer's liability, $16,320 for the year, leaving a net increase in reserves of $767,956 for the year.

Miscellaneous operating statistics for the last two years follow:

	1918	1917
Passenger earnings	$29,492,279	$28,485,861
Increase (per cent)	3.53	5.26
Passengers carried	771,044,274	760,519,397
Revenue mileage	97,333,571	98,593,632
Decrease (per cent)	1.28	0.16
Earnings per revenue-mile (cents)	30.3	28.8
Units per passenger (cents):		
Passenger earnings	3.82	3.74
Miscellaneous earnings	0.19	0.19
Total earnings	4.01	3.93
Operating expenses	2.35	2.20
Taxes	0.32	0.31
Interest and rentals	0.81	0.74
Total	3.48	3.25
Surplus	0.53	0.68

COMPARATIVE INCOME STATEMENT OF BROOKLYN RAPID TRANSIT COMPANY FOR YEARS ENDED JUNE 30, 1917 AND 1918

	1918		1917	
	Amount	Per Cent	Amount	Per Cent
Transportation revenue	$29,879,309	97.94	$28,992,111	98.27
Miscellaneous revenue	627,188	2.06	511,908	1.73
Total operating revenues	$30,506,497	100.00	$29,504,019	100.00
Maintenance of way and structure	$2,480,439	8.13	$2,505,288	8.50
Maintenance of equipment	2,632,885	8.63	2,496,349	8.46
Operation of power plant	2,667,809	8.74	2,041,617	6.92
Operation of cars—trainmen's wages	5,780,108	18.95	5,605,533	19.00
Operation of cars—other expenses	2,264,439	7.42	1,978,089	6.70
Damages	872,945	2.86	713,768	2.42
Legal expenses in connection with damages	258,111	0.85	269,523	0.91
General law expenses	63,658	0.21	57,394	0.20
Other general expenses	811,023	2.66	768,991	2.60
Freight expenses	280,099	0.92	304,666	1.03
American Railway Traffic Company—expenses	288	0.00	199	0.00
Total expenses	$18,111,805	59.37	$16,741,417	56.74
Net revenue from operation	$12,394,692	40.63	$12,762,602	43.26
Income from other sources	407,729	1.34	427,814	1.45
Gross income	$12,802,421	41.97	$13,190,416	44.71
Taxes	$2,443,652	8.01	$2,351,104	7.97
Interest and rentals (net)	6,246,715	20.48	$5,644,074	19.13
Total deductions	$8,690,367	28.49	$7,995,178	27.10
Net income	$4,112,054	13.48	$5,195,238	17.61

International Railway Deposits Asked

Holders of a large amount of the International Traction Company's 4 per cent bonds on Oct. 18 appointed the following committee to act for the protection of all the holders of these bonds: T. De Witt Cuyler, Philadelphia; Elliott C. McDougal, president of the Bank of Buffalo, Buffalo, and T. E. Mitten, president of the Philadelphia Rapid Transit Company.

This action, a statement by the committee said, was due to difficulties that resulted in a suspension of operation and threatened default in the payment of interest due on Nov. 1, together with the imminence of a receivership. The protective agreement is being prepared which will call for deposits of the bonds under the terms that will be set forth in the agreement.

Capital Traction Prospers

Abnormal Conditions in Washington Lead to 21 Per Cent Gain in Receipts from all Sources

The operating revenues and the non-operating income of the Capital Traction Company, Washington, D. C., increased $501,621 or 21.4 per cent during 1917. This sum was absorbed as follows: Additional expenses for labor and materials, $191,964; increase in depreciation allowance, $102,954; tax increase, $43,469, and extra dividends to stockholders, $150,000. In addition $46,531 was carried forward to surplus as the result of the year's operation.

INCOME STATEMENT OF CAPITAL TRACTION COMPANY FOR CALENDAR YEAR 1917

Operating revenue	$2,783,538
Operating expenses	1,533,329
Net operating revenue	$1,250,209
Taxes	186,283
Operating income	$1,063,926
Non-operating income	16,262
Gross income	$1,080,188
Deductions	283,658
Net income	$796,530
Dividends	750,000
Surplus for year	$46,530

The increase in earnings was due to the abnormal conditions in Washington. While the greatly augmented receipts enabled the company to meet the increases noted above, conditions give no assurance, it is said, that the company will be able to make such a satisfactory showing in the future. On some of the lines the ultimate capacity has been reached, and any considerable growth in revenue would have to be accompanied by further capital expenditures and correspondingly increased fixed charges. Moreover, the larger part of the 1917 net earnings was accumulated during the early part of the year, before the full effect of rising operating costs was felt.

TAXES UP 30.4 PER CENT

The taxes for 1917 were larger by $43,469 or 30.4 per cent than those in the preceding year. The major part of the increase was caused by the federal income tax and the capital stock tax.

In 1917 the appropriation for depreciation was materially increased to $225,833, based on actual values of the property and rates of depreciation recommended by the Public Utilities Commission. Expenditures from the depreciation fund during the year, chiefly for track renewals, amounted to $84,093, leaving the balance on Dec. 31, 1917, $328,941. Of this amount $180,000 has been invested in Liberty Bonds.

The number of revenue passengers carried in 1917 was 64,285,993 as compared to 53,482,546 in 1916, while the transfer passengers totaled 19,412,983 and 16,487,820 respectively. The car-miles increased from 7,769,389 in 1916 to 7,871,530 in 1917. The net capital expenditures for 1917 were $127,511.

The following table gives car-mile and passenger financial statistics for the last two years:

	Cents Per Car Mile 1917	Cents Per Car Mile 1916	Cents Per Passenger 1917	Cents Per Passenger 1916
Passenger revenue	35.15	29.26	3.30	3.24
Other revenue	0.42	0.32	0.04	0.04
Gross revenue	35.57	29.58	3.34	3.28
Operating expenses	19.48	15.93	1.83	1.77
Taxes	2.37	1.84	0.22	0.20
Interest	3.60	3.63	0.34	0.40
Net income	10.12	8.18	0.95	0.91

City Intervenes in Receivership

Judge Charles P. Orr in the United States District Court at Pittsburgh on Oct. 19 handed down an opinion and order granting the petition of the city of Pittsburgh to intervene as a party plaintiff in the receivership proceedings against the Pittsburgh Railways, placed in the hands of receivers several months ago. The petition of the city was presented by Special City Solicitor C. K. Robinson on July 20 and a supplemental petition was filed on Sept. 27. In his order Judge Orr granted permission to the city to intervene in its own behalf and in the behalf of the surrounding boroughs, cities and townships through which the Pittsburgh Railways now operates. The court said in part:

"Without now passing upon the merits of any of the matters presented in the petition except upon the question of intervention, this court has reached the conclusion that the petition of the city, in so far as it prays to intervene in its own behalf and in behalf of others, should be granted.

"Intervention is not allowed because the petitioner is a creditor or because it claims to be guardian of public interests or because it will be afforded better opportunities to assert the duty of the receivers to comply with its demands. The rights of the creditors are protected in the distribution of funds. The general public interests are well guarded by the courts and the controversies between municipalities and the receivers can be separately adjusted.

"The municipality is in the nature of one who has a substantial interest in property used by a street railway. One who has a substantial interest in property placed in the hands of receivers appointed in litigation is almost invariably permitted to intervene for the protection of the property. There is no reason why the city of Pittsburgh, on its own behalf and as representing the class, should not be permitted to intervene in the like manner.

"The intervention by the city of Pittsburgh will not tend to increase the labors of the receivers or lead to confusion, but will rather simplify some of the perplexities which are bound to arise in this receivership. Being a party to the proceedings, the city of Pittsburgh subjects itself to the jurisdiction and to the proper orders of this court."

Would Abandon Service

Spokane Company Saw in This the One Quick Way Out of Its Difficulties

Early in October the City Council of Spokane, Wash., ordered the Washington Water Power Company to resume railway service on certain of its lines which the company had abandoned on the plea that operation did not pay. In its letter ordering service resumed, the city contends that the giving of service on these lines is a franchise obligation and can be set aside only by agreement between the city and the company. The city was not consulted when the service was discontinued by the company.

Without stating what would eventually be done in regard to the city's mandate, the company asked to be allowed to continue not to operate the lines until the hearing on Oct. 23 before the State Public Service Commission when other railway matters are to be considered, and lay the situation before that body. This request is being considered by the counsel for the city, and it seems likely that the matter will remain in status quo until after the public hearing.

The city authorities assert that the Public Service Commission has no jurisdiction over franchise provisions, and that the requirement to maintain service over certain lines is entirely within the jurisdiction of the municipality. They say that the company can be compelled to maintain service on all lines covered by the franchise unless the city authorities see fit to release the company from its franchise obligations.

D. L. Huntington, president of the company, said recently:

"Unless we are allowed to cut down expenses, we will be forced to ask the Legislature to amend the statute limiting the fare. The situation for the railway is critical. On one side is the statutory limit of the 5-cent fare. On the other side is increased taxation, increased wages for employees and increased costs for everything that goes into the railway. We have to get more money through increased fares or cut expenses through curtailed service."

Salt Lake Traffic Still Dwindling

In the ELECTRIC RAILWAY JOURNAL for Sept. 21, page 523, facts taken from company sources were reproduced showing the falling off in passenger traffic on the lines of the Utah Light & Traction Company, Salt Lake City, Utah. According to *Kar-Fax* for Oct. 12, issued by the company, traffic continues to dwindle. In the issue just mentioned that paper says:

"There were just 455,300 fewer passengers on the Salt Lake street cars during September this year than during the same month last year.

"Now, even though approximately 40 per cent of the patrons paid 6-cent fares, as compared with a 5-cent fare last year, you can see that the loss to the company was an enormous sum.

"This loss in traffic has been going on so long that measures have had to be adopted to offset the loss in revenue caused by it. The skip stop, though not primarily adopted for that reason, will help some, and a reduction in service on some lines during the slack hours is to be tried as a further remedy."

Fixed Charges Ordered Paid

Following the filing of a petition by J. D. Callery and H. S. A. Stewart, two of the three receivers of the Pittsburgh (Pa.) Railways, setting forth a statement of the indebtedness of the Pittsburgh Railways falling due during the month of October and aggregating $530,128, Judge Charles P. Orr, in the United State District Court, on Oct. 17 ordered the receivers to pay out moneys in the way of interest and fixed charges aggregating $100,152.

The same day Judge Orr also handed down three additional orders directing the receivers to pay to the Fidelity Title & Trust Company $87,500 for interest due on mortgages to the Pittsburgh, Allegheny & Manchester Traction Company, the Federal Street & Pleasant Valley Passenger Railways Company and its subsidiary companies, and to the Pittsburgh Traction Company. These orders were made subject to the terms and limitations of the court's opinion of Sept. 7, disposing of the petition of the Consolidated Traction Company.

In the petition of the railways company filed on Oct. 17 Receiver Charles A. Fagan's name did not appear. Recently Mr. Fagan filed a supplemental petition in the United States District Court in which he set forth his objections to the payment of fixed charges in view of the recent increase in the employees' wage scale and the uncertainty of the 7-cent fare. Mr. Fagan's dissent was noted at length in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 714.

Financial News Notes

New Pacific Gas & Electric Director.—Nion R. Tucker has been elected a director of the Pacific Gas & Electric Company, San Francisco, Cal., to take the place of Capt. Norman B. Livermore, resigned.

Montreal Dividend Passed.—The Montreal (Que.) Tramways, which deferred its dividends of 2 per cent for the quarter ended June 30 last, has further deferred it for the quarter ended Sept. 30.

Deferred Interest Paid.—The Aurora, Elgin & Chicago Railroad, Wheaton, Ill., announced on Oct. 15 that the interest coupon on the first and refunding mortgage 5 per cent forty year gold bonds which was due and payable on July 1, would be paid on and after Oct. 15, together with compound interest from July 1 to Oct. 15.

Object to Removal of Line.—The people of Medford and Jacksonville plan to fight the proposal of S. S. Bullis, president Southern Oregon Traction Company, to dismantle the line and dispose of the rails to the government. Injunction proceedings are being planned. Protest resolutions of the two City Councils recite that both cities contributed substantially to the building of the road, and that its removal now would be a serious blow.

Colorado Springs Protective Committee.—In view of default of the coupon maturing on Oct. 1 last, holders of first consolidated 5 per cent bonds of the Colorado Springs & Cripple Creek District Railway, Colorado Springs, Col., due in 1942, are requested to communicate with a committee designated to act for the protection of the bondholders' interests. The committee is composed of Mortimer N. Buckner, president of the New York Trust Company, New York, and Frederick J. Lisman, F. J. Lisman & Company, New York.

New Indianapolis Directors.—Alfred C. Potts has been appointed a public director of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., by Governor James P. Goodrich of Indiana. B. A. Worthington has been appointed to a similar position with the company by the Chamber of Commerce of Indianapolis. A third appointment will be made by the Mayor of the city of Indianapolis. These appointments are in keeping with an order of the Indiana Public Service Commission in the fare case, to which the Indianapolis Traction & Terminal Company agreed, that three public directors be appointed who shall serve to Jan. 1, 1919. Thereafter public directors are to serve for a term of one year. The order directs that the board shall report to the commission within sixty days and thereafter every ninety days. The duty of the public directors, in the language of the order is "to serve faithfully the interests they represent, but always with absolute fairness and equity to the company, and to strive to attain better service and secure and maintain hereafter, so far as possible, a frank, honest and open policy on the part of the company toward the city of Indianapolis and the people thereof." W. Kesley Schoepf, Cincinnati, Ohio, has resigned as a director of the company. This resignation will leave four directors, J. W. Willy, John J. Appel, Ferdinand Winter and Robert I. Todd, who with the two appointees named above and one more to be nominated, will make up the directorate. The number of directors has been increased from five to seven.

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$82,666	*$49,054	$33,612	$20,354	$13,258
1m., Aug., '17	78,486	*43,521	34,965	19,227	15,738
12m., Aug., '18	921,663	*552,537	369,126	236,220	132,906
12m., Aug., '17	865,266	*492,238	373,028	223,977	149,051

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

1m., Aug., '18	$164,063	*$121,136	$42,927	$32,079	$10,848
1m., Aug., '17	142,801	*101,878	40,923	29,871	11,052
12m., Aug., '18	1,577,686	*1,399,288	178,398	371,764	†193,366
12m., Aug., '17	1,379,817	*966,918	412,899	357,054	55,845

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

1m., Aug., '18	$343,770	*$255,323	$88,447	$59,245	$29,202
1m., Aug., '17	333,849	*233,627	100,222	50,761	49,461
12m., Aug., '18	4,240,145	*3,085,212	1,154,933	632,821	522,112
12m., Aug., '17	3,824,984	*2,598,042	1,226,942	543,857	683,085

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

1m., Aug., '18	$1,862,921	*$1,273,246	$589,675	$506,306	$83,369
1m., Aug., '17	1,585,919	*1,022,683	563,236	437,829	125,407
12m., Aug., '18	21,269,646	*14,233,848	7,035,798	5,778,119	1,257,679
12m., Aug., '17	18,582,072	*11,031,354	7,550,718	5,156,724	2,393,994

* Includes taxes. † Deficit. †† For the month $20,132, and for twelve months, $330,425, included for depreciation.

‡ Includes non-operating income.

§ Includes accurals under rapid transit contracts with city payable from future earnings.

EAST ST. LOUIS & SUBURBAN SYSTEM, EAST ST. LOUIS, ILL.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$372,462	*$303,987	$68,475	$67,380	$1,095
1m., Aug., '17	317,838	*214,640	103,198	65,175	38,023
12m., Aug., '18	3,981,837	*2,952,176	1,029,661	806,511	223,150
12m., Aug., '17	3,484,103	*2,237,784	1,246,319	771,280	475,039

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

1m., June, '18	$3,289,610	*$1,958,897	$1,330,713	$1,190,608	‡§$377,022
1m., June, '17	3,257,237	*1,683,460	1,573,777	1,041,775	‡§633,203
12m., June, '18	40,497,728	*22,871,920	17,625,808	13,556,649	‡§7,171,267
12m., June, '17	39,866,146	*19,454,678	20,411,468	12,085,186	‡§9,102,654

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

1m., July, '18	$3,227,989	*$2,080,511	$1,147,478	$1,361,774	‡§$288,031
1m., July, '17	2,911,301	*1,693,134	1,218,167	1,064,983	‡§451,788

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

1m., Aug., '18	$336,524	*$205,004	$131,520	$71,423	$60,097
1m., Aug., '17	324,901	*181,164	143,737	70,302	73,435
12m., Aug., '18	3,158,011	*2,193,621	964,390	852,272	112,118
12m., Aug., '17	3,038,213	*1,997,428	1,040,785	813,884	226,901

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

1m., Aug., '18	$671,067	*††$452,586	$218,481	$190,284	$28,197
1m., Aug., '17	505,552	*303,922	201,630	178,505	23,125
12m., Aug., '18	7,131,359	*††4,466,857	2,664,502	2,180,793	483,709
12m., Aug., '17	5,785,649	*3,142,497	2,643,152	2,166,386	476,766

Traffic and Transportation

39,000,000 More Passengers

Year Ended June 30 Shows This Increase on the Rapid Transit Lines in New York City

According to reports just tabulated and made public by the Public Service Commission for the First District of New York, the rapid transit lines of the city of New York (underground and elevated roads) carried a total of 1,024,615,280 passengers for the year ended June 30, 1918. This is an increase of about 39,000,000 over the preceding year. Divided among the different systems, the ticket sales were as follows:

DIVISION OF TICKET SALES

On city subways operated by the Interborough Rapid Transit Company, 418,337,666.

On the company-owned elevated lines operated by the Interborough Rapid Transit Company, 352,660,669.

On the city subways operated by the New York Consolidated Railroad Company (Brooklyn Rapid Transit System) 104,669,567.

On company-owned elevated lines operated by the New York Consolidated Railroad 150,388,060.

The increase for the year was below normal and was due mainly to the new subway lines of each system. For instance, the old subway, operated by the Interborough Rapid Transit Company, showed a decrease of 11,226,476 passengers, while the new subways (Queens Borough subway, White Plains road, Seventh Avenue and Lexington Avenue lines), showed an increase of 15,002,257, making the net increase for the year 4,143,674.

ELEVATED TRAFFIC INCREASES

The traffic on the elevated railroads in Manhattan and the Bronx operated by the Interborough Rapid Transit Company showed a net increase for the year of 3,200,576, which is comparatively small, and was due to a falling off in ticket sales at some stations on all lines. The Third Avenue line as a whole showed a decrease of more than 2,500,000 for the year, while the Second Avenue showed an increase of more than 5,000,000. The Sixth and Ninth Avenue lines showed increases of about 135,000 and 585,000 respectively.

On the New York Consolidated system the company-owned lines showed an increase of 6,724,300, while the city-owned lines scored an increase of 24,856,772.

Among the largest ticket sales by stations on the subway lines operated by the Interborough are the Grand Central Station, with a total of 26,100,215; Atlantic Avenue, Brooklyn, with 21,516,847; Brooklyn Bridge station, with 21,222,947; Fulton Street station, with 18,279,325, and Fourteenth Street station, with 16,108,367.

On the elevated lines operated by the Interborough Rapid Transit Company some of the heaviest stations were: City Hall on the Third Avenue line, with 9,342,520 ticket sales; 106th Street, Third Avenue line, with 7,027,269; Thirty-third Street on the Sixth Avenue line, with 7,375,132.

POINTS OF HEAVY TRAFFIC

On the New York Consolidated system some of the heaviest stations were Chambers Street on the Broadway-Fourth Avenue subway, with 23,239,201 ticket sales which, by the way, was a decrease of more than 4,600,000 from the preceding year; Brooklyn Bridge (Park Row), on the elevated lines, with 18,157,610, which is also a decrease of nearly 1,000,000.

Citizens Favor Increase

Citizens of Shawnee, Okla., are preparing a petition to be presented to the Corporation Commission of Oklahoma asking that body to issue an order permitting the Shawnee-Tecumseh Traction Company to increase its fares from 5 cents to 7 cents. This action was initiated by the members of the Rotary and the Lions Clubs and has been indorsed by the members of the Shawnee City Council and by civic and commercial organizations. R. D. Long, general manager of the Shawnee-Tecumseh Traction Company, is said not to have known what was being done until announcement of the plans was made at a banquet arranged recently by the Rotary and the Lions Clubs "for a discussion of traction problems," and at which Mr. Long was guest of honor.

In speaking of this banquet, Mr. Long said:

"As an electric railway manager, I was prepared to listen to protests and complaints, and I went to Shawnee expecting to be told that somebody had fault to find with the manner in which the company was being operated. As a matter of fact, the company had lost $130,000 in the last ten years through the Shawnee property. So when I was asked to talk about the company at the conclusion of the luncheon, I told of the handicaps under which we were operating, but did not hint at any increase in the rate of fare.

"Then the clubs went on record as favoring a schedule that would provide for a 7-cent fare or for the sale of sixteen tickets for $1. The petition is being prepared by these clubs and by other citizens of Shawnee. I have taken no part in the movement to bring about the increase."

New Rhode Island Fares

Modification of Former Zone System Went Into Effect on Oct. 23—Permanent Solution Demanded

Increased fare schedules on the system of the Rhode Island Company, Providence, R. I., went into effect on Oct. 23 in accordance with a decision of the Public Utilities Commission handed down on Oct. 19.

The new schedules are calculated by the company to produce an increase in the annual revenue amounting to $1,900,000, and the company believes that it will be able to meet its operating expenses, wage increases, and rentals, under the new order. It did not ask for fare increases sufficient to pay depreciation charges or any dividend upon its stock.

The new fare schedule is based upon the 5-cent unit fare, on a zone system. Starting from the center of Providence, on the suburban lines, and on lines running beyond the first zone limit, the passenger pays an initial fare of 5 cents which takes him generally 2 miles. He can then ride 1¾ miles for another nickel, and after that pays 5 cents for every 1½ miles. One cent is charged for every transfer issued, at any place on the entire system.

In granting permission to put the schedule into effect, the commission ordered slight modification in the zone terminals, to remove local unfairness. It notified the company that the new fares would hold for four months, and that each month a detailed report must be filed showing the exact result of the company's receipts and expenses.

As soon as the fare increase was made authoritative the company notified its employees that the new wage scale would become effective immediately.

On the evening of Oct. 19 the carmen's union held a meeting, received the formal notice of the wage increase being granted, and voted unanimously to accept conditions.

The substantial interests in the State are already preparing to go before the General Assembly when it meets in January and seek legislation providing a permanent solution of the electric railway problem.

Columbus Retains Expert

The Columbus Railway, Power & Light Company, Columbus, Ohio, has engaged the services of W. J. Bieneman, president of the State Public Service Utility Audit Company, Charleston, W. Va., to look after its interest in the application for increased fares now pending before the City Council of Columbus, Ohio. Mr. Bieneman has for several years past made rate cases for public utilities a specialty and has been very successful in representing public utilities before state and federal commissions. It is acknowledged by several state commissions that a feature of Mr. Bieneman's exhibits is the clearness and fairness with which these are prepared.

P. S. Seven-Cent Fare Approved

League of Municipalties Loses First Legal Step to Block Justice to New Jersey Lines

The recent action of the Board of Public Utility Commissioners of New Jersey in authorizing a 7-cent fare for the Public Service Railway in addition to a 1-cent transfer charge was affirmed by Supreme Court Justice Swayze on Oct. 18 in *certiorari* proceedings. Under a joint stipulation previously filed the decision of Justice Swayze is accepted as the judgment of the court, and the case will now go on appeal before the November term of the Court of Errors and Appeals, the highest court in the State.

Argument of Opposition

According to Justice Swayze the chief point made by counsel for the League of Municipalities, which has been trying to block fare relief for the company, is that the commission had no jurisdiction to grant the increase since it was without evidence of property value. In refusing agreement on this point, the justice pointed out that under one section of the regulatory law the commission must approve a company-initiated increase when it is satisfied that the increase is just and reasonable.

According to the evidence, the increase approved was only enough to enable the company to meet the increased expenses forced upon it by the awards of the War Labor Board. The complainants did not venture to introduce evidence or to contradict the railway evidence, but simply assumed that the justice and reasonableness of a rate can be determined only by first ascertaining the property value.

Reasonableness of Rate a Business Matter

In Justice Swayze's opinion, however, the reasonableness of a rate is a business question, depending upon many factors. It is the result of "a composition of forces." In amplifying this point the justice said:

> There can be no better evidence of the reasonableness of a rate than its general adoption by the municipalities of this and other states in ordinances granting consent to the location of street railways, over a long succession of years, with acquiescence by the public without question, and, as far as we know, without complaint either by the public or by Boards of Public Utility Commissioners.
>
> Five cents was certainly not on its face unreasonably high, since it was a standard rate, and there was an entire absence of proof on the part of the prosecutor. It follows with the certainty of a geometrical axiom that the addition of just enough to meet the increased wages forced on the railway by the War Labor Board could not make unreasonably high what was not so before.
>
> The failure to allow any return on capital investment would, if this had been a case of the board fixing a rate, instead of its approving a rate fixed by the railway, have been a violation of the principle of the gas rate case that a just and reasonable rate must be sufficient to induce the investment of capital in the business and its continuance therein.

From the uncontradicted evidence put in by the company, Justice Swayze said, he was unable to see how the commission could have drawn any other conclusion than the one which it reached. If any doubt existed, he believed it would be removed by the suggestion of city counsel as to the method by which the railway might meet the increased expense for wages.

One counsel suggested that the difficulty might be overcome by decreasing the service rendered, while another "with seeming seriousness and indifference to results" suggested that relief could be found in the appointment of a receiver. Justice Swayze disposed of the former suggestion with the observation that the commission as a matter of business policy had preferred to keep up the service even at the cost of increasing the rate and that no one except city counsel now suggests that a reduction of efficiency would be tolerable or tolerated.

Power to Regulate, Not to Destroy

As for a receivership the justice stated:

> I do not say that if a reasonable rate drove the operating companies into insolvency, that rate could not be established against the underlying companies. I only say that the present proceeding is not adapted for that purpose. The act contemplates a regulation of still existing public utilities for the benefit of the public, not their destruction. It was decided more than thirty years ago that the constitutional power was a power to regulate, not a power to destroy.

The municipal counsel had again raised the question of the power of the New Jersey commission to set aside the fare limits set in municipal franchises, but Justice Swayze succinctly disposed of this point with the observation that the matter, as far as the Supreme Court is concerned, was disposed of by the decisions in the Collingswood Sewerage Company and the Atlantic Coast Electric Railway cases. These were digested in the ELECTRIC RAILWAY JOURNAL of March 30, page 623, and June 22, page 1208. The latter decision, by the Court of Errors and Appeals, upheld State paramouncy in rate-making in reversing a former decision of the Supreme Court. In the meantime, the Supreme Court by its decision in the Collingswood case had already reversed its Atlantic Coast reasoning.

Trenton Six-Cent Fare O. K.

On Oct. 18 Justice Swayze of the New Jersey Supreme Court approved the recent grant of a 6-cent fare to the Trenton & Mercer County Traction Corporation by the Board of Public Utility Commissioners. Most of the points raised by complainants were covered by the contemporaneous decision of Justice Swayze in the Public Service Railway case of which an abstract is published above.

The only argument calling for further remarks in the Trenton case, the justice said, is that the railway lost $86,000 a year by its operation of suburban lines, and that this loss cannot be made up by profits on the operation of lines in the city of Trenton. In the court's opinion, whether the railway shall run some parts of its line at a loss—perhaps with a view to future development on future gain, or perhaps with a view to greater public service—is a business question to be determined by the railway subject to the control of the commission. It is settled that the correct legal test is the effect on the railway's entire line and not upon that part which was formerly a part of one of the consolidating roads. (St. L. & San Francisco Railway vs. Gill, 156 U. S. 649, 665.) The test has recently been applied in the case of an electric railway. (Puget Sound Traction Company vs. Reynolds, 244 U. S. 574.)

In commenting further Justice Swayze said: "A rule which would deprive suburban communities of electric railway service might be much to the advantage of great cities like Trenton but work harm to rural communities, and perhaps be to the disadvantage of the State as a whole. There is a general public interest in having thinly populated and relatively poor sections helped by the more densely populated and richer communities. Public roads are a good illustration. We can readily picture to ourselves the state of our roads if every mile depended for its upkeep upon the revenues traceable to that mile. The law as to railways is settled adversely to prosecutor's contention."

Kansas City Goes to Court

A suit had been filed in the Supreme Court of Kansas in the name of S. M. Brewster, attorney general, asking on behalf of Kansas City, Kan., that the court stop the collection of 1 cent from passengers on Kansas City Railways cars at the State line, and asking that the court oust the company from Kansas. A receiver is also suggested, to administer the property, and an injunction asked, preventing the company from withdrawing any of its cars from service.

This ouster and injunction suit is the second proceeding now pending over the fare situation in Greater Kansas City. It will be remembered that the Public Service Commission of Missouri granted the Kansas City Railways the right to charge a 6-cent fare. The company, however, serves on both sides of the Kansas-Missouri State line. The Public Utilities Commission of Kansas has so far been prevented from holding a hearing on the fare question with reference to an increase in fare on the Kansas side.

Pending decision by the commission, the railway is charging only 5 cents on the Kansas side, and collecting another cent at the State line from passengers who ride across the line into Missouri.

The Public Utilities Commission will hold a hearing on the fare question on Oct. 30.

I. C. C. Allows Increase

W. R. Power, general manager of the Ohio Valley Electric Railway, Huntington, W. Va., recently announced that he had received word from Washington that the company's request for permission to raise the fare had been granted by the Interstate Commerce Commission.

At present the railway has three fare zones: the first, Huntington to Kellogg; the second, Kellogg to Catlettsburg, and the third from Catlettsburg to Ashland. Under the new ruling there will be four zones: first, from Huntington to Kellogg; second, from Kellogg to the Norfolk & Western depot in Kenova; third, from the Norfolk & Western depot to Catlettsburg, and fourth, from Catlettsburg to Ashland.

The fare remains unchanged in the first zone. Ten cents will be charged between Huntington and all points within the second zone. The third and fourth zones carry 15 and 20-cent fares respectively for persons commuting out of Huntington. The local fare within Huntington is unaffected.

A Real Emergency Here

The Public Service Commission of Pennsylvania in an extended opinion by Commissioner James Alcorn on Oct. 18 dismissed complaints against increased fares, including an advance to 6 cents, put into effect last June by the Indiana County Street Railway, but in so doing said that as "the increased cost of operation due to the abnormal conditions now existing is the ground for supporting an increase in the rates of fare it would be only proper that when these conditions cease the old rate should be restored or the company be required to show that it is still entitled to the additional revenue."

The rates are approved until Jan. 1, 1920. The opinion also commends to the notice of the company statements by witnesses that cars are operated irregularly and directs that service be improved.

Grand Rapids Wants Seven Cents

The Grand Rapids (Mich.) Railway has opened its books and bared its financial condition to the City Commission in support of its request for the right to charge increased fares. That statement shows if the company continues to operate on a 5-cent fare basis through 1919, it will lose $173,310, including $100,000 dividends to preferred stockholders.

Benjamin S. Hanchett, president of the company, told the City Commission on Oct. 12 that the company cannot borrow a dollar and that the only financial relief in sight is in increased earning power. In support of that statement, he showed that on the basis of a 6-cent fare, with no decrease in the number of passengers carried, the company would lose about $5,310.

The company has requested that the City Commission deal with the increased fare question directly, and not refer it to the people. Forms of an amended ordinance by resolution have been submitted to City Attorney Taggart for approval, with the request that some commissioner introduce it. That ordinance, as drawn, provides for a 7-cent fare.

The business interests favor the increase. At the hearing on Oct. 12 Lee H. Bierce, secretary of the Association of Commerce, in discussing the request of the railway for the right to charge increased fares urged that the advance be granted, stating that every other public utility in the city had been permitted to advance rates. He said that the railway company must be permitted to earn enough to pay its way.

Transportation News Notes

Springfield (Ohio) Company Wants Increase.—The Springfield (Ohio) Railway has applied to the City Commission for an increase in fare. No specific amount is designated in the request

El Paso Wants More.—The El Paso (Tex.) Electric Railway has applied to the City Council for permission to increase fares from 5 cents to 6 cents, with an increase in half fares from 2½ cents to 3 cents. The Council has announced public hearings.

Straight Five-Cent Fare for Terre Haute.—An order has been issued by the Public Service Commission of Indiana granting the Terre Haute, Indianapolis & Eastern Traction Company the right to charge a straight 5-cent fare on cars in the city of Terre Haute.

Injunction Against Interference With Fares.—The Murphysboro & Southern Illinois Railway, Murphysboro, Ill., filed on Oct. 16, in the Federal Court at Danville, a bill for an injunction restraining the State officials from interfering with the company charging in excess of 2 cents per mile on its interurban line.

Increased Rates for Boulder.—The Western Light & Power Company, Boulder, Col., of which D. A. Hegarty is vice-president, has been authorized to increase rates for electric light, power, steam and gas and to abolish all commutation tickets on the electric railway, by the Public Utilities Commissions of Colorado and Wyoming.

Seven Cents for Ashland.—The Railroad Commission of Wisconsin has issued an order granting a 7-cent fare to the Ashland Light, Power & Street Railway Company, Ashland, Wis. The order provides that cash fares shall be 7 cents with six tickets for 40 cents, while school children's tickets are increased from 2½ to 3½ cents.

Wants More in Benton Harbor and St. Joe.—C. K. Minary, president of the Benton Harbor-St. Joe Railway & Light Company, Benton Harbor, Mich., has addressed a letter to the City Council asking for a conference to discuss the matter of an advance in rates of fare. A similar communication has been sent to the City Council of St. Joe.

North Coast Wants Advance.—The North Coast Power Company, Vancouver, Wash., which owns and operates the railway in that city, and as far out as Sifton, has filed with the Public Service Commission a new schedule of fares between Vancouver and Sifton, advancing the rates about 50 per cent. The price of commutation tickets has also been increased.

Plans to Retaliate.—The City Commission of Sacramento, Cal., has warned the Pacific Gas & Electric Company that if it persists in its application before the State Railroad Commission to raise fares in Sacramento to 6 cents the City Commission will revoke the ordinance which practically put the jitneys out of business in Sacramento.

Seven Cents in Ishpeming.—The Michigan Gas & Electric Company, Ishpeming, Mich., has found it necessary to increase the fare on the line between Ishpeming and Negaunee. The fare has been raised 2 cents on each 5 cents paid. From Lake Angeline to Ishpeming or from Ishpeming or Negaunee to the Union Park the fare is 7 cents and from Ishpeming to Negaunee the fare is 14 cents.

Increase for Syracuse Line.—Increased passenger fares on the Syracuse & Suburban Railroad, Syracuse, N. Y., have been granted by the Public Service Commission for the Second District, in accordance with the petition of the company. The new rates include a 6-cent fare within the city. The other new rates are: 3 cents per mile for cash fares; 2½ cents per mile for ticket fares; 2 cents per mile for mileage book fares; 1½ cents per mile for commutation fares. The road was formerly divided into zones.

Peak Loading Reduced in New York.—At a hearing before the Public Service Commission for the First District of New York on Oct. 17 in reference to the service provided on the lines of the New York Railways, Frank Hedley, vice-president and general manager of the company, stated that the change in business hours ordered by the Health Commissioner had resulted in a material improvement in the service which it is possible for the company to give. The rush hour is now substantially without a "peak," he declared, and hence the conditions are better for the riding public.

Six Cents for Muskegon.—Resolutions were adopted by the City Council of Muskegon, Mich., on Oct. 9, permitting the Muskegon Traction & Light Company to increase its cash fares to 6 cents and its tickets to 5 cents, the

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

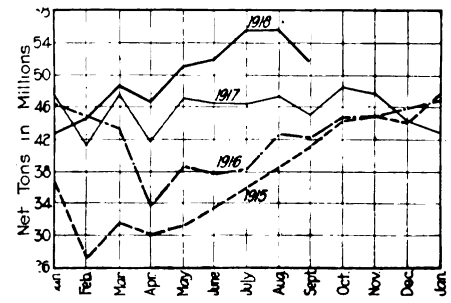
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Output of Coal Is Still Falling Off

Production for First Nine Months of Current Year Estimated at 447,905,672 Net Tons

The production of bituminous coal during the week ended Oct. 12 is estimated at 12,321,000 net tons, a decrease compared with the week preceding of 273,000 net tons or 2.2 per cent, but an increase over the corresponding week of last year of 1,317,000 net tons or 12 per cent, according to the weekly report of the Geological Survey. The average production per working day during the current week is estimated at 2,053,000 net tons as compared with 2,099,000 net tons during the week of Oct. 5, and 1,834,000 net tons during the week of Oct. 12, 1917.

Bituminous coal production during the month of September, 1918, is estimated at 51,687,031 net tons, and exceeds production during the same month of 1917 by 6,579,073 net tons or 14.6 per cent. September production, limited, first, by loss of time on Labor Day; second, loss of time on Registration Day, and third, by the short month, was approximately 4,000,000 net tons less than production during either July or August, and fell slightly below the production of June but exceeded all records prior to June, 1918.



PRODUCTION OF BITUMINOUS COAL 1915-1918 INCLUSIVE

For the first six months of the coal year 1918, production of bituminous coal is estimated at 312,282,414 net tons as against 274,537,172 net tons during the same period of 1917 or an increase of 37,745,242 net tons or 13.7 per cent. The requirements during these first six months of coal year 1918, however, exceeded the production during these months of last year by 49,448,828 net tons, so that even with the large increase, production during the first half year fell 11,703,586 net tons or 3.7 per cent behind the estimated requirements.

Production for the first nine months of the calendar year of 1918 is estimated at 447,905,672 net tons, an increase over the same nine months of 36,179,783 net tons or 8.7 per cent. This tremendous increase over last year was really brought about during the months of July, August and September, the increase during this period amounting to 24,234,681 net tons or 17.4 per cent, and more than doubled the improvement that occurred during the first six months of the calendar year, the increase during this period over last year amounting to but 11,945,102 net tons, or 4.4 per cent.

ANTHRACITE OUTPUT DECREASES 4.7 PER CENT

For the week ended Oct. 12, 1918, production of anthracite is estimated at 1,955,000 net tons, a decrease of 4.7 per cent, compared with the week of Oct. 5.

The daily average during the current week of 326,000 net tons was lower than the daily average for the coal year to date during either 1918 or 1917. Total production for the coal year to date now amounts to 55,658,000 net tons compared with 54,683,000 net tons for 1917, an increase of 1.8 per cent.

Production of Carmen's Badges Cut

War Industries Board Curtails Output to 75 Per Cent of Six Months Production of 1917

The manufacturers of badges worn by conductors, motormen, inspectors, etc., have for some time past reported a considerable shortage of supplies on hand. The recent ruling of the War Industries Board curtailing the manufacture of metal tags or badges for industrial purposes to 75 per cent of six months production of 1917 will tend toward making this shortage more acute.

Owing to the difficulty of obtaining metal, shipments are from six weeks to two months behind and prices in the past year have risen about 50 per cent. As far as can be learned there has been no attempt on the part of the manufacturers to use a substitute in place of metal.

Shortage in Railroad Picks

The government is now in the market for about 600,000 railroad picks, which will most likely, with what government orders are already on hand, tie up the market in this field for quite a few months.

Much Activity in Fare Box Market

Replacements and New Collection Methods Because of Higher Fares Account for Most of the Orders

Due to the gradual awakening to the necessity for increased fares and the subsequent granting of same, there has developed a need for much revision in the methods of fare collection. This has opened up the whole fare-box situation and the manufacturers have been active in working out the needs of the industry and in supplying equipment to meet the changed conditions. As a joint result of increased fares and the foresight of the manufacturers, there is at present much activity in the fare-box market.

The statement is made by one manufacturer that the demand during July, August and September last equaled 75 per cent of the demand for any preceding entire year.

ENORMOUS INCREASE IN NUMBER OF PENNIES HANDLED

As a natural result of the changes from a 5-cent fare to either a 6-cent fare or a zone system that have occurred, the number of pennies handled has increased enormously. The old method of locking up the pennies in counting type fare boxes has in these increased fare cases become inadvisable, if not impossible. The manufacturers state that too much emphasis cannot be placed on the value of metal tickets in the elimination of pennies, and in the consequent speeding up of loading and unloading.

Fare-box orders for the most part are either for replacement of other methods of collection or for the changing of equipment formerly designed to handle only the 5-cent fares. New rolling stock being built to serve war industries such as shipbuilding, coal, munitions, etc., furnishes some demand for boxes, to be sure, but it is said that this is only a small percentage of the total.

No supply is being carried in stock by the manufacturer chiefly because it is impossible to keep up with the demand. Some trouble is being experienced in obtaining sufficient quantities of steel and bronze and this gives rise to further delay so that about ninety days is necessary in which to fill orders for any considerable quantity of boxes.

Prices on some boxes advanced several months ago and those of another manufacturer were advanced $5 per box about ten days ago.

Industrial Preparations for Peace

Many Problems Relating to Labor, Return of Output to Peace Products, Foreign and Domestic Market Conditions and Possibilities Should Receive Consideration Quickly

The recent plea of Germany and Austria for an armistice should impress upon manufacturers in this country the necessity for preparation for peace. President Wilson's replies to Germany's notes mean that the peace which is to come will not be "Made in Germany." Nevertheless, it may hasten the time of the arrival of the real peace, and while the doughboys' wish of "Hoboken, home, Heaven" may not be realized by Christmas, the German collapse cannot be far off. Already this event is being presaged in the stock market by lower quotations on munitions stocks and higher prices for the railroads and public utilities.

The peace problems which confront our industrial establishments after the war are many. Among them are the following:

What will be done with all of the workmen now engaged in the industries connected directly with the war, such as munitions and arms, and the supply of raw material for these manufacturers, as well as with those indirectly connected with the war, such as the building of ships.

To what uses will the manufacturers put the immense manufacturing establishments which have been created and equipped with tools solely to manufacture war materials?

What arrangements will be made to absorb into industry the large number of men gathered for war purposes, including some 1,800,000 in France and others in this country?

Will the employment of women in industrial establishments undertaken as a war expedient become permanent?

As a nation we have been slow in taking up this matter. Our Allies and even Germany have had committees considering the matter for some time. That Congress has at last awakened to the necessity of some action is shown by the fact that there is now a joint resolution covering the matter, before both branches of Congress, introduced by Senator Weeks and Congressman Madden, as well as a bill before the Senate introduced by Senator Overman. The purpose of this legislation is for the government to make a thorough study of after-the-war trade, though the proposal in one case is that the study should be conducted by a congressional committee while in the other case the investigating body proposed is a commission to be appointed by the President. This proposed government action, however, does not relieve any manufacturer from considering the matter so far as his own property is concerned. Indeed, it is not improbable that before any of the committees mentioned can be appointed and conclude its deliberations, peace will be here.

There are, of course, but two logical ways for each manufacturer to approach the question. The first is the extent to which he can find a domestic market for his peace-time products, the second, the extent to which he can command a foreign market for his goods.

There is no doubt that there will be great need for materials of nearly all kinds when the war is over. Not only have many necessary improvements been postponed because of inability to secure material, but for the same reason many industries, the electric railway companies for example, have gone without material really necessary to maintain their properties because it could not be had. Finally, the stockrooms and stock shelves of a great many retailers as well as users have been swept bare, and artificial means have been taken by the government to reduce production, such as standardization along many lines. Some of this standardization will probably be retained after the war, but in some cases the different patterns represented real needs, and while the suppression of so many varieties was a legitimate war measure, their production undoubtedly will be renewed after the war.

Uncertainty of Foreign Markets

Foreign countries present a very similar condition to that described as characterizing America. In addition, many of those farthest distant have suffered under the handicap of greatly reduced shipping facilities so that in some respects their need for manufactured articles is greater than our own. These will have to be supplied and the devastated regions of Europe rehabilitated. All this calls, or would seem to call, for an output comparable, almost, with that at the present time.

On the opposite side we have, as regards foreign trade, probably greatly reduced shipping facilities. In spite of the tremendous activity of our shipping yards, the toll of the U-boat has not been small. Besides, this country will have in Europe at the close of the war, a great many men who will have to be returned to this country, and for some time at least many bottoms will be required for this task. Our European Allies, as well as the neutral countries, and as far as possible the Central powers will endeavor to have their share of any foreign business, so that there will be competition.

The domestic market is subject to considerable uncertainties also, mainly because of the labor situation. We can hardly expect to do very much export business if labor receives the same rates of pay as at present, but will it accept less?

One solution for the problem, and it may prove to be the correct one, is greatly to enlarge the use of manufactured articles in this country so as to utilize the manufacturing space in our factories, created for the war, but available now for peace production.

For instance, take the railway situation. It is a well-known fact that owing to the lack of incentive to capital, practically no new electric railway mileage has been built during the past ten years. During this time the population of the country has increased probably 25 per cent and in purchasing power still more, so that with improved conditions in the electric railway field as regards incentive to capital, much could be done.

Again, the same conditions practically prevail as regards steam railroad electrification. The few installations which have been made have shown that electric equipment can pay for itself in a very few years under many circumstances, owing to its ability to utilize the track more intensively that can steam locomotives. This means that on mountain divisions and on congested sections of steam railroads in the large cities where additional track construction would be expensive, there will be a demand for electric equipment. In fact, in many of these situations it would have been introduced long ago but for the financial inability of the steam railroads to finance the installation. No one knows what the future of the steam railroads is to be after the war, but it is safe to say that they will not be permitted to return to the unfortunate financial condition in which they existed before the war owing to the shortsightedness of the Interstate Commerce Commission. Whether they return to private ownership or remain under government ownership, public opinion will require them to be rehabilitated so that they can render the transportation service which the country demands.

Finally, there is no doubt that among the municipal improvements which will be inaugurated after the close of the war, rapid transit will occupy first place in many communities. New York, indeed, was fortunate in concluding its rapid transit agreements and almost completing construction work before 1914. In other cities, the rapid transit program was interrupted and nothing was done in the way of active work, but Philadelphia, Cleveland, Detroit, Chicago, and Los Angeles have all prepared rapid transit plans, and they will undoubtedly be revived in many of these places when the opportunity returns for municipalities to raise funds at reasonable rates.

We have recited the prospects for industrial activity with particular reference to electric railway industry, because we are more familiar with that industry than with any other. But other lines are destitute of material as well, and there seems to be no reason why the termination of the war should not see a great activity in industrial lines. Each manufacturer should be prepared to take advantage of it.

Franchises

Johnstown, Pa.—The Johnstown Traction Company has asked the City Council of Johnstown for an extension of time on its franchise granted last year for the completion of projected extensions in Moxham and to Constable Hollow Park. The company was asked by the government to discontinue work on the Horner Street extension and not to start work on the Moxham tracks because of labor shortage and other conditions brought about by the war.

Pittsburgh, Pa.—The Pittsburgh Railways has received a ten-year franchise from the City Council of Pittsburgh for the construction of a crosstown car line loop, the cars to run up Sixth Avenue, turn on Ross Street and go down Fifth Avenue to the Northside.

Track and Roadway

Calgary (Alta) Municipal Railway.—The question of a new route for the Ogden car line is being considered by the City Council of Calgary. Work will be begun as soon as the matter is settled. An extension will be built by the municipality which will cross the city limits at Fiftieth Avenue, W., and will cross the prairie in an almost direct line to the new hospital site.

San Diego (Cal.) Electric Railway.—A report from the San Diego Electric Railway states that it expects to construct a 1-mile extension of its Logan Heights line to the Pacific Marine Construction Company's shipbuilding plant.

Washington, D. C.—A favorable decision has been reached by the War and Navy Departments for the establishment of a belt line at Washington, D. C., to relieve electric railway congestion in the center of the city and to accommodate government workers in West Potomac Park. The line will be used by both the Capital Traction Company and the Washington Railway & Electric Company. The plan involves the laying of new tracks over a portion of the route. The government will either construct them or guarantee the cost. The District Commissioners have turned the matter over to the Bureau of Industrial Housing. Otto M. Eidlitz is director of the bureau, and has full power to build any railway necessary to accommodate war workers.

Springfield (Ill.) Consolidated Railway.—Announcement has been made by A. D. Mackie, general manager of the Springfield Consolidated Railway, that plans are under way for important additions to the company's system after the war. A study is being made of the present lines and the facilities they offer for development.

United Railways & Electric Company, Baltimore, Md.—An extension will be built by the United Railways & Electric Company of its Sparrows Point line to the yards of the Bethlehem Shipbuilding Corporation.

United Railways of St. Louis, St. Louis, Mo.—Cars are now being operated on the new City Limits line of the United Railways of St. Louis. The new line extends along the city limits from Maplewood to Wellston and forms a link connecting all the downtown lines from Manchester to Easton Avenue.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—A contract has been awarded by the Trenton & Mercer County Traction Corporation to J. J. Barrett Company for the replacing of old ties with new ones on its Pennington and Hopewell divisions.

London & Lake Erie Railway, London, Ont.—It was recently announced by the London & Lake Erie Railway that operation would be discontinued on the line and the work of scrapping the road would be begun immediately. The city of London is considering the purchase of 8 miles of the road extending between Lambeth and London.

Duquesne Street Railway, Pittsburgh, Pa.—Arrangements have been completed by the Duquesne Street Railway for the construction of a line on Fifth Avenue, Ross Street and Sixth Avenue.

Pittsburgh (Pa.) Railways.—Application has been made by the Pittsburgh Railways to the city for permission to construct and reconstruct tracks with paving on the following streets, at a total cost of about $626,400: Chartiers Avenue, East Ohio Street, Butler Street, West Carson Street, Fifth Avenue, Liberty Avenue, Federal Street, West Ohio Street, Preble Avenue and other streets.

Dallas, Tex.—The City Commission of Dallas, on petition of E. P. Turner and associates, owners of the Dallas Northwestern Traction Company, and the Dallas Southwestern Traction Company, has granted extensions of all franchises for the duration of the war and for a period of one year thereafter. In asking this extension, Mr. Turner stated that, because of the war, his company had been unable to secure building material and had also been unable to get labor to carry forward construction work. The Dallas Northwestern Traction Company proposes to build an interurban line from Dallas northwestward to Denton and Slidell, and the Dallas Southwestern Traction Company plans to build a line from Dallas southwestward to Cleburne and Glen Cove. In the conditions of the extension, the two companies gave up franchises over all city streets with the exception of two blocks over which their lines will enter the city. Mr. Turner represented to the commission that during the eleven years that his companies had held these franchises they had paid $5,500 in taxes to the city and had received no direct benefit therefrom. The City Commission agreed to fix a bonus tax of $100 a year on the franchises as extended in lieu of other taxation during the period of the war. [Nov. 24, '17—May 4, '18.]

Northern Texas Traction Company, Fort Worth, Tex.—A contract has been awarded by the Northern Texas Traction Company to the Union Switch & Signal Company for the necessary material to be used in connection with the extension of the automatic block signaling on its line between Fort Worth and Dallas. The extension will include six blocks operating under the Traffic Direction Block system, one block for complete curve protection on single track and four blocks for double-track signaling for rear and curve protection. The installation will be made by the railway company's forces.

Lewisburg & Ronceverte Electric Railway, Lewisburg, W. Va.—This company reports that it is building an extension to Main Street and Lewisburg Avenue.

Power Houses, Shops and Buildings

New York Central Railroad, New York, N. Y.—A contract has been awarded by the New York Central Railroad to Ruggles-Robinson & Company, New York, for the erection of a bridge on Forty-second Street, connecting Grand Central Station with Fourth Avenue, to cost about $50,000.

Choctaw Power & Light Company, McAlester, Okla.—Plans are being made by the Choctaw Power & Light Company, which supplies energy to the Pittsburgh County Railway, for the construction of an electric plant and distribution system in Hartshorne.

Pacific Power & Light Company, Portland, Ore.—A number of water power sites have been purchased by the Pacific Power & Light Company on Hood River for possible development after the war ends. A survey has been made for a pipe line from a dam site near Wynans to Ruthton and right-of-way for such line has been secured.

Portland Railway, Light & Power Company, Portland, Ore.—The Portland Railway, Light & Power Company recently completed a transmission line, carrying 11,000 volts, from Portland, Ore., across the Columbia River to Vancouver, Wash. This makes three of its lines which cross that stream and connect substations in the two cities.

Charleston Consolidated Railway & Light Company, Charleston, S. C.—A contract has been awarded by the Charleston Consolidated Railway & Light Company to J. A. P. Crisfield Contracting Company, Philadelphia, Pa., for improvements to its plant to cost $750,000.

Seattle, Wash.—An ordinance is before the City Council authorizing an issue of $1,750,000 for extensions and permanent improvements to the municipal lighting department. It is proposed to take up the light department warrants, issued to pay for permanent improvements, build the Spokane and Ballard Street substations, pay for the proposed connection of the municipal and the Puget Sound Traction, Light & Power Company's power plants, and to provide a fund to cover extensions for the next three years.

Rolling Stock

Cameguay (Cuba) Electric Company, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 19, has purchased from the J. G. Brill Company, Philadelphia, six open passenger cars.

Savannah (Ga.) Electric Company has asked for prices on twenty safety one-man cars. As far as could be learned orders have not been placed.

Jacksonville (Fla.) Traction Company has asked for prices on twenty-five safety one-man cars. As far as could be learned orders have not been placed.

St. Louis (Mo.) Municipal Railway has placed an order for two one-man safety cars with the National Safety Car & Equipment Company. These cars will be built by the Cincinnati Car Company.

Galveston-Houston Electric Company, Galveston, Tex., has received three rebuilt interurban cars which have been put into service on the Galveston-Houston Interurban. Another rebuilt car is on the way and will also be put in this service when it arrives.

Colorado Springs & Interurban Railway, Colorado Springs, Col., has placed an order with the National Safety Car & Equipment Company for twenty-four safety cars. These cars will be built by the Cincinnati Car Company and will be delivered in December.

New Brunswick Power Company, St. John, N. B., may be in the market later for one-man cars. The Royal Commission, which recently authorized the company to increase its fare to 6 cents, also recommended to the company the introduction of one-man cars.

Gary & Valparaiso Railway, Gary, Ind., has obtained a loan of $33,000 from the government and has contracted to spend the amount for new passenger and freight cars, the cars to be of steel construction and to accommodate sixty-five persons. The railway company must pay 5 per cent interest on the loan during the period of the war and later, if it desires, can buy the cars at cost, less depreciation.

Trade Notes

Chicago Pneumatic Tool Company of Massachusetts announces the appointment of B. H. Tripp as district manager of sales, Pacific Coast territory, succeeding M. W. Priseler.

G. F. Heffler has been chosen to succeed M. A. Curran as manager of the line material department of the Western Electric Company. Mr. Curran has been appointed assistant manager of the company's Philadelphia house.

Milliken Brothers Manufacturing Company, Inc., New York City, has been organized to succeed Milliken Brothers, Inc., established 1857, taking over certain assets, including patent rights, good will, etc., of the former company. The new company will specialize in the manufacture of galvanized-steel transmission towers. The new organization will also manufacture galvanized-steel wireless towers, special steel poles for distributing and interurban railway lines, as well as the standardized truss unit system, a patented system of construction for steel buildings, designed by J. E. Jennings, vice-president and secretary of the company and for many years in charge of the power transmission department of the former company. C. T. Clack, for many years connected with the United States Steel Corporation, is president of the company, and Robert Grant, iron and steel merchant, is treasurer. General offices will be in the Woolworth Building.

New Advertising Literature

Walter A. Zelnicker Supply Company, St. Louis, Mo.: Bulletin No. 252, or that for Oct. 15, 1918, devoted largely to storage tanks, pressure tanks and tanks for other purposes.

Armco Iron Culvert & Flume Manufacturers' Association, Chicago, Ill.: Sixteen-page folder entitled "Somewhere in the U. S. A." and containing views of installations of corrugated iron culverts in different cantonments.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Yesterday's Conference Should Help the Industry

THE 1918 conference was marked by a good attendance and great interest in the papers presented. The general sentiment both felt and expressed was that at this time as never before there was need for mutual counsel and united action. Much of this feeling undoubtedly came from the knowledge of what the companies had been able to do together through the association's War Board, whose report is published in this issue. An important factor also was the common need felt by all companies for higher fares and guidance as to the basis on which the fares should be collected. Moreover, there seemed to be this year more questions than ever which concerned all companies and fewer which concerned only a part of the industry. The conference was well worth while and should be of benefit to those who were not present as well as to those who were. The significant fact today is that railway managers desire as never before to get down to the root of their troubles. Hence nothing but measures that are radical, in the true sense of the word, will do for these strenuous times.

Staggered Hours Offer a Genuine Opportunity

IN OUR Oct. 19 issue we adverted briefly to the great opportunity that the influenza epidemic offers to electric railways to make the staggered hour a fixture. Following its successful introduction at Washington and New York, Denver, Cleveland, Chicago and other cities have been added to the list. Thus a dread emergency has produced almost instantaneously a reform that had been urged for decades by every thoughtful operator. It would indeed be a pity if this reform could not be made permanent. Happily the possibility of doing this lies more with the electric railways than any other agency. Let them but demonstrate that the new order of things means a permanent improvement in service and their patrons will back them to the limit. In New York City this has already been proposed by the chairman of the Public Service Commission. Of course we realize that the very scourge that has forced the staggered hour has also crippled most seriously the platform force of the electric railways themselves, but such preventative measures as have been taken by the Philadelphia Rapid Transit Company, and special awards for extra service by those who have been spared, will go a long way toward putting the full complement of cars out on the road. With the staggered hour a possibility at last, it would be poor policy indeed not to give such good service during the entire period of the spread rush hours that the public will see the transportation advantages of the plan.

The War Board Deserves Appreciation and Co-operation

ALMOST one year ago, on Nov. 9, 1917, to be exact, the Electric Railway War Board held its first meeting at Washington. An eventful year has intervened, in which this representative body has become increasingly useful. It has occupied a difficult position and an uncomfortable one; difficult on account of the broadness of its commission, uncomfortable because the industry behind it has been in a critical financial condition. In spite of handicaps a great deal has been accomplished, as detailed in the report printed elsewhere in this issue. This work has been done at slight direct cost to the industry, thanks to the loyalty of its representatives.

Forgetting for the moment what the board has accomplished, let us go back a year in imagination and try to look at the job then ahead. The board was asked "to co-ordinate the facilities of the electric railways of the country and to place them at the command of the government and of industry; and to represent the electric railways in the important activities of the governmental departments and the various boards and committees appointed to conduct the nation's affairs during the war." At the time the confusion of activities in Washington was bewildering. We had been in the war nominally for several months but had really just begun to realize the magnitude of the task to come. Numberless bureaus were being created for this and that service, fuel and food shortage at home and abroad was staring us in the face, man-power supply was inadequate, material costs were sky-rocketing, etc.—a situation furnishing plausible cause for discouragement. Into this maelstrom the war board plunged.

The task of the board, in accomplishing which a real start has been made, was two-fold: First, an industry theretofore very loosely knit together had to be consolidated under the cohesive forces of war needs; second, relations with numerous, complicated and mobile governmental agencies had to be established. Publicity was the chief factor in the accomplishment of the first task; personal contact between the board's representatives and government officials was necessary in the second. As the most concrete possibility the printing press was put immediately to work, and a rapid succession of bulletins and posters has since kept the industry awake to the "doings" at Washington. In this work the ELECTRIC RAILWAY JOURNAL lent its active co-operation, as is gracefully recognized in the report.

But possibly the most important work of the board, which cannot be measured tangibly, as in pages of printed matter, is the gradual development of a spirit of co-operation between the government and the electric railways. To be sure this co-operation has not yet gone nearly far enough. The government has laid a heavy load on the industry without furnishing adequate means for carrying it, but it is believed that this condition is temporary. The logic of the situation must eventually appeal to the "powers that be." The men of high standing who are representing the industry at Washington, two of whom serve entirely without compensation, are continuously endeavoring to impress upon the President and his colleagues the nature of the electric railway situation. They are showing how essential electric transportation is, how it is contributing to war work and what it should have to permit it adequately to serve. At the same time they are telling the industry what it can do to assist the government in its gigantic task.

Municipal Ownership versus the Partnership Agreement

PENDING negotiations at Seattle and San Francisco under which the municipality concerned in each case would take over the ownership and operation of electric railways make the paper on municipal ownership by Mr. McCulloch of immediate interest. There is no doubt a great change in feeling among railway men on the subject of municipal ownership, since regulation has become a controlling force in electric railway operation. One has only to recall some of the common practices of fifteen or more years ago to be impressed with the change since that time. Then, in most states, railway companies conducted their business with as much freedom from oversight as a merchant. They regulated their service as they saw fit and issued securities as and when they desired. There was little contact with the municipal authorities except when an additional franchise was wanted or with the state authorities except when an accident occurred. Now, when there is regulation of the service, the capitalization, the expenditures and the rate of fare, and nothing is left for the railway except to take the responsibility for earning the interest on the investment, it is not surprising that many railway executives believe that the public should take over that responsibility too, because power and responsibility go hand in hand.

There are undoubtedly many advantages to be cited in favor of municipal ownership of public utilities, but in most cases to each advantage there is a corresponding disadvantage which is comparable in size to the benefit secured. Thus, municipalities can borrow money for railway construction at lower rates than corporations only because investors know that any deficit from operation must be made up from taxes. The people can have the service which they desire and have extensions built at any time, but this will usually mean that a great deal of unprofitable and consequently wasteful service will be run. Finally, the fact that most of the enterprises conducted by a municipality are operated without any effort toward profit, like the schools, charity organizations, police and fire departments, would tend to make both public and authorities slow about taking steps to keep the railways out of the unproductive class. On the other hand, in certain ways, where co-operation between the municipality and the railway is required for best results, such as the giving of priority in street traffic, the railway service would undoubtedly be benefitted under municipal ownership. Undoubtedly the present tendency is toward municipal ownership, and the presentation of the resolution on this subject by Mr. Mortimer places it before the association in concrete form.

Broadly speaking, we believe that it is possible to retain most of the advantages of both municipal and private operation and get rid of most of the disadvantages of both through a partnership agreement. Of these, of course, there are many varieties, the later franchises providing for many points which were overlooked in the earlier acts. Undoubtedly experience will show that even the latest forms can be improved, but partnership agreements are less untried in this country than municipal operation and are immeasurably safer for the taxpayer. We hope to see progress along the partnership line rather than through direct municipal operation.

Zone System Needs Wider Study and Trial

IF A PRACTICAL method of fare collection can be devised, the zone system furnishes the solution of present financial difficulties for companies with an average ride of more than one mile. This general conclusion presented by Professor Conway at the New York conference hits the nail on the head. Similarly pertinent is the declaration by Mr. Storrs that no panacea exists for all electric railway ills. These statements are not antithetical.

Obviously the matter of placing fares upon a scientific basis of payment for service rendered is quite apart from the matter, for example, of adopting all the possible means for efficiency and economy, or the matter of securing relief for the car riders from unjust tax burdens. The zone system has to do with income; such other factors as we have mentioned influence outgo. The financial condition of individual railways will, of course, vary in accordance with the degree of control secured and maintained over both income and outgo, but the zone system in particular cases should be judged primarily upon one basis—its ability to increase or decrease revenues easily and equitably in the face of changing conditions.

Thus far experiments with the zone system in this country have not been many. Most of the companies which have sought to raise their revenues have preferred to use a higher unit fare, either because they felt that such a fare would result in less disturbance of social and civic conditions than would the zone system, or because they thought that for reasons of law or expediency a higher unit fare was advisable for securing temporary relief—the question of a general scientific readjustment of all fare bases being left for after-the-war consideration.

But results with the 6-cent fare have been disappointing, and the industry is realizing the folly of postponing a thoroughgoing study and trial of the zone system. It is true, as Professor Conway points out, that the zoning experiments thus far in this country have not been entirely satisfactory. But if estimates of revenue results have not been accurate, if the preliminary studies have not recognized properly the effect upon short-haul traffic, the companies at least have been moving forward. They deserve the thanks of the industry for their courage and their foresight.

No perfect zone plan is going to spring full-grown from the brow of any electric railway operator, and further mistakes are inevitable. But they will be discovered, just as Professor Conway now notes that some existing systems have based their studies upon the ordinary "on and off" counts used to determine points of traffic congestion, instead of upon data for origin, destination and length of ride. Such data are necessary for the identification of existing short-haul travel, which must be encouraged rather than discouraged by the zone system.

The difficulties of making a wide-spread change to the zone system are not to be minimized. The crucial point, as Professor Conway says, is the fare collection. It must be more speedy and safer. But the minds of the industry are working; that is the best earnest of good results.

Why Not Take Up Technical Questions Too?

WE BELIEVE the time has come when the affiliated associations should resume, at least on a limited scale, some of the activities which were promptly stopped at the declaration of war. We refer particularly to meetings of the more important standing committees of the affiliated associations. We mention them especially because the American Association has means in existence for considering those questions which are regarded as belonging more to the province of the executives through its conferences, of which two have been held since we entered the war, and also through the Electric Railway War Board.

There are many problems of a technical nature relating to engineering and transportation matters, however, brought about in large part by the war, which ought to be settled promptly if the railways are to fulfill their full duty as public carriers. Hence the sooner these matters are taken up the better, whether the war should come to an end in two months or less or should continue for two years or more.

To mention first the transportation subjects, we can cite as examples of necessary work that which could well be performed by the fares and transfers and the schedules and time-tables committees of the T. & T. Association. Every day decisions are rendered by commission or court raising new fare or transfer problems. One company gets authority to charge a 6 or 7-cent fare. Another company retains the old fare standard but is permitted to make a charge for transfers. Still another company is directed to install a zone system. The public utility which is the beneficiary of these orders may have been looking for a different sort of ruling and may find itself unprepared to meet unexpected conditions. The association headquarters, of course, is performing a splendid service in supplying information in cases of this kind. This service, however, is not a complete substitute for the gathering of data which might be done through a regular committee to keep information available and up to date in the secretary's office.

The same may be said for the conditions brought about by the recent spread of skip-stop operation and staggered-hour opening and closing arrangements. Both of these changes affect car schedules seriously, and the regular committee chosen by the association could perform an invaluable service at this time by accumulating information for the benefit of the member companies. It might not even be necessary to publish reports of their findings, but the data would be available for emergencies.

The Transportation Association, even in the absence of convention gatherings, can prove its worth to the industry in these critical times. Why not have such action considered by the executive committee?

Some Problems Which the Engineers Ought to Settle

THE engineers have before them not only the questions brought on by the war but should prepare for the equally pressing ones which will come in the period of reconstruction to follow the declaration of peace. In the first class of problems, or those precipitated or made acute by the war, though continuing after the war, we put questions of automatic equipment, from the automatic substation down to the automatic adjustment of brake rigging. For all of this kind of equipment there has been great demand during the war, and this demand will undoubtedly continue. We also include in this class of questions that of car and other standards, of importance both before and after the war but brought especially to the fore during the period of hostilities by government requirements and purchases.

But beyond all these matters which imperatively need study there is also the question of preparing for the peace which is bound to come very soon. Undoubtedly, an enormous amount of electric railway reconstruction is due to begin in this country immediately after the cessation of hostilities. Before we entered the war, the track, rolling stock and equipment of many of our transportation systems were in a run-down condition, because even four and five years ago the industry as a whole was not in good economic condition and could not secure the new capital necessary for desirable extensions and improvements. During the war period there has been even more rapid deterioration. Furthermore, obsolescence, especially in car design, is occurring at a rapid rate due to the fact that the automobile, the public and the railway companies themselves are setting new service standards, to meet which new physical equipment will be required.

The dark side of this cloud is rather depressing but it is not necessary to dwell upon it. Electric railways are an essential industry in peace as well as in war, and as soon as manufacturers are in a position to supply the equipment to rehabilitate electric railway properties, this work will have to be undertaken, even if the cities pay the bills. But this period of enforced leisure affords the opportunity for the railway engineers to make their plans and develop standards, which will put the electric railway "on the map" again. Imagination and the progressiveness which it creates are the hope of the future in this business.

For this reason we should be glad, as we have said, to see a revival of activity also in the Engineering Association, at least in the direction of some committee work. It is a national duty of the industry to be ready to spend wisely the money which it is receiving from the government now for war extensions and the vastly larger sums which will have to be expended for rehabilitation after the war. This is no time for inaction or unpreparedness.

Fares Have Essentially Been Cut in Half*

President of the association urges the support of all agencies which are helping to tide the industry over the present critical period, and explains why present incomes are so inadequate.

By John J. Stanley
President
American Electric Railway Association
President Cleveland (Ohio) Railway

DURING my term of service the interests of the association have been largely confided to its war board, from which you will receive a report of activities, that, I am confident, will warrant in your estimation, not only its creation, but the further necessity of its continuance with an even greater degree of co-operation, both financial and moral, from the country's railways, than it has so far received.

I do not believe that you require from me a justification of the action of your executive committee in suspending during the war all but the absolutely essential activities of the association, and centering its greatest effort in the work which is being conducted by Thomas N. McCarter and his associates. When this nation entered the war, the industry which we represent lost its purely local character and became of *national* importance. The work which it performed is essential to the successful carrying out of the war program, and the nation, to a very large extent, has taken command of its affairs.

GOVERNMENT EXERCISING WIDE CONTROL POWERS

Through the operations of the National War Labor Board, jurisdiction over wages, the largest item of operating expenses, has been assumed.

Through the operations of the Fuel Administration and of the War Industries Board, control has been taken of all material that enters into the construction and maintenance of our property.

Through the Capital Issues Committee, the government has taken command of our capital expenditures, while the operation of the draft dictates the personnel of our operating staff.

We are thus called upon to operate our roads in the interest of the national program. Unusual and onerous requirements are made upon our service to provide for the transportation of workers in munition plants and in shipyards, and of the soldiers and sailors in the various training and concentration camps and cantonments. The service of our interurban lines and to a certain extent of our city lines has been commandeered to relieve the freight congestion caused by the unusual burden placed upon the steam railroad system, and at the same time we are subject to the operating requirements of the Fuel Administration in its efforts at fuel conservation.

The national government is dictating the wages that we shall pay, the price of our fuel and of the materials that we must necessarily use, and the service that we shall furnish. It has practically, in all but one essential feature, assumed the regulation of the street and interurban railways of the country. Unfortunately, the function which it has not yet taken over from state and local authorities is to the industry in the present alarming situation the most important of all—that of regulating fares from which must be paid the enormously increased cost of operation forced upon us by the exigencies of the war and by the necessity of complying with government requirements.

Under these circumstances the wisdom of maintaining in Washington an organization, through which the industry can keep in touch with the government, and shall represent the industry at the seat of government, is not to be disputed. It is, in the first place, a patriotic duty and, in the second place, a measure of protection for the companies.

I would be remiss in my duty if I did not voice, on behalf of the electric railways of the country, their appreciation of the unselfish and effective work that has been accomplished by the members of the board and its efficient staff. Largely through their intelligent efforts the perilous state of the industry and the necessity of affording to it such relief as can come through the national government has been made apparent to President Wilson, to Secretary Wilson, to Secretary McAdoo, to Comptroller Williams, to the Capital Issues Committee, to the National War Labor Board, to the War Industries Board and to various other important officers and departments of the government. Messrs. McCarter, Brady, Budd, Gadsden and Storrs have served you faithfully and well. They have contributed of their time and ability and have not only served without compensation, but without a call upon the industry for the payment of their expenses. Especially to Mr. Gadsden, who has devoted practically his entire time to the work, is credit due. We owe also to E. C. Faber, the board's manager, and L. J. Wolff, who has made possible his service, an especial debt of gratitude. To W. V. Hill, the assistant manager, thanks for services well and faithfully performed should be given.

It should not be understood, however, that the work of the association has been entirely transferred to the war board. The association has been and is performing an additional task for the benefit of its members. In the state of transition in which the industry finds itself,

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*Abstract of address presented at New York conference of American Electric Railway Association, Nov. 1, 1918.

"the dissemination of information," one of the important objects for which the association was organized, takes on an added importance. The railway manager who knows only what is going on in his own limited jurisdiction fails in his duty. It is essential, now as never before, that he should keep himself informed as to the trend of events in all sections of the country. Of this information the association is the natural clearing house. In matters connected with fares, wages, operating statistics, methods and practice and the larger questions of policy, it can, with the least trouble to the busy men upon the properties, collect and distribute essential data and information. This it is constantly doing, and, I believe, doing well.

MEMBERSHIP DUES IN ASSOCIATION A JUSTIFIABLE EXPENDITURE

Through the columns of *Aera*, through bulletins and special reports, it is constantly presenting to association members the information so gathered, and the increasing use which is being made by member companies of the association's information bureau is proof that this branch of association service should be maintained and strengthened in the coming years.

I see in the work that is being performed by the association, through its headquarters staff and through the war board, reason for its further development and for its increased support by the electric railways of the United States, Canada and Mexico. To the electric railways and to the manufacturers interested in the welfare and progress of the railways it is essential in the strenuous times that are with us, and in those more strenuous times that are to come, that the organization which is their mouthpiece, which acts for them and through which they must act in all matters of general importance, should be strong, able and active. Strength, ability and activity can come only from co-operative effort, which means that not only must the association retain its present membership, but that this membership should be largely increased. There are few more justifiable expenditures of company funds than that for membership dues in this association, and I trust that everyone interested in the organization will make it his business to recruit new members from those companies which are not already within our fold, although they have been reaping the benefit of our effort.

WHY THE RAILWAYS NEED HIGHER FARES

I shall not attempt to review the events of the past year as they have affected this industry, nor shall I try to point a way out of the alarming situation in which we find ourselves. That is the province of this conference.

I do desire, however, to emphasize a point which I believe has not been so forcibly impressed upon the public from whom we are asking increased revenue as it might have been.

The leading economists of the country unite in the statement that the purchasing power of the dollar has declined at least 50 per cent since the early nineties. In other words, the 50 cents of that period bought what it requires $1 for to-day. And this means to the street railways of the United States that the 5-cent fare of the nineties is now less than a 2½-cent fare.

In our request for a higher fare we are, therefore, asking nothing more than that what we receive for the service rendered shall be restored to somewhere near its real worth at the time when the rate of fare was fixed. The coin dropped in our fare boxes to-day bears as an impress "5 cents;" but as compared to the 5 cents which was stipulated in our franchises or fixed by statute as our lawful and legal fare, it is 2½ cents and no more. To put the street railway fare upon a parity with what was received in the decade 1890-1900, under a franchise, a statute, or an agreement, calling for the nickel unit, it would now be necessary to substitute the dime for the nickel.

The wages paid to the motorman in this earlier period were approximately 20 cents an hour. For a single fare we could therefore pay for fifteen minutes of his time. To-day, through the action of the federal government, the motorman's pay approximates 38 to 48 cents an hour and a single fare pays for but eight or six minutes of his time according to the rate of wages, and this in varyingly increasing ratio is true of all that we must use to render our service.

On the other hand, taking $2 a day as the average wage in the earlier period, the workman using the street car to ride to and from his work was compelled to pay out 5 per cent of his day's wages for transportation. To-day with an average wage of $4, and this is probably much less than the correct figure, he pays for the same purpose but 2½ per cent.

This decreased purchasing power of the dollar is not a product of the war alone. The war but gave it an additional, although a mighty, impetus. It has been a gradual development and in other industries it has been accompanied by an increase in price of commodity, which has at least kept pace with and in some cases passed it.

It has been in part overcome in the electric railway field by extraordinary improvements in apparatus and methods, the result of millions spent in experiments due to the enterprise and initiative of railway men and manufacturers of which the public reaped the benefit.

The limit of economy made possible by these improvements in operation was, however, largely reached some time before the war, and for a number of years the difference between the cost of producing our service and the price at which it was sold has come from the pockets of those whose money is invested in the industry.

That was the situation when the war sent the price of everything which we must use in producing our product soaring skyward and left the price at which we sell stationary.

It is plainly evident that whether the public shall decide to operate the street railways, whether it assumes greater control over them, or whether it allows them to remain in the hands of private investors, that the unit of their fares, the price at which their product is sold, must be restored at least to the level which prevailed in past years.

I have confidence in the common sense and judgment of the American public. I believe that it stands ready to pay a fair price for what it receives and I conceive it to be our main duty both as members of this association and as operators of electric railways to see that the public is informed as to what such a fair price really is, not in terms of coinage, but in those of value —that is purchasing power.

Public Ownership the Obvious Policy for Electric Railways*

The unusual of today may well be the commonplace of tomorrow—Public ownership would solve the many present problems of operation—Railway executives should be interested only in protection or return of investment.

By Richard McCulloch
President United Railways
St. Louis, Mo.

THE obvious remedy for the perils which now confront the electric railway industry is public ownership. It is the purpose here to analyze the situation and indicate the advantages of public ownership at present to both the public and the investor.

OLD-STYLE FRANCHISES ARE VALUELESS

In recent years one of the great difficulties has been to obtain franchises of sufficient duration to enable the companies to borrow necessary capital at the lowest rate of interest. As a matter of fact, under modern utility control, a franchise is merely a permit to lay tracks on certain public property, the service and equipment being determined from time to time by a commission. Nevertheless, franchises have heretofore been associated in the public mind with great value, and this impression persists. There has always been more or less opposition to new long-term franchises or extensions.

Under public ownership the necessity for franchises immediately disappears, and the rate upon which money may be borrowed, with the city's credit, would be much lower than that at which private corporations, with short-time franchises, could obtain the same money. The return which municipal authorities would claim on securities issued by them would be 2 or 3 per cent lower than that demanded by private investors, and also much lower than the rate of return now termed reasonable by public service commissions. One of the great advantages to the community in public ownership lies in this lower rate upon borrowed money. The saving thus made in the fixed charges would be great enough to answer the claim frequently made that there might be losses due to wasteful and extravagant management under public ownership.

SERVICE QUESTION WOULD BE SOLVED

Under public ownership the character of equipment and the kind of service can be determined by the people themselves. They can have exactly the service they wish to pay for. The familiar protests against the crowding of cars, antiquated equipment, infrequent service, restrictions of transfer privileges and poorer service than in other cities will then come back to the car riders themselves, and the remedy is obvious.

People can ride in discomfort or in luxury, according to the bill which they are willing to pay. It is entirely probable that under public ownership the community would be satisfied with the service simply because it was public service. They would feel that any necessary curtailment of service was for the common good and not for the benefit of the absentee landlord. Witness the absence of complaint regarding the steam railroad service now operated by the national government.

Under public ownership many reforms such as skip stops, train operation, staggered hours of business, short routing of cars, readjustment of routes, police co-operation in keeping tracks clear, and other aids to cheap and quick transportation, difficult to obtain under private ownership, would be immediately introduced.

One of the lessons taught us during our war experience has been the economic waste due to useless competition. The electric railway is the most economical intra-urban carrier, and under public ownership there would be no congested streets on account of jitneys, buses and other competitors. The private automobile owner might also be restricted in his now unquestioned right to use the city streets for storage purposes, if it was found that such use interfered with rapid transit on the city's street car lines.

WAGE ADJUSTMENTS WOULD BE SIMPLE

One of the most difficult problems, especially during the last year, has been the adjustment of wages. Whenever disagreements have arisen between electric railway employees and the companies, great pressure has been brought to bear on the companies by municipalities, merchants, chambers of commerce, and in some cases by the state and national governments to adjust wages so that there would be no cessation of work. The adjustment of wages has usually consisted in a horizontal increase far beyond the financial ability of the companies. Even where the authorities, readjusting the wages, have advised an increase in fare to compensate for this wage increase, it has been difficult for the companies to get the consent of the proper authorities. Contracts have been cited, legal obstacles raised and other difficulties put in the way of the companies.

Under public ownership, wages would be a simple matter to adjust. Precedents already exist in the wages of firemen and policemen. It is a well-known fact that the pay of street-car men at present is greater than that of the corresponding class of city employees. It is entirely possible that public ownership might lead to lower wages, and in a business where 50 per cent of the operating expenses consist of wages, a lower wage scale would be an important factor in keeping down the cost of operation.

One of the frequent sources of contention between electric railways and municipalities has been the constant pressure brought upon the companies to extend lines into undeveloped portions of the city and adjoining territory. The usual argument advanced is that the extension will soon build up the new territory. Railways know from long experience that any extension increases the average length of haul, and that these extensions will probably be operated for many years at a loss before the territory is sufficiently well built up to produce enough riding to pay the expenses of operation.

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*Abstract of address presented at New York conference of American Electric Railway Association, Nov. 1, 1918.

This argument, however, does not appeal to the usual local improvement association or to the eloquent real estate promoter. Under public ownership, municipalities would have this matter entirely within their own control. They could build the proposed extension and make the car rider pay for it, or they could require a subsidy of the real estate owners sufficient to pay the cost of the extension in whole or in part, or for a term of years until the extension took care of itself.

The same methods could be used in connection with the building of rapid transit lines and terminal facilities, which are too expensive to be undertaken under private ownership. It is well known that the great gain due to rapid transit lines is in increased land values, which are reflected in the tax assessments and not in revenue to the railway. In case of public ownership the burden of building extensions and rapid transit facilities could be put where it belongs.

TAXES AND FARES EASILY ADJUSTABLE

The question of taxes has always been a disputed point in connection with the operation of electric railways. Most companies feel that they are overtaxed, while often the general impression in the community is that they are not sufficiently taxed. Under public ownership the city or the state itself could adjust the tax question as it chose. It could either abolish special taxes and have lower rates of fare, or it could use the car riders to collect taxes and have higher fares.

This brings us to the question of rates of fare. It is difficult to see how electric railways, under private ownership, can ever afford to return to a 5-cent fare, even if their other burdens are lifted. But under public ownership the rate of fare could be established at 5 cents or less, and the deficit in the cost of operation made up out of the general taxes. Under an extension of this theory to the limit, street car riding could, if so desired, be made free, the cost of operation being spread over the entire community. This plan, I believe, was once proposed by Tom L. Johnson of Cleveland, who argued that inasmuch as the owner of a public office building provided free elevator service for his tenants, why should not a community provide free street car transportation for its inhabitants?

If the city chose the other alternative and used the street car system to assist in the collection of taxes, the rate of fare could be adjusted from time to time to produce the revenues required by the city, either in whole or in part. This would be an extremely simple method for the collection of municipal revenues and would reach many of the people who now pay no taxes at all.

The argument that has frequently been urged against public ownership of electric railways is the fact that the city would take over a large number of employees who might be developed into a political machine. All cities, however, now have more employees on their payrolls than they have electric railway operatives. All American cities have their own fire and police systems, employing much the same class of men as are now employed by electric railways. There has never been any great scandal over the use of firemen or policemen as a political machine. All the large American cities now operate their own water systems involving large investments and a large number of employees. The electric railway system, next to the water system, is probably the closest to the community and is vital to the health and happiness of the inhabitants of the city.

There has been a feeling that electric railway problems are so difficult and concern the welfare of each citizen so intimately, that no municipal administration could attempt to solve these problems with any prospect of re-election. We must not overlook, however, the large numbers and the powerful political influence of electric railway employees and their friends, who would no doubt rally valiantly to the aid of any administration which was fair in its treatment of them and which seriously attempted to solve present-day transportation problems, no matter how deeply the municipality might become involved in expensive experiments. We must not delude ourselves into imagining that public owners just like private owners can evade facing the demands for rapid transit, better equipment, denser service, a seat for every passenger and lower fares. Public owners must face these problems boldly, however, and in attacking them make use of their self-evident advantages.

MAKING PUBLIC OWNERSHIP EFFECTIVE

With this brief statement of the advantages of public ownership from the standpoint of the people, the next question is how may it be put into effect. This may be done:

1. By an outright purchase of the electric railway system by the public at an agreed valuation.
2. By an assumption by the public of the securities of the railway, with an agreement to pay interest on these securities.
3. By an exchange of municipal or state bonds for electric railway bonds, and an agreement on the part of the public to pay an agreed return upon the stock.
4. By any combination of these three methods.

The first method, that of direct purchase, is the most simple and the most desirable from the standpoint of both parties, and since in nearly all the states the machinery for establishing the valuation of the property already exists, it may readily be put into effect. Investors, of course, will insist that if their property is taken over as a going concern, the public must not be niggardly in its treatment of the elements which unite to form the value. These investors have worked and worried and risked all for the purpose of keeping up with a rapidly progressing art. They, more than any other agency, have been responsible for the development of the modern city, and in dealing with them the cities should take all this into account.

If the public chooses the other alternative and assumes the interest on the securities of the railway until such time as these securities may be purchased or amortized, the scheme then becomes public control and private ownership. This has been put into effect in Massachusets by action of the State Legislature, and a similar plan is now proposed in the City of Chicago. In this case investors will demand that the interest on their capital be guaranteed and that the investment be properly safeguarded until such time as the property is entirely purchased by the public.

Within the last year we have seen vast amounts of money raised within a few weeks by popular subscription, and there need be no fear that the public cannot raise the necessary money for the purchase of its electric railways. Securities issued by municipalities are popular, because investors like the tax exemption features, and these securities will be especially popular at this time because it is likely that the period of high taxation will continue for many years.

All things taken into consideration, there are great advantages in public ownership and there are no insurmountable obstacles to putting it into effect, if there is a disposition on the part of both parties to deal fairly with each other.

Taking over electric railways at this late date, the public would have the advantage of interesting itself in an art which has been well developed by private initiative. The public would reap the experience and technical knowledge which have been acquired over long years of experience and test by private investors. The public is in a much better position to take over this business at the present time than at any time heretofore. Equipment and methods have been standardized, working organizations have been selected and trained, and the whole industry can readily be taken over by the municipality or the state without any of the uncertainties which the public would encounter in developing a new business.

If we analyze the objections to public ownership of electric railways, it will develop that the only valid objection is the fact that public ownership of such enterprises is unusual and, in this country, untried. In the face of what we are seeing every day, however, this objection has no value. The unusual of to-day is fast becoming the commonplace of to-morrow. Electric railway executives should be the last to oppose public ownership. They will be accused of a selfish interest—a desire to hold on to their jobs. Our only real selfish interest is that of the investors. We should see to it either that they are protected in their investment, or that their principal is returned to them.

Is Public Aid Desirable?*

Service at cost would restore credit of many city railways, but a large number of companies will not be able to secure funds except through public aid in form of direct guarantee. Such aid is advisable from point of view of investors and patrons —Massachusetts shows the way.

By Homer Loring

President Fort Dodge, Des Moines & Southern Railroad, Boston, Mass.

FOR two years the electric railway industry has been drifting rapidly toward apparently inevitable bankruptcy. Can it be saved and restored to prosperity by such remedies as lightweight cars, higher unit fares or zone systems, or must it submit to radical treatment and accept public financial aid or public ownership?

WHAT IS PUBLIC AID? IS IT NECESSARY?

Public aid, as I am treating it, is direct financial assistance from state or municipality. It may be extended in the form of relief from taxes, rentals or other public charges; it may in certain instances be given through outright money donations, or it may consist of a guarantee of income or of securities.

After a year of united and continuous effort, increased rates of fare have been granted in many cities. We have discovered, however, that the nickel idea is so strongly imbedded in the public mind that increased fares do not always result in correspondingly increased revenue, and the conductors have become so accustomed to reporting in 5-cent units that they are said to be very absent-minded about turning in the odd cents. It can safely be said that the results from higher fares have been disappointing.

What is the answer? Will the public become reconciled to the new rates and resume normal riding? Will the prices of labor and material decline, or must the public in its own interest come to the rescue and give financial aid? The entire electric railway world is searching for the solution.

The security owners have been watching the situation, and their conclusions are plainly indicated by the stagnation in electric railway securities. They have lost confidence in the soundness of the business. The difficulty in getting fare increases has exposed an almost fatal weakness. War and money conditions have restricted betterments to a minimum during the last three years. With peace the public will insist that the accumulated deferred improvements be undertaken promptly. This will require an enormous expansion of credit. Can private credit be restored and made equal to this demand? For many electric railways in large cities service at cost without any maximum fare would so strengthen credit as to make more direct financial aid unnecessary, but it seems certain that a large number of companies cannot secure the necessary funds except through public aid in a direct guarantee.

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*Abstract of address presented at New York conference of American Electric Railway Association, Nov. 1, 1918.

IS PUBLIC AID ADVISABLE?

This phase of the subject is open to many opinions, according to local circumstances. If you consider public aid in the light of public alms, probably you will avoid it as you would the poorhouse. If, however, you believe as I do that our electric railways are really great co-operative enterprises, you will not hesitate to ask the public for financial assistance whenever conditions compel it.

Public aid is particularly vital to two interests—the investors and the public served. From the viewpoint of the former, it seems to me that public aid unquestionably is advisable. Security prices have declined most seriously, and for two years there has been no market. Furthermore, millions of additional securities must be sold at the close of the war to refund short-time loans and make improvements. If the experience in Massachusetts can be taken as a criterion, public aid which guarantees a reasonable return on the money invested would be heartily welcomed by insurance companies, banks and individual investors.

From the standpoint of the public—again with reference to Massachusetts—financial aid for the purpose of hastening improvements and bettering service would be fully warranted. The public is rapidly learning that a poor electric railway cannot give good service. The people have long desired a more direct measure of control than exists through the commissions and would avail themselves of an opportunity to secure this in exchange for financial aid. Public aid would appear to give them the benefits of ownership without some of its dangers.

WHAT WILL PUBLIC AID COST?

In Massachusetts the greatest obstacle to public aid was the fear of watered stock, although the State has had a reasonably effective anti-stock-watering law since 1894. I feel sure that the public will not guarantee dividends on inflated capital. Undoubtedly a valuation will be necessary in most cases, and fortunate is the road which can justify its entire capital stock by modern appraisal methods. If you believe, as many do, that physical valuations of electric railways for rate-making purposes are inevitable, is not the present a good time to submit to one?

The price paid for public aid will mean also the transferral of at least a majority control in management to publicly appointed trustees or commissioners. Whether control should be divided between the corporation and the public is open to discussion. In Boston it was decided that divided control would not be satisfactory. If public control will eliminate friction between electric railways and their patrons, it surely will be substantial compensation for possible disadvantages. As long as the people feel that electric railways are being operated for private gain, this friction will continue.

The best answer to the question whether public aid can be obtained is a summary of what was done by the 1918 Massachusetts Legislature. The Boston Elevated Railway act put the road on a "service-at-cost" basis, with the agreement of the State to make up any deficit caused by the payment of operating expenses, liberal depreciation, fixed charges and agreed dividends. It should be explained that the State merely acts as agent and would collect the amount of any deficit by taxation from the territory served. The arrangement is for ten years, and thereafter unless terminated by the Legislature. Here is an example of public aid with public control, and so far the results have been satisfactory. The stock of the company has advanced from 27 to 75, the bonds have increased in value 20 per cent, credit has been completely restored and the stockholders have purchased $3,000,000 of new preferred stock at par.

The Bay State Street Railway received public aid of a different kind. A "service-at-cost" basis was provided, and the State, in order to hasten the prompt rehabilitation of the road, guaranteed the principal and interest of $4,000,000 of serial notes. As in the Boston Elevated Railway case, the State is authorized to collect, through taxation from the territory served, any amounts so advanced. The railway is to be operated by public trustees, who, as in Boston, have sole authority to regulate fares. The Legislature also temporarily relieved the Bay State company of some of its taxes and construction burdens.

Another law enacted by the same Legislature permits cities and towns, for a period not exceeding two years after the close of the war, to tax themselves and give financial aid to any electric railways which might otherwise be abandoned for lack of sufficient traffic. It is believed that many lines will be saved to the people through this legislation.

No one claims that the new legislation is perfect, but all agree that it rescued from receivership the Boston Elevated Railway, involving $125,000,000, and that it will enable the Bay State Street Railway, with its 900 miles of track, to be successfully reorganized. The State has furnished a concrete example of public aid which will be copied and improved upon elsewhere.

PUBLIC EDUCATION THROUGH SECURITY HOLDERS

There is nothing mysterious about the methods used in Massachusetts. Twenty thousand electric railway stock and bond owners in Massachusetts, including 180 savings banks and many insurance companies, were organized into an association. Each member was fully informed of the true situation and then was urged to discuss it with all those whom he met. The quick action of this leaven on public opinion was truly remarkable, and a decided change was soon evident.

We patiently answered a long list of grievances which had rankled in the public mind for years—and candor compels me to admit that in many of these the public was justified. No advertising was done, but all newspaper editors were visited personally by members and urged to keep the public advised through their columns. For several months weekly articles were sent to 250 papers, the majority of which not only published them free of charge but commented favorably upon them editorially. Meetings were held throughout the State at which security-owning members explained to legislators and others the real situation. Gradually it dawned upon the public that it was suffering from the starved condition of the railways fully as much as were the investors.

So thorough was the public education, and so insistent became the public demand that the situation be remedied without delay, that the electric railway bills passed the Legislature with but slight opposition. In addition to the legislation already mentioned, numerous other electric railway bills were passed, including a general "service-at-cost" bill for the other railways of the State.

The Massachusetts legislation was completed about June 1. The Boston Elevated trustees took control on July 1. Fares soon were advanced to 7 cents without the slightest public agitation, because the people knew that the trustees needed the money to improve the service and that the increase was not for the benefit of stockholders. A still higher fare is imminent and, although all regret it, none complains. Compare this situation with Detroit's experience, and you will appreciate the psychological difference between public control and private control.

To be sure, only time will prove the efficiency of public control, and the next few years may demonstrate that it is a price far too great to pay for financial aid. I am confident, however, that as a result of public education, electric railways hereafter will be considered public necessities which must be as scrupulously managed and jealously safeguarded as the water supply.

Permit me in closing to offer some suggestions based on Massachusetts experience for roads desiring public aid: (1) Be frank with the public; lay all the cards on the table. (2) Do not try to defend inflated capital; you cannot successfully do so in these modern days. (3) If public control is demanded, insist upon a definite guarantee of interest return. (4) Give special attention to systematic public education and if possible organize your security owners for this task.

Is the Zone System the Solution?*

If practical method of collection can be devised, the zone system furnishes the solution for companies whose average ride exceeds one mile—A zone system should be scientifically planned to encourage short-haul riding—moreover, the burden of taxes on the car rider should be removed.

By Thos. Conway, Jr.
Professor of Finance
University of Pennsylvania

THE electric railway industry stands face to face with the greatest crisis in its history, not even excepting the revolution which followed the electrification of the horse-car lines. The problems of the early 90's were technical and concerned the handling of a largely augmented business by a new and untried method of propulsion. The problems of to-day are financial and concern the method of saving an industry whose entire economic basis has been undermined.

In the early days of the war, when the prevailing opinion was that the struggle would be comparatively short-lived, the remedy for the electric railway situation seemed to be a temporary increase in fares which would carry the industry over the crisis. With slight advances in labor costs and the practical certainty of a marked reduction after the war in the prices of materials, it then seemed possible to return speedily to substantially a pre-war basis. It was this situation which caused electric railway operators to move for a horizontal increase in fares to 6 cents, resulting in an increase in revenue of about ten per cent, sufficient to offset the then increased cost of operation. The 6-cent fare was easily understood by the public, and its adoption would destroy the popular belief that a nickel and a street car ride were synonymous. Everyone felt that after the war was over it would be possible to fix the rate of fare with reference to the cost of service.

But the war did not come to a speedy termination, and when the United States was forced into the struggle, the situation of the electric railway, which had been perilous, became desperate. It is apparent that there is now no likelihood of a return to pre-war operating costs. The war hastened the process of readjustment to a higher cost level, which would have occurred over a period of years in any event. Labor, which represents 60 per cent or more of the cost of operation of the average electric railway, has secured very large increases which must in the nature of things be more or less permanent. The solution, whatever it may be, should therefore not only carry the industry through the war, but furnish a sound economic basis for a period of years.

TURNING TO THE ZONE SYSTEM

Up to the present time two alternatives have been seriously considered. The first involves a horizontal increase in the unit of fare to 7 cents or more, as the case may require. The experience thus far secured is fragmentary, but it is apparent that progressive increases in fares bring about progressive reductions in travel. If a 6-cent fare increases revenue 10 per cent, a 7-cent fare will not increase revenue 20 per cent. Indeed a point is soon reached where a further increase in fare will bring about an actual decrease in revenue. Just where this point is will vary with each particular property, but it is safe to say that the practical limit of horizontal rate increases has been reached upon many properties.

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*Abstract of address presented at New York conference of American Electric Railway Association, Nov. 1, 1918.

It is this situation which has caused the thoughts of a large percentage of the industry to turn to some sort of a zone system as a possible solution. In substance, the fundamental idea of a zone system is that the rate of fare shall bear some relation to the length of ride. The application of this principle takes various forms. In Europe the passenger fare varies directly with the mileage traveled. In this country the practice has heretofore been to establish certain arbitrary zones. A person traveling in a zone pays a certain rate, and his fare increases with the number of zones through which he travels.

MANIFEST ADVANTAGES OF ZONE SYSTEM

The appeal of a zone system is due to its manifest advantages. While higher horizontal rates inevitably cause a reduction in the volume of a utility's business, a properly devised zone system would hold a larger proportion of the existing travel. A 6-, 7- or 8-cent fare discourages short-distance riding, which under proper operating conditions constitutes profitable business.

From the standpoint of the public the zone system has the great advantage of making the long rider pay a correspondingly higher fare than he who takes a short journey. The system appeals to the public, because a man pays for what he gets. It is true that the plan appears to saddle all of the extra costs upon a portion of the public rather than distribute the burden equally over the company's entire business. As long as the public regards increased costs as a war phenomenon this argument has weight, but when it is understood that the increase will be in a large measure permanent, this contention loses force.

NO PRESENT AMERICAN ZONE SYSTEM IS ENTIRELY SATISFACTORY

It has been my privilege to visit recently every city in the United States in which a zone system exists, to talk with the operating officials and to study the actual operation of each system. Judging from the standpoint of the financial results secured, I believe it can be said that no zone system now in force is entirely satisfactory. The Milwaukee zone system (in force upon the suburban lines alone) produced the revenue predicted at the time the original plan was formulated—a sum insufficient to meet present costs. In every other case the revenue producing possibilities of the system have been greatly over-estimated. In one of the most important of the recent experiments, the over-estimate amounted to as much as 40 per cent of the estimated operating revenue.

Such gross discrepancies are, in my opinion, due to incomplete information used as the basis for formulating the zone plan. In practically every case the traffic in each zone has been determined from the application of characteristic load curves based upon "on and off" checks taken on the several lines. From the curves the travel passing given points on the line is calculated. Such checks do not show how much of this travel is short-haul business which will be discouraged by the new rates of fare. Moreover, where it is possible to ride over two or three zones, each one mile in length, for the initial 5-cent fare, the short-haul rider is counted at each zone limit as paying the full fare for that zone, whereas this is not always the case. The allowances which have been made for reductions in travel have, of necessity, been little more than guesses based upon a general knowledge of the territory rather than upon a detailed record of the actual travel.

It is impossible accurately to estimate the travel or the revenue which will be produced by a zone system upon the basis of information secured from an "on and off" check, except in the rare instances where all the travel originates at one point and there is no intermediate riding. An accurate estimate can be based only upon a much more elaborate check which furnishes information as to the actual length of ride of each passenger—where he got on and off—which, when compiled, gives the statistical basis for securing a clear understanding of the probable effects of any system of fares.

The inadequate financial results which have been secured from most zone experiments have seriously embarrasssed the interested companies in the eyes of their communities. It is not a good thing to be forced continually to change the system of fares. Unfulfilled predictions by operators impair the confidence of the public concerning their knowledge of the business, and furnish a basis for commissions to take liberties with figures presented in subsequent proceedings.

Inadequate zone plans affect other companies about to inaugurate a zone system. The public reasons upon the basis of rough analogies. If the people of the city of Metropolis are hauled a certain distance for 5 cents, the rate for additional miles thereafter being 2 or 3 cents, the ordinary man argues that the same rate should prevail in his community. He does not stop to inquire whether the rate used as a basis for his comparison is furnishing sufficient revenue. It is to be hoped, therefore, that any future zone experiments will be based upon accurate fact, so that other companies will not be embarrassed by inadequate schemes, from which the unfortunate utilities are themselves endeavoring to escape.

MORE SPEEDY AND SAFER FARE COLLECTION NEEDED

The great difficulty with zone systems, as thus far employed, concerns the collection of fares. In general, two methods are employed. In either case city fares are collected in the ordinary manner, registration being effected with a fare box, overhead register or some other of the many fare collection devices now generally employed. In some cases, the fares on suburban lines are similarly collected and registered, the conductor going through the car and collecting the fares at each zone limit. Where outlying zones of one or two miles are used and the schedule is rapid, the conductor spends his entire time in successive trips through the car collecting fares. The practice is annoying to passengers and keeps the conductor off the rear platform, thereby increasing boarding and alighting accidents.

The alternative to this method is the even more cumbersome plan of using a duplex ticket. This method is employed on a number of systems, the plan being to collect the entire suburban fare as the car passes the limit of the central 5- or 6-cent area. Over-riding can be guarded against only through the use of hat checks, periodic inspections of the portion of the duplex given to the passenger or surrender of the duplex ticket as the passenger leaves the car. This method is so cumbersome that it is only practicable where there is no considerable amount of boarding and alighting at frequent intervals. It has proved impracticable in city areas.

Its greatest defect concerns the possibilities of stealing on the part of conductors. Some idea of the extent of such losses can be secured from the experience of one of the most important companies which have tried a zone system. The news of the arrest of a number of conductors was followed by an increase of 10 per cent in passenger revenues, beginning on the succeeding day. No amount of inspection, however, appears to prevent the misappropriation of fares where travel is heavy and haste in collection is necessary.

The application of such collection methods to lines located wholly or in large part in thickly built-up city territory is impossible. The Rhode Island Company and the Bay State Street Railway have recently decided to go from a system where rates of 2, 3, 5 or 6 cents per zone prevailed to a basis of either 5 or 10 cents per zone. A system with 5-cent zones is no different from that which has prevailed for many years in this country.

The only other method of fare collection thus far tried under strictly urban conditions is the plan employed in Pittsburgh. As the Pittsburgh Railways has pointed out, this is not a zone system but two flat-rate systems, one superimposed upon the other. The fare within a prescribed area, including the center of the city, is 5 cents. Any one traveling from the center of the city to a point beyond the limits of this central area pays 7 cents, while the same rate of fare is charged for travel between any two points situated within this outside ring. From the standpoint of fare collections this system is simple. It, however, has the same disadvantages inherent in the high unit fare, because it discourages short riding in the outer zone in which a large proportion of the population is situated.

After careful study, I am convinced that the successful application of a zone system in thickly built-up city areas is predicated upon the development of a more speedy and safer method of fare collection. The successful system of fare collection must be one in which the opportunity for the passenger to beat the conductor or for the conductor to misappropriate the fare is reduced to a minimum. Where fares of varying units are collected, it is out of the question to register them serially upon one register, even though a fare box or some other pre-payment device is employed.

One of the most prominent electric railway operators recently said to me that the industry would be saved if the men in it had brains enough to work out their own salvation. His conclusion is certainly true concerning the zone system. The problem of the moment, in so far as the zone system is concerned, is to devise a method of collection which will meet the practical conditions prevailing in all of our large cities. If a practical method of collection can be devised the zone system, in my opinion, furnishes the solution for companies whose average ride exceeds a mile in length. The possibilities of a zone system are now the subject of serious study and investigation by some of the largest companies in the country, and it is to be hoped that the solution will be shortly hit upon.

A zone system should encourage short riding. The long rider should be made to pay an adequate fare for the journey which he takes, and the cost of furnishing the service which he uses. Business should be encouraged rather than discouraged. The automobile, the improved highway and the jitney have taken enough of the business of the electric railway. More travel rather than less should be the goal.

Even with a satisfactory system of fare collection at hand I doubt whether it would be possible to work out a zone system of fares which would meet the financial necessities of many properties. I have recently seen a number of properties whose future seems hopeless. Sufficient travel can not be secured at rates of fare which will produce adequate revenues to defray the present high cost of operation. Indeed the extremity of the electric railroad industry is so great that every opportunity should be seized upon to convince the public that the function of the railway is to provide transportation rather than serve as a medium of reducing general tax bills.

In the days when the 5-cent fare ruled supreme, municipalities and states alike levied taxes and burdens of one kind or another upon the electric railway, upon the theory that whatever they got was at the expense of the utility owners rather than the car rider. To-day increased expenses must be immediately reflected in increased fares. There is no reason why the average car rider should pay higher fares in order that streets be maintained for those who own motor trucks and pleasure automobiles. Franchise taxes levied upon the gross receipts of companies, payments for snow removal, street sprinkling and the like, will from this time forth require perceptible additions to the rate of fare.

It should be pointed out to the riding public that they are the ones who pay electric railway taxes, through higher fares. This is true whether a company operates under a sliding-scale fare, the "service at cost law" in Massachusetts or the strict control of a public utility commission, as in most of our states. The utility's profits are in all cases limited to the amount necessary to induce capital to enter the business. When earnings exceed this amount rates are reduced, and when they fall below this requirement, rates should be immediately increased.

It is gradualy beginning to dawn upon the people of this country that the days of profiteering in electric railways ended some years ago, and that if the electric railway is to survive it must be helped rather than hindered, and must be allowed to charge a rate of fare which is sufficient to maintain its solvency and to permit it to continue to serve the public. That the cost of the service, by whomsoever provided, must be met, goes without saying. The next few months will be the most critical in the history of the industry. Its entire future hangs in the balance. It can not long continue upon the present unsound economic basis.

No Panacea for All Troubles*

A controlling reason for general trial of higher unit fare was its less disturbance of existing social conditions—adoption of zone system must be approached as a civic and social problem—British transportation differs from ours in origin and history.

By L. S. Storrs
President The Connecticut Company
New Haven, Conn.

WE HAVE DISCOVERED during the last year that there is no single panacea which will cure all of our troubles. Even the most enthusiastic advocate of any particular remedy is compelled to admit its inadequacy in many instances. Here and there methods have been applied which for a particular property or even a small group of properties seem, at least for the moment, to afford some substantial measure of relief, but which when given wider application fail of results. As long as the utility we represent is controlled and administered by corporation interests alone, no single plan will eliminate its financial difficulty.

The first question that presents itself is as to whether the maximum effort has been made to produce transportation at the lowest possible cost. It may be safely said that not only have the various methods of bringing about a material reduction in operating costs been widely advertised, but the operating manager who has not made serious efforts to apply each of these suggestion to his own property is the exception.

Upon failure in the effort to secure a substantial reduction in the cost of operation, the only thing left is to increase revenues. Toward that end various changes in the rates of fare have been suggested and many of them tried, but as yet with no large measure of success. The question of fares is not solely a transportation problem, nor is transportation its most important phase. It is first a civic and social problem, and unless approached from that angle with the active co-operation of all the interests involved (which includes, of course, the interest of the community as a whole, its industrial needs, its civic requirements and the financial necessities of the utility) no real solution is to be found.

We may well confine our considerations to city properties since changes in rate of fare upon rural lines creates materially less disturbance. The method of fare collection by fixed zones is merely a method of getting the money and is in effect a tariff based on distance, modified, of course, by density of population. It is not vital, therefore, to the ultimate solution of the problem, whether suburban fares be collected upon a mileage basis or through a unit rate, nor would any change in the method materially disturb rural life.

The full development of urban electric railways occurred during the years when the great American cities were attaining their growth. The fundamental basis of their development was the theory that each individual might ride upon the street cars between any two points in the city for an identical and single fare. This resulted in the spreading of the city area and the building of workers' homes in widely separated districts. Moreover, the industries have not been confined within narrow limits but are found distributed throughout the cities, because operatives could be drawn from any portion. Our industrial class, therefore, is exceedingly mobile, moving freely from industry to industry as its wishes impel, and all because there has never been any fare limit barrier to impede such freedom.

The American city has profited by this system in so far as it has prevented those densely congested tenement districts so common in European centers of population. The individual has in consequence developed into a higher grade of citizen, for the opportunity afforded him to own and occupy a separate home has induced a spirit of thrift and saving, and his children are children of homes rather than of tenements, with a correspondingly higher standard of citizenship and morality. At the same time, this development has tended toward a centralization of civic activities and has caused the building up of shopping districts within relatively small areas at the center of the cities.

CHANGE IN URBAN FARE SYSTEM IS A CIVIC AND SOCIAL PROBLEM

A change in the system of fare collection for urban roads, by which the charge would bear a relation to the service rendered, must be approached as a civic and social problem. The establishment of a central fare area within which would be located the civic activities and a large number of the city's industries, would tend to the gradual drawing in of the residences of the industrial operatives and all others in whose living costs street car fares play a considerable part.

The exact location of the fare limits must be selected with the greatest care so that the collection of the extra fare would work no undue hardships. At the same time these limits must be so placed that the amount of revenue received would meet the needs.

A natural result of the establishment of fare areas within cities could be the springing up of trade centers just within the dividing line of fare limits, so that a change in the shopping habits of a large part of the community would be caused to the detriment of the central city district. This would inevitably result in such community activity as would tend to subordinate the civic spirit of the city as a whole to that of the smaller and more intimate centers.

A zone system may eliminate inequalities and provide a fairer method for charging for our product, but to be of avail in the present emergency it must also produce the same amount of new revenue as will a higher unit fare. It is well, therefore, to bear in mind that the higher unit will spread the additional cost of service among a very much larger number of persons than will a zone system, and so will not, we may argue, have the same effect in discouraging riding.

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*Abstract of address presented at New York conference of American Electric Railway Association, Nov. 1, 1918.

For example, take the case of a railway which to pay its expenses must have an increase of $100,000 in yearly revenue. It carries 10,000,000 passengers a year. Assume that 2,000,000 of these 10,000,000 would ride into the outside zone if two zones were established. To assess them with the extra revenue needed would require that the increase in their fare must be five times the increase necessary if it were spread over the entire body of riders, as it would be through a simple raise in the unit. Whether this larger increase affecting a smaller number of persons will cause a greater or less disturbance in riding habit is a question for most careful investigation. It again emphasizes the civic phase of our problem.

EUROPEAN EXPERIENCE NOT A GUIDE

The system of fare collection in vogue in European cities is often cited to show the propriety of establishing a zone system in this country. Neither the reasons governing the establishment of the transportation system nor its subsequent history are similar in the two lands. European cities had reached their growth, the habits of their population had become fixed and but little change in industrial life and activity were probable when the electric railway was first projected. In this country, on the other hand, by far the greatest growth and the greatest development of industrial activity has come to our cities since electric railways appeared.

A few figures may in this connection be of interest. It has been pointed out that if the electric railway system of Columbus, Ohio, had been developed in no greater degree than those of Glasgow, Scotland, Columbus would have attained but 15 per cent of its present area, all of the present population being forced into the territory thus restricted. Bridgeport, Conn., would have less than one quarter of its present electric railway trackage if it had no better facilities than in Aberdeen, Scotland.

As showing the difference in the facilities afforded to American and European cities by electric railways, the following tabulation is of interest:

Item	Great Britain	New England
Population	965,000	1,085,000
Miles of track	156	695
Population per mile of track	6,187	1,560
Revenue per mile of track	$16,767	$13,314

Perhaps the most significant item of this comparison, showing as it does the absolute lack of accommodation for that portion of the British communities living in the thinly settled territory, are the figures which give the population per mile of track. In England it is 6187; in New England, 1560. This tabulation presents the whole picture of British tramway conditions—slender accommodations, dense tenement congestion, slow service, low fares and high earnings per mile of track.

It is safe to say that the entire urban population of the United States is served by electric railways. The most recent census classifies 41,000,000 of the country's inhabitants as city dwellers. During the last two years increases in rates of fare have been made upon properties serving approximately 17,000,000 of these residents, and practically all urban companies are seeking increases where they have not been granted, and further increases in many cases where fares have already been raised.

In all but a few instances, what has been asked for is an advance in the unit fare. While it may be that this is the simplest way to effect an increase, it is also true that a controlling reason for its selection is that it causes less disturbance of existing social conditions than other methods.

For the purpose of determining the adequacy of this effort to increase revenues, it is unfortunate that not more fare increases were made effective prior to two years ago. The trend of decreasing revenues in the period before the present crisis was marked enough to show the need of some action, but the public as a whole and the regulatory bodies in particular were not convinced of it. It has taken the practical insolvency of the industry to prove its case.

The conditions with which we are met at this time are so unusual that no prediction can be made with any degree of certainty as to the effect upon revenues of any method of fare increase. The call to the nation to "win the war" has met with such a loyal response that old civic and social customs have been at least suspended, while estimates of the ultimate results of increased fares must be predicated upon the undisturbed continuance of community habits.

NON-ESSENTIAL TRAVEL HAS BEEN REDUCED

The taking out of social life of the millions of young men for the active service of the government, and the wish to "do their bit" on the part of the young women, have eradicated the desire to continue those purely social activities upon which the so-called "pleasure riding" habit was based. The financial necessities of the government have developed a spirit of thrift and saving, heretofore unusual in this country, and unnecessary expenditures have been eliminated from the average budget, thus automatically reducing non-essential travel.

The great activity in all industry and the drawing into industrial pursuits of a large element from the drifting population to fill vacancies caused by the draft have completely changed the riding characteristics of our cities. While gross income may continue at about the same level, the balance has been maintained by large increases in the requirements for transportation during those periods of the day when industrial operatives are moving to and from their work, thus requiring large increases in transportaiton units and greatly increased costs. This has, of course, resulted in heavy decreases in riding during normal periods of the day, without the ability to curtail service correspondingly.

I fear that we are at the parting of the ways. Old theories and so-called fundamental facts are but based upon experience of actual conditions as presented in the development of the industry.

Have we not reached the time when the slate must be cleaned and entirely new bases established upon which to develop the future of our utility, both as a medium for the continued progress of the communities and as an industry that will return to the investor sufficient reward to warrant the continued supply of fresh funds necessary to its continued service?

Thos. N. McCarter
Chairman
A. E. R. A. War Board

War Board Presents First Annual Report*

Report to American Association Executive Committee includes a comprehensive summary of an aggressive and effective year's work. The board has acted as intermediary between the governmental departments and the industry and has kept each informed of the other's requirements.

P. H. Gadsden
Resident Member
at Washington

THE war board has faithfully endeavored to carry out its object, namely, "To co-ordinate the facilities of the electric railways of the country and to place them at the command of the government and of industry. To represent the electric railways in the important activities of the governmental departments and the various boards and committees appointed to conduct the nation's affairs during the war."

The first meeting of the war board was held in Washington on Nov. 9, 1917, and arrangements were completed for financing the expenses of the board, the appointment of the Washington representative, the securing of office space, etc. Announcement has heretofore been made of the personnel of the board, its organization and the names of those assigned to special branches of the work.

Meetings of the board have been held at frequent intervals, and careful consideration has been given to the serious problems confronting the industry and the other miscellaneous matters having to do with the carrying out of the object of the board.

SYNOPSIS OF REPORT

The following are some of the more important subjects which will be discussed in this report:

I. *Finance:* (a) Report of the Comptroller. (b) Letter of the Secretary of the Treasury. (c) Letter of the President to the Secretary. (d) War finance bill. (e) Capital Issues Committee. (f) Financial problems of the electric railways. (g) Increased passenger and freight rates. (h) Increased compensation for carrying United States mail.

II. *Fuel Conservation and Supply:* (a) Saving of coal; reference to Bulletins Nos. 1 and 6 on saving of coal; trainmen's pledges, staggering of hours, posters, etc. (b) Electric railway coal supply. (c) Skip stop

III. *Traffic Department:* (a) Work of traffic bureau. (b) Movement of draft troops. (c) Jitney and motor-truck competition.

IV. *Legislation:* (a) Railroad control bill. (b) War revenue bill. (c) General.

V. *Association Publicity:* (a) Bulletins. (b) General.

VI. *Labor:* (a) National War Labor Board.

VII. *Standard Car.*

VIII. *One-man Car.*

IX. *Operation of the Draft.*

X. *Priorities.*

XI. *Co-operation with Governmental Departments.*

XII. *Miscellaneous.*

XIII. *Financial Statement by Secretary.*

XIV. *Conclusions.*

I. Financial

The war board, after a survey of the vital needs of the industry, realized the seriousness of the financial situation of many of the utilities as a result of the effect of the war. The war has made it practically impossible for the utilities to secure funds to meet maturing obligations, of which it was found from investigation there were approximately $225,000,000 falling due during the year 1918.

This presents not only a question of importance to the utilities but a menace to the stability of the financial structure of the entire country, on account of these securities being held by insurance companies, trust companies and banks. Its solution was essential to the government's successful prosecution of the war, as the welfare of the utilities and their ability to meet the demands made upon them is vital in the production of war materials, equipment, shipping, transportation of employees, etc.

Messrs. McCarter and Gadsden were appointed by the board to act with a committee appointed by the gas and electric associations to develop a plan and assist the government in providing means of relief for this situation. This committee, after much investigation, analysis and careful study, submitted a report to the effect that if the credit of the public utilities is to be preserved there are four phases of the situation be taken care of, as stated on the following page.

This analysis of the situation was presented by this committee to the Comptroller of the Currency and was supported by compilations of data and information.

REPORT OF THE COMPTROLLER

The Comptroller, in his report to Congress, called attention to the conditions confronting public utilities in a concise and comprehensive statement. A copy of this statement was issued by the War Board (see

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*Abstract of address presented at New York conference of American Electric Railway Association. Nov. 1, 1918.

Bulletin No. 8, entitled "The Comptroller of the Currency Urges Authorities and Public to Assist in the Maintenance of Public Utility Credit").

Through the efforts of the war board wide publicity was given this statement.

CORRESPONDENCE BETWEEN THE PRESIDENT AND THE SECRETARY OF THE TREASURY

As a result of this analysis of the situation by the Comptroller, supplemented by additional information and representations to the Treasury Department by the committee, Hon. William G. McAdoo, Secretary of the Treasury, presented the situation in a letter to the President, dated Feb. 15, 1918. This letter set forth the fact that continued and effective service on the part of the public utilities was a most essential and fundamental part of the war program, and outlined the difficulties which the utilities were having in adjusting their rates to meet the increased cost of doing business under war conditions.

Under date of Feb. 19, 1918, the President replied to the Secretary, expressing the nation's interest in the proper solution of this problem. (A copy of the letter from the Secretary to the President and the President's reply were mailed to all electric railways of the country as inclosures with Bulletin No. 11 of the war board, requesting that this correspondence as set out in Joint Bulletin No. 1 be distributed among officers, employees and patrons of the company, as this is the first time public recognition has been given by federal authorities to the public utilities' greatest problem, and it was of such far-reaching importance to the industry that they should make every effort to bring it to general attention).

THE WAR FINANCE CORPORATION

The needs of the public utility industry, the largest single industry in the country whose services in the aggregate are essential to the successful prosecution of the war, were presented to the Comptroller of the Currency and the Secretary of the Treasury by P. H. Gadsden, prior to the original drafting of the war finance bill by the Treasury Department. That measure was intended to facilitate the operations of public utilities, among other industries, by affording them necessary financial assistance. This was so understood when the measure was before the House of Representatives and the Senate and their respective committees. Mr. Gadsden, representing the war board, appeared before the committees, for the purpose of explaining the difficulties confronting the public utility industry, particularly the electric railways. It was hoped and expected that the War Finance Corporation, when organized, would be able to make direct loans to public utilities under Sec. 9 of the act. A few minor changes in the measure were made in the House before the bill became a law, and those changes were responsible for the interpretation placed upon the act by the board of the War Finance Corporation, pursuant to which direct loans to public utilities cannot be made, except in exceptional cases. The statement of the board of the War Finance Corporation on this point is as follows:

> In view of the applications for direct advances which have been filed with the War Finance Corporation, the directors wish to point out that an erroneous impression seems to exist in certain quarters that the corporation is intended primarily to make direct advances to borrowers under the "exceptional cases" clause of the act. This, however, is not the purpose of the act, which was designed primarily to enable credit to be extended by the War Finance Corporation through the banks of the country to "war industries," that is, to those industries whose operations are necessary or contributory to the war. In other words, the resources of the War Finance Corporation are not intended to be loaned directly to war industries unless in an exceptional case, but only indirectly through the banks.

CAPITAL ISSUES COMMITTEE

The function of the Capital Issues Committee is to consider and pass upon the issue and sale of securities, corporate, municipal or state, and to discourage and refuse its sanction to such issues as are not for war or essential purposes.

The war board had a hearing, lasting practically an entire day, before the Capital Issues Committee. (There were also present several members of the Federal Reserve Board.) At this meeting the committee thought it advisable to invite representatives to speak for several of the larger interests owning and operating utilities. All of those present representing utilities unanimously agreed to eliminate all expense for non-essential improvements, and took the position that the Capital Issues Committee could and should assist them in cases where utilities might be called upon by municipal or state authorities to make expenditures for improvements (including some franchise requirements) which are not necessary to the successful prosecution of the war.

Four Essential Conditions

1. Rates must be increased sufficiently to absorb the increased costs of producing the service.

2. The utilities must be relieved during the period of the war of all non-essential and unproductive requirements, such as paving, undergrounding of wires, duplication and unnecessary extension of service.

3. Some way must be found to enable the utilities to take care of obligations maturing while the war lasts.

4. Assistance must be provided to enable the companies to finance the unavoidable extensions of service made necessary by the nation's war program.

It was also suggested that the Capital Issues Committee might be helpful through issuing some notice of its recommendations to municipal authorities, state commissioners, etc., and as a result of the suggestions made by the board at this meeting the Capital Issues Committee arranged to have a committee representing the National Association of State Public Utilities & Railroad Commissioners appear before it on Feb. 28. This meeting was called for the purpose of bringing to the attention of the special war committee of the National Association of Public Utilities & Railroad Commissioners the need of postponing all public improvement work not necessary to the prosecution of the war and also to the urgent need of increased rates for public utilities.

On Aug. 22, 1918, the Capital Issues Committee published an appeal addressed to public utilities commissions and municipal officials to make sacrifices because of the shortage of men, material and money, and particularly enjoined them that existing facilities must be made to serve in place of new ones regardless of temporary inconvenience and discomfort, and that these conditions apply with marked force to public utilities.

On Oct. 1, 1918, the Capital Issues Committee wrote to the War Industries Board, calling attention to its letter of Aug. 22, and Mr. Baruch, chairman of the War Industries Board, replied as follows:

> WAR INDUSTRIES BOARD
> WASHINGTON, D. C., Oct. 3, 1918.
>
> *Hon. Charles S. Hamlin,*
> *Chairman, Capital Issues Committee,*
> *Washington, D. C.*
>
> Dear Sir:
>
> Referring to your letter of Oct. 1, in regard to public utility requirements, may I bring to your attention the desirability of holding down all expenditures to what is absolutely needed, not what is wanted? In view of the demands for materials for war purposes, the War Industries Board would not and cannot permit the use of materials unless the need for war purposes can be clearly demonstrated. In many instances, the demand would be just and fair were we not confronted with this unusual demand for materials. This demand is insistent and persistent, and it will be so for some time to come. Only absolute necessity must be considered and not convenience.
>
> May I ask for your co-operation?
>
> Very truly yours,
> BERNARD M. BARUCH.

The Capital Issues Committee has been effectively and consistently helpful in delaying or preventing expenditures save those absolutely necessary for war purposes or for safeguarding public health or public necessities.

FINANCIAL PROBLEMS OF THE ELECTRIC RAILWAYS

The spring of this year found most of the electric railways breaking down under the excessive operating costs, due to the increased cost of all materials and the advance in wages made necessary by reason of the great demand for labor in war industries at much higher rates than those paid by electric railways.

These high operating costs were still further increased by the decisions of the National War Labor Board in the cases of some twenty-two roads which had referred the demands of their employees for increased wages to that board for adjustment. The result of these decisions brought forth demands for increases on the part of employees of other electric roads and established new wage standards for the industry throughout the country.

Some few roads have been able to obtain assistance from the government through the War Finance Corporation, but these cases have been exceptions and this means of relief cannot be looked upon as meeting the situation except to a very slight degree. Some relief has been extended to electric railways by the Housing Bureau and the Shipping Board, and in a few cases by the Navy and the War Departments, but only in cases where such relief was necessary in order to serve the war needs of the country and to render better transportation facilities to important plants engaged in the construction of ships or other war materials. Some advances have also been made by governmental departments for extensions and new equipment, but in every instance such relief has been granted "as a necessary war measure."

A considerable amount of data has been gathered by the board, indicative of the plight of the electric railways, the latest report of the board being the statement set forth in Bulletin No. 36. These figures have been used to advantage in presenting the true situation of the industry at hearings before committees of Congress, in connection with the new revenue bill now being enacted, before the National War Labor Board, before the War Finance Corporation, before the Capital Issues Committee, before the War Industries Board and before the District Commission at Washington in the hearing of the local companies for increased fares. Wide publicity has been given these figures, and as stated above they were issued in bulletin form and sent out to all electric railroads in the country.

INCREASED PASSENGER AND FREIGHT RATES

The board has put forth every effort to assist electric railways to secure increases in their rates of fare and, while it is true that some few have received permission from the state and local authorities to increase their rates, others have been less fortunate.

The courts have ruled in some states that the commissions did not have the power to increase rates where franchises specified a definite fare. Other commissions have been confronted with statutory limitations, and others have declined for political and other reasons. This condition of affairs has been responsible for many companies being unable to meet their fixed charges. Some are in default in their interest payments, and in some cases receiverships have resulted, while some few have found it necessary to dispose of their property as junk.

This serious state of affairs has been called to the attention of the President and the board has recommended that the President appoint an administrator or a commission to meet the situation. This plan of the board has met with the approval and indorsement of the National War Labor Board and other federal officials, as well as the war board of the National Association of Railroad & Public Utility Commissioners. This administrator or board would be vested with the power to investigate conditions and fix reasonable rates—adequate to meet the new war-time conditions.

The board is now receiving replies to an inquiry it sent out for the purpose of ascertaining the effect of increased fares and expects to have in the near future full data on this subject.

Prior to the announcement by the Railroad Administration of the increases on lines under federal control, this board was consulted with the view to increasing rates on electric lines at the same time where it was possible to do so. Data were submitted showing the present rates on electric lines, and from the very beginning this board assured the officials of the Railroad Administration of the need of increased revenue and of the willingness of the electric lines to go the limit and meet their announced increases. It was agreed that the administration would assist the electric lines through an announcement to state and local authorities that electric line rates should be increased on a parity with those of the lines under federal control.

The board also urged the federal officials to increase existing commutation rates, as the electric lines were more particularly interested in these rates, and, substantiating this position with facts and figures, took the position that commutation fares should be increased at least 25 per cent on the federally controlled lines, which would enable the electric lines handling the bulk of this class of business to obtain similar increases. But the best compromise we could obtain was a 10-per cent increase, with the understanding that the matter would be gone into thoroughly by the traffic department of the federally controlled lines and a further readjustment made. This matter is still actively in hand by the board and we are working with the traffic officers of the federally controlled lines. The Railroad Administration officials later decided against issuing a general appeal to state and local authorities on behalf of the electric lines but accorded their support in some cases.

This board has been in close touch with the Interstate Commerce Commission, expediting the applications of the electric railways as much as possible, but, owing to the large number of applications filed following the increase announced by the Director General's Order No. 28, applying to lines under federal control, the fifteenth section has been overtaxed with work, the result being that a large number of these applications are still pending. The decisions rendered by the commission have been favorable, but in some cases they have not permitted increases on a parity with those in effect on federally controlled lines, and in no cases have they permitted them to exceed the rates now in effect on federally controlled lines. The commission has insisted upon each company justifying the increases sought by full data and has declined to increase rates simply because the steam lines in competition with them have increased their rates. This caused some delays and considerable expense, as many electric railway traffic men thought it only necessary to file a formal request for permission to raise rates on a parity with those put in effect on federally controlled lines by the Director General's Order No. 28 and the supplements thereto.

The board has fully informed the members of the Interstate Commerce Commission of the serious financial condition of the electric railway industry and has urged them to expedite the applications now pending before them.

Considerable publicity data have been sent out by this board, bearing on the necessity for increased rates. This information has been sent out in pamphlet and letter form. Members have been fully informed and from reports received indications are that we have been helpful in this way.

INCREASED COMPENSATION FOR CARRYING UNITED STATES MAIL

Congress passed an act which provides that the Interstate Commerce Commission shall investigate, fix and determine reasonable rates and compensation for the carrying of mail by electric railways. This act is embodied in Bulletin No. 24. The board arranged, through the courtesy of James D. Mortimer, for the services of F. W. Doolittle to represent the electric railways in the gathering of data and to appear before the examiner to be appointed by the commission to take testimony in a number of cities throughout the country. Mr. Doolittle is very familiar with this kind of work and he has already entered actively upon it, having conferred with members of the commission, members of the association's mail compensation committee and others interested. The hearings will probably commence in February or March, but there is much preliminary work in assembling data and getting in communication with the 350 electric railways interested. The prospects for a complete readjustment of the present unsatisfactory conditions prevailing are favorable.

II. Fuel Conservation and Supply

SAVING OF COAL, REFERENCE TO BULLETINS NOS. 1 AND 6 ON SAVING OF COAL, TRAINMEN'S PLEDGES, STAGGERING OF HOURS, POSTERS, ETC.

One of the first matters to which the board directed its attention was the question of saving coal. Bulletin No. 1, issued by the war board, submitted suggestions to the electric railways by which the amount of fuel used could be considerably reduced through the elimination of unnecessary service; reduction in number of stops; heating of cars by electricity and even by coal; heating of waiting rooms by electricity; effort to flatten peak through the staggering of open and closing hours of manufacturing establishments, department stores and other industries; securing of pledges from trainmen in coal saving through the saving of power, maximum coasting, etc. Bulletin No. 7, "Report on Fuel Savings in Washington," related to a study made to ascertain the actual savings as expressed in tons of coal that might be effected on typical railway properties. This report took up the matter of saving in coal by the use of the skip-stop plan, elimination of unnecessary car-miles, reduction of heat, operation of most economical power houses, staggering office hours of governmental departments, etc.

In collaboration with the United States Fuel Administration we have designed a set of patriotic posters, which have been directed especially to all electric railway employees; a special poster for car employees, to be posted in the vestibule of each car; a "fireman" poster, to be placed in all boiler rooms; an "Uncle Sam" poster, to be posted in carhouses and repair shops. In addition to these posters, pledges of trainmen were secured to save coal by (1) the proper use of the controller, (2) proper braking, (3) coasting whenever practicable, (4) by not wasting fuel or heat, and (5) by not using lights unnecessarily. As a part of this plan posters were placed in all cars to the effect that "the motorman and conductor of this car are members of the United States Fuel Administration and are pledged to save coal."

Reports indicate that these measures have been responsive and effective. The questions of car heating, heating of stations and use of lights, have been dealt with effectively, and these matters are receiving further consideration by this board and the Fuel Administration for the forthcoming winter season.

The staggering of hours has been advocated by the board and, while it has been tried out in connection with handling peak loads to shipbuilding plants in several sections and has recently been put in operation in Washington on account of the influenza epidemic, it has not been adopted as generally as it should be. The board is giving further consideration to this matter with the view of having it more generally adopted in the congested centers.

During last winter when the fuel situation was so serious, the board succeeded in obtaining relief for a number of individual companies in securing their supply of coal and in some instances obtained a modification of the zone system to the extent of affording the continuation of coal supply to some companies. In other cases this was not possible, but it was not due to the laxity of effort on the part of the board. These requests for relief were overwhelming at times. It is hoped that the situation will not be so serious the coming winter, as the companies have had opportunity to readjust their coal supply contracts and have presumably laid in supplies.

THE SKIP-STOP SYSTEM

The board has also worked in close harmony with the United States Fuel Administration in connection with the adoption of the skip-stop system for operation, and it can be stated at this time that our efforts have brought about the establishment of the skip-stop system of operation in practically all cities in the United States with a population in excess of 25,000.

This plan of fuel conservation required an extensive educational campaign and a considerable expense in order to convince the public, the municipalities and even some electric railway officials that it is a desirable and effective means of bringing about economies through the saving in coal. It is doubtful now if there is one company that would want to return to the old plan of operation, and the public, according to all reports, seems well satisfied as this system has resulted in reducing the running time of cars approximately 10 per cent.

The elimination of unnecessary service has been urged and the board is now making a special effort along this line, with the indorsement of the United States Fuel Administration.

III. Traffic Department

WORK OF THE TRAFFIC BUREAU

A traffic bureau was organized, embracing representative traffic officials throughout the country, as set forth in Bulletin No. 4. This organization has been useful in assembling data for the board in dealing with the United States Railroad Administration in connection with rate increases and in obtaining traffic for certain lines that were in a position to handle increased freight and passenger business.

The board has been working with the various departments of the government having to do with the transportation division of the Quartermaster and Ordnance Departments.

The board found in Washington a well-organized department in transportation division of the Quartermaster's Department and practically all of the employees for this department have been furnished from the traffic organizations of the steam railroad lines.

MOVEMENT OF DRAFT TROOPS

An extensive effort was made to obtain for certain electric lines, operating in six states, a portion of the draft troop movements, but strong opposition developed from steam railroad officials in the districts involved after the board had convinced the Provost-Marshal-General's department and the Manager of Troop Movements for the Railroad Administration that the electric lines could perform the service satisfactorily. Schedules in detail were compiled by the traffic officials of the electric lines interested; conferences were held and an understanding was reached, which, however, was strongly opposed by the regional representatives of the Railroad Administration, who held that the steam lines were amply equipped to handle the movements and, in fact, offered every conceivable objection they could to the plan. The matter was then taken up again with the Traffic Director's office, but, in view of the statements made by the regional traffic men, they were not inclined to divert traffic from the steam lines that could be handled by them.

It developed that a number of electric lines, particularly in California, were participating in draft troop movements. It also developed that the only lines that cared to attempt to handle these movements were confined to those operating in six states, others claiming that they were handling all the business their present equipment and terminal facilities permitted.

JITNEY AND MOTOR-TRUCK COMPETITION

The problems of jitney and motor-truck competition have been given constant attention. The board has had the matter up with the Provost-Marshal-General, the Fuel Administration, the Highways Transport Committee of the Council of National Defense, the Department of Labor, and the War Industries Board, all with the view of showing the destructive and unnecessary duplication of service.

The board has about completed a statement showing the number of jitneys operating in competition with electric railways throughout the country; the number employed in the business; the estimated earnings; and the amount of gasoline consumed. This report is to be made to Dr. H. A. Garfield, Federal Fuel Administrator, at his request. Copies will also be submitted to the Provost-Marshal-General and to the chairman of the War Industries Board, with the view to showing the waste of man power, fuel and materials. The data received to date indicate that there has been a considerable falling off in the number of jitneys operating throughout the country, there being fewer than 5000, and possibly only 25 per cent of the electric railways are affected by this form of competition. This is due to the increased demands for labor at high wages, draft requirements, increases in cost of operation and local regulatory measures, some of which have prohibited jitneys from operating at all in certain cities.

In the case of the motor truck there is a different situation. The Highways Transport Committee of the Council of National Defense has been waging an active campaign in Washington creating favorable sentiment in favor of motor trucks. It has been active in the introduction of bills providing for appropriations for improved roads to be classified as "military roads," and, in general, is working in the interest of the motor truck. It maintains an organization three times the size of that maintained by the war board.

We have made some progress through co-operation with this Highways Transport Committee, with the result that it has gone on record, in a letter, to all of its state and regional representatives against the jitney where they compete with electric lines. Copies of this and other similar communications and replies received have been submitted to this board. It has also recommended against motor trucks competing with electric railways in freight business, taking the position that they should be supplemental to the electric railway service. The board is co-operating with this organization with the view to bringing about a better understanding and in an attempt to establish a relative functioning of electric railway and motor-truck service.

IV. Legislation

RAILROAD CONTROL BILL

The railroad control bill, as set forth in Bulletin No. 13, at one time during its passage carried an amendment including electric railways but, after a number of the largest systems had expressed themselves as opposing government control of electric railways, the board succeeded in having them eliminated. It was known at the time that the Administration opposed the inclusion of the electric railways in the bill and they were involved in the measure through the efforts of the Short Line Association, which was endeavoring to force federal control of the so-called "short-line steam roads" throughout the country. The association of steam lines was also responsible for involving certain classes of interurban electric lines in an amendment to a resolution introduced and passed to extend the relinquishment of certain steam roads then under control until Jan. 1 next. The short lines are still endeavoring to reach an understanding with the Railroad Administration as to rates, exchange of equipment, etc., and the latest information is that they have reached an agreement.

Several interurban electric railroads, twelve more or less, were retained under control. These roads were principally carriers of freight, and performed important service in connection with lines that were taken over by the government. Two of these lines were subsequently relinquished at the request of their owners.

The President reserved the right to take over all electric railways in his proclamation taking over certain steam lines, and subsequently laws were enacted empowering the President or his designated agents to take over electric railways serving shipyard and plant employees and also in connection with the housing program. (Bulletins Nos. 18 and 20.)

THE WAR REVENUE BILL

Mr. Gadsden has also appeared on behalf of the board before the House and Senate committees in connection with the war revenue bill, presenting the needs of the industry and calling attention to the inconsistencies and penalizing provisions in the bill. In his statement before the Senate finance committee on Sept. 14, 1918, Mr. Gadsden argued for the segregation of public utilities into a special class for the purpose of taxation, on the ground that they are segregated into a special class for every other purpose, especially in the control of their revenues by state and municipal authorities. He argued also for the retention of the 1917 normal tax of 6 per cent instead of the proposed increased tax of 12 per cent or 18 per cent, pointing out that the imposition of the 18 per cent tax on that portion of the net revenue not distributed by way of dividends and 12 per cent on that portion distributed in dividends presented a distinct injustice to the industry, which has, since the outbreak of the war, been obliged to suspend dividend payments in order to provide current funds for necessary additions and extensions required by law and by the emergency of war, such suspension of dividends being necessary because public utilities are unable to borrow money to finance their extensions and additions. Mr. Gadsden also argued for the acceptance of consolidated returns from public utilities operating a number of plants or a number of properties. The present bill has been modified in a number of respects so as to cover some of the points presented by Mr. Gadsden.

GENERAL

Congress passed an act in which it defined electric railways as "war utilities." This is embodied in Bulletin No. 17. Congress also, by an amendment added to the first deficiency appropriation bill, which has passed both houses and is now before the President for approval, has broadened the powers of the Shipping Board with respect to electric railways, by adding the words "or to extend, improve or increase or cause to be extended, improved, or increased." Also a new subdivision reading: "g—in pursuance of the foregoing powers, or any of them, to make advance payments or loans of such amounts and upon such terms as the President may deem necessary and proper."

There has been little legislation, other than the above, involving the electric railways, although it has been necessary for the board to be constantly vigilant and in close touch with the proceedings of Congress.

V. Association Publicity

BULLETINS

The board has endeavored to keep every electric railway official, as well as state commissions, governmental departments and manufacturing industries (using the mailing list of the American Electric Railway Association, augmented by a special war board list) informed through the issuance of bulletins containing important information of events in the nation's capital, but it has made no mention of the activities of the board in these bulletins.

GENERAL

The board has been able to secure publicity that has been helpful through the Associated Press, local Washington papers, etc. A. B. Cole, of the Westinghouse Electric & Manufacturing Company, has been contributing some of his time to the board, writing articles on the electric railway situation in general. These articles have been published in pamphlets and in various magazines. Others have assisted in this work. The *Aera* and ELECTRIC RAILWAY JOURNAL have carried much space devoted to the activities of the board.

VI. Labor

NATIONAL WAR LABOR BOARD

The President, by proclamation dated April 8, 1918, created the National War Labor Board. At that time there was much unrest in the labor field. This board was appealed to by many of its company members and companies that were non-members of the association, and much needful information was furnished them in the preparation of their cases before the National War Labor Board. The difficulties of the electric railway industry were fully set forth in statements made by Messrs. Gadsden and McCarter before a section of the War Labor Board, Messrs. Taft and Walsh, joint chairmen, presiding. These statements were later printed in pamphlet form and due publicity was given to them.

The joint chairmen ruled that, while appreciating the difficulties confronting the electric railways, they were not empowered to increase rates or give other financial assistance, but that they would recommend to the President that some relief was imperative, which they did, and that their powers were limited to the fixing of a reasonable and living wage to employees. The industry was therefore confronted with the dilemma of having operating expenses greatly increased through the decisions of a federal labor board and no source open to obtain increased revenue to meet these increases except through the tedious process of obtaining permission through local and state authorities. This condition exists at the present time.

The National War Labor Board handed down twenty-two decisions in electric railway cases on Aug. 1. These decisions were startling, and established a wage scale throughout the country ranging from 35 per cent to 75 per cent increase in existing rates, the result being that a number of companies have been forced to meet the rates established or submit their difficulties to the labor board. The names of the companies involved in the twenty-two decisions and extracts containing the rates and important points brought out are contained in Bulletin No. 26. Complete copies of these decisions have been largely distributed to those requesting them.

A special meeting of the war board was held on Aug. 6 and, after going over the situation, a telegram was sent to the President, calling his attention to the gravity of the situation and urging him to give favorable consideration to the appointment of an electric railway administrator or board, as recommended by the National War Labor Board and by the National Association of Railroad & Public Utility Commissioners. The only reply received was a formal acknowledgment and a statement that the matter was being given consideration by the President.

In addition to the foregoing the National War Labor Board has just announced decisions in twelve cases, the Boston and Providence cases several weeks ago and the remaining ten on Oct. 23. The important features of these decisions are set forth in Bulletin No. 38.

It has been estimated by the board that by applying the increases announced in the twenty-two decisions of Aug. 1 to all of the electric railways in the country, it will increase operating expenses between $100,000,000 and $125,000,000 annually for the industry as a whole. It would seem almost impossible to obtain sufficient increases in rates to offset these figures and this is the situation the industry is confronted with to-day.

The Birmingham Railway, Light & Power case was an exceptional one, and merits specific mention. The company contended that the National War Labor Board did not have jurisdiction since the employees had not taken advantage of the arbitration clause in their agreement with the company. Messrs. Taft and Walsh sustained the contention of the company and declined jurisdiction. This was fully covered in Bulletin No. 33.

In the New Orleans case, organized labor in that city opposed the company receiving an increase in fare. They were warned by Messrs. Taft and Walsh that if they persisted in opposing the company's efforts to obtain increased fares the National War Labor Board would suspend the award. Notwithstanding this warning, which was sent in a letter addressed to the acting president of the Federation of Labor, the local organizations in New Orleans held a mass meeting, passed resolutions opposing the increase, and, after the Council had passed the ordinance enabling the company to proceed in establishing the increase in fares, the labor organizations served notice on the city authorities that they would oppose the validity of the ordinance in the courts. The Labor Board's original award brought about an increase of 70 per cent in wages for the New Orleans company.

In all matters pertaining to the National War Labor Board the war board has extended every assistance possible to the companies involved and to those that were considering the submission of their difficulties.

VII. Standard Car

Otto M. Eidlitz, director of the Bureau of Housing, Department of Labor, in a communication to the board, suggested that the board appoint a committee to devise plans for a standard car, the Housing Corporation being in the market for fifty cars to be put in service on electric railways throughout the country. The board appointed the following committee: A. L. Drum, chairman; H. H. Adams, G. F. Wells, Mr. Mellen, J. F. Layng, Edwin C. Faber, C. O. Birney, John Lindall, G. T. Seely, J. H. Hanna and M. B. Lambert.

This committee held several meetings in Washington and plans and specifications were finally adopted and approved for a type of car that would best meet the operating requirements of the electric railways, of the government and of the wishes of the railway representatives and the car builders. The specifications have met with the approval of John A. Beeler, transportation expert, now engaged in Washington in unraveling some of the local transportation difficulties.

VIII. The One-Man Car

The board has strongly advocated the adoption of the one-man type of car wherever practicable. It made a detailed report on the success of its operation in numerous cities for the National War Labor Board, as the question of wage for one-man-car operators has been a factor before that board. Organized labor has opposed in some instances the use of this type of car and the purpose of the report was to show the necessity for using such a car on certain lines and to show the simplicity of operating this type of car by one man, to avoid, if possible, first, a decision against their operation, and, second, an unreasonable wage for those operating them.

IX. Operation of the Draft

This question of the draft has been given thorough consideration by the board. The question of obtaining deferred classification was taken up directly with the Provost Marshal General. He ruled at that time that it was a matter to be left to the district boards and that he would issue no specific ruling as applying to classes. Bulletin No. 30 contains the Provost Marshal General's statement to employers with reference to this matter.

The board gave considerable thought to the subject before acting, fearing that the wrong interpretation would be placed on the industry in attempting to obtain exemptions for certain classes of employees.

X. Priorities

The question of obtaining priority certificates for the industry has been a difficult one. The board has handled a great many of these applications for electric railways, some of which have been of vital importance to them. The board has been in close touch with the Priorities Board and has impressed upon the members of that board the necessity of enabling the electric railways to continue their service to the government and the public generally. Through these efforts the industry has continued to receive the supplies necessary for replacements and renewals and for extensions where needed to meet governmental requirements.

A plan is now under way to include public utilities, including electric railways, under the automatic classification, which should further expedite the handling of materials for their urgent needs. An announcement is expected soon in connection with this matter. In the meantime the Priorities Board has been giving electric railways careful consideration in obtaining good ratings where the needs were made evident.

The board has been of much assistance in handling these matters for the electric railways and it has taken a good deal of work and time in following the applications through to a conclusion, owing to the amount of detail necessary under the present system.

The question of obtaining priorities for the movement of materials has also been a difficult one. This question is handled through the car service section of the United States Railroad Administration. The board has obtained permits for moving materials for electric railways, including cars, when every other effort has failed. The board has, on two occasions, secured permits to move cars destined for municipal lines, showing that the board represents the entire industry.

XI. Co-operation With Governmental Departments

The board has been in close touch with the various departments, commissions and committees handling governmental business and, through these connections, has become definitely established as representative of the electric railway industry. It has become known throughout these various agencies that any information desired can be obtained by communicating with the board, and some of the information sought has been of a nature to require considerable work, not only on the part of this board, but on the part of member companies interested, although in each case the information requested has been furnished promptly.

XII. Miscellaneous

Information was obtained for the director of transportation of the Shipping Board, showing the available equipment on hand by electric railways that could be disposed of in case the government wanted to make use of it. This information enabled the board promptly to inform other companies which were in the market for cars and electrical equipment. In one instance where a company had suffered a serious loss by fire, the board enabled that company to get in immediate touch with those having equipment for sale.

The question of internal revenue tax rulings has been a matter that has been handled for a number of companies, as the zone system of operations brought up many interesting questions in this connection. This board has also kept close watch on the tax on fares and freight earnings in the new revenue bill now before the Senate committee, and especially the clause taxing the automobile and truck competitors.

There are many other subjects relating to individual companies that are constantly coming up and are receiving the attention of the board.

XIII. Financial Statement

The following table shows the receipts and expenses for the eleven months ended Sept. 30, 1918:

Receipts	
Railway member companies	$25,292.50
Non-member companies	1,565.00
Manufacturing member companies	3,840.00
Acting as Washington representative for the association	1,333.32
	$32,030.82
Expenses	
Salaries	$6,757.87
Rent	1,516.64
Postage	2,028.52
Telephone and telegraph and messenger service	2,563.37
Printing	1,842.43
Stationery	1,040.14
Reporting meetings	165.49
Extra stenographical work	688.24
Office supplies and expense	392.86
Extra statistical clerks	944.18
General office expenses	5,696.31
Federal trade service	100.00
Furniture and equipment	1,251.30
Petty cash	750.00
	$25,737.35

XIV. Conclusions

The board, in brief, has been earnestly endeavoring to perform all of the functions for which it was created.

It has been helpful both to the government and to the industry which it represents, as indicated by the expressions contained in many communications which it has received from the governmental departments and the companies as to its efforts in various matters.

The board takes occasion to extend its sincere thanks and appreciation to the members of the American Electric Railway Association and others, who have rendered prompt and generous assistance whenever called upon by the board.

(Signed) THOMAS N. MCCARTER, Chairman
LUCIUS S. STORRS,
P. H. GADSDEN,
BRITTON I. BUDD,
ARTHUR W. BRADY.

E. C. FABER, Manager,
W. V. HILL, Assistant Manager,
E. B. BURRITT, Secretary.

Proceedings of the

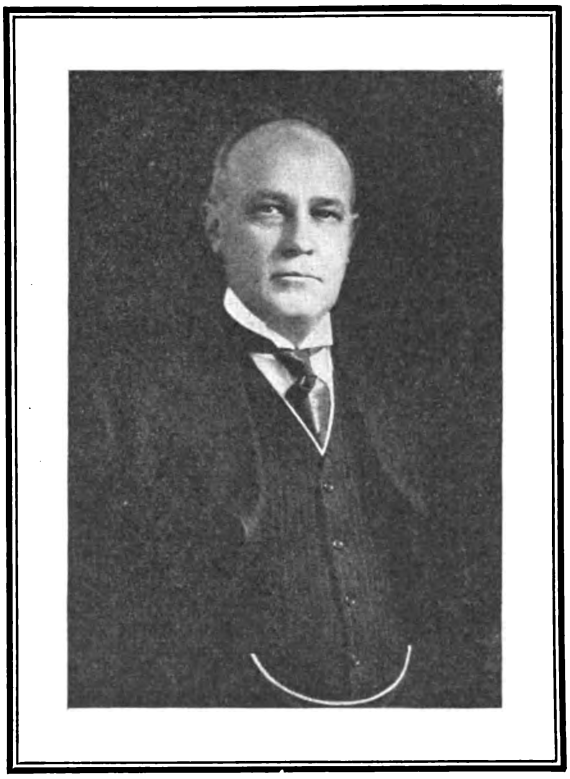
New York Conference

At a meeting of the American Electric Railway Association, held on Nov. 1, the program consisted primarily of discussion of the possible ways in which the electric railway business can be rehabilitated. The first annual report of the war board was presented. J. H. Pardee succeeded John J. Stanley as president.

A CONFERENCE of the American Electric Railway Association for the discussion of the pressing problems of the hour was held in New York City on Nov. 1, in place of the usual convention. President John J. Stanley opened the meeting with an appreciation of the work of the Electric Railway War Board and an emphatic statement of the fundamental reason for the inadequacy of electric railway fares. An abstract of the address appears earlier in this issue. This was followed by the presentation of the report of Secretary-Treasurer E. B. Burritt, in substance as follows:

MR. BURRITT'S REPORT

The association year just closing opened with 344 railway company members in the association. Eleven new companies have been enrolled and eight companies have resigned, seven of the resignations being due entirely to unfavorable financial circumstances and one to a consolidation. The fact that during this trying period the association's company membership shows a slight gain demonstrates that the companies realize the value of the organization. On the whole, the situation with respect to company membership is good and promises substantial increase with improved conditions. With regard to the membership of manufacturer companies, on Nov. 1, 1917, 194 companies were enrolled. One company has been added and fourteen have resigned their membership, the resignations having been due to the omission of the usual convention. A detailed statement of the various classes of membership appears on page 790.



J. H. PARDEE
President-elect
American Electric Railway Association

Early in the association year the executive committee considered the advisability of resuming committee work which last year had been suspended because of the war. It was decided that the state of the industry and the country generally made it inadvisable to undertake any work which did not pertain directly to war conditions. Accordingly practically all association activities have centered in the work of the war board and the supplying of information to member companies through the office of the secretary.

The organization of the war board was the result of a recommendation of the committee on military traffic appointed by President Storrs immediately following the meeting of the executive committee in New York, Oct. 8, 1917. Arthur W. Brady was made chairman of this committee, and a meeting was held in Washington on Oct. 23, 1917. After a general survey of the situation, the committee was convinced that for the period of the war it was the duty of the industry to put itself in a position to extend the closest possible co-operation to the government, and to take such steps as would insure a proper care of its own interests. Accordingly, a resolution was adopted recommending to the executive committee that a man of standing in the industry be selected to represent the association in Washington for the duration of the war. On receipt of this resolution, President Stanley arranged a conference of executives in New York on Nov. 2, and presented the committee's recommendation. As a result the war board was appointed by the executive committee on Nov. 2. The war board has presented a report to the association, in which is given an account of its activities during the year. The secretary has acted as secretary of this board since its organization, and the work of the board has been co-ordinated with that of the association.

In connection with the matter of the association's co-operation with the government, mention should be made of the extremely important work undertaken in May, 1917, by the Committee of National Defense. This work, which has been in charge of L. S. Storrs, has to do with the collection and assembling of important data for the War Department. The president of the War College has expressed appreciation of the military authorities of the results obtained.

At the request of the war board, President Stanley called a meeting of association members in New York on Aug. 22, to discuss certain matters as to which the board desired advice. A sudden change in the situation at Washington, however, altered the character of the meeting, and after a statement by P. H. Gadsden, member of the war board, a general discussion ensued as to conditions obtaining in the industry.

The value of the statistical bureau maintained at association headquarters is indicated by the constantly increasing number of requests received for information, and the wide range of subjects covered. During the year ended Sept. 30, 470 requests were received and answered from companies operating in forty-one states and in Cuba, Hawaii, Porto Rico and Canada. Information has also been furnished to colleges, libraries, public service commissions, technical societies in this country and abroad, and bureaus of the federal government.

The bureau has prepared the statistics of electric railways and the digest of public utility decisions published each month in *Area*, and has also compiled data for the use of the war board and for the National Public Utility Committee.

Our facilities for the prompt preparation of information of this character have enabled the association to render valuable service to a considerable number of companies in their rate cases.

The wage bulletin issued in May was compiled from information furnished by 756 companies and contains data relating to war bonuses, working conditions, etc. The information has been kept up to date and a supplement will shortly be issued.

The files of the bureau contain a great quantity of valuable material which is constantly being revised and added to. A large number of our member companies make frequent calls for this material. All companies should feel free to call upon the association at any time for information of any character. It seldom happens that a request is received which we cannot meet promptly and fully.

Aera has continued to fulfill its functions in the association work during the past year. It may be safely said that it has increased its usefulness to the members of the association and to its many other readers.

Because of the conditions prevailing the usual midyear meeting and dinner were abandoned. Plans were under way, however, to hold an annual convention, without an exhibit, but as the time approached the executive committee decided that it would be better to hold a one-day conference.

The committee on company sections has brought about the organization of one new section, on the property of the Rhode Island Company. This section, No. 12, was formed April 9, 1918, with a charter membership of 204.

The thorough co-operation of the ELECTRIC RAILWAY JOURNAL in all association work, and its desire to help in our activities, took substantial form in connection with the organization of this new section. With a view

STATEMENT OF MEMBERSHIP

	Company			In-dividual	Company Section
	Railway	Manufacturing	Total		
Number of members, Nov. 1, 1917	337	188	525	1215	1655
Number of members reinstated	7	6	13	9	....
Number of new members	11	1	12	10	307
Total	355	195	550	1234	1962
Resignations or deaths	8	14	22	169	301
Grand total	347	181	528	1065	1661
Paid	307	163	470	793	1046
Delinquent	40	18	58	272	615

INCOME STATEMENT

Eleven Months Ending Sept. 30, 1918

REVENUES

Admission fees:		
Railway companies	$110	
Manufacturing companies	10	$120
Annual dues:		
Railway companies	$45,032	
Manufacturing companies	9,939	
Individuals	3,965	
Company section members	1,494	60,431
Miscellaneous income:		
Interest on deposits	$411	
Sale of year books and *Proceedings*	38	
Sale of "Engineering Manual" and binders	57	
Sale of "Cost of Urban Transportation Service"	94	
Sale of "Bibliography on Valuation"	4	
Sale of miscellaneous pamphlets	493	1,099
Aera:		
Advertising	$12,149	
Paid subscriptions	182	
Sale of extra copies	56	
Sale of binders	5	12,394
Total revenues		$74,044

EXPENSES

Eleven Months Ending Sept. 30, 1918

American Association:		
Salaries of general office staff	$16,749	
Salary and expenses of Washington representative	2,000	
Rent of office and storeroom	4,149	
Stationery and printing	1,343	
Postage	1,667	
Repairs to furniture and equipment	12	
Office supplies and expenses	959	
Telephone, telegraph and messenger service	1,071	
Express, freight and cartage	23	
Exchange	18	
Traveling expenses of secretary	395	
Miscellaneous general expenses	1,189	
Miscellaneous pamphlets	856	
Committee expenses:		
Executive	656	
Electric railway revenue	475	
Military traffic	70	
Storage	180	
Federal relations	29	
National electric safety code	12	
Company sections	392	
Convention committee	647	$32,901
Accountants' Association:		
Executive committee	$35	
Engineering Association:		
Executive committee	$120	
Engineering transportation	3	
Program committee	9	
Nominating committee	71	
Subjects committee	65	
Special war committee	94	364
Claims Association:		
Miscellaneous expenses, secretary	$95	
Hooper Holmes Bureau	908	1,004
Transportation & Traffic Association:		
Executive committee	$12	
Transportation engineering	41	53
Aera:		
Salaries of *Aera* staff	$10,015	
Rent of office	621	
Telephone, telegraph and messenger service	143	
Postage	228	
Traveling expenses of *Aera* staff	1,324	
Miscellaneous expenses	14	
Discount	158	
Magazine expenses:		
Cost of printing	6,159	
Cost of paper	3,013	
Cost of cuts	517	
Express, freight and cartage	224	
Mailing charges	512	
Envelopes for mailing	18	22,953
Total expenses		$57,313

NOTE: The financial report of the War Board, also presented by the secretary, will be found in the report of the Board, as printed in this issue.

to simulating interest in the movement, the JOURNAL donated to the association a handsome silver cup to be held by the section organizing with the largest number of members. President Stanley accepted the cup for the association, and it was presented to the Rhode Island Company section, to be held until such time as another section is organized with a larger number of charter members. Several new sections are in prospect, and it is safe to say that the cup will not remain with the Rhode Island Company section.

Notwithstanding the handicap of war conditions, the company sections show creditable progress. The character of the papers presented and the interest manifested in their discussion demonstrate the high educational value attaching to this work. The officers of those companies having company sections bear enthusiastic testimony to the all-around value to the company and to the members themselves of the section work.

The association has maintained its membership in the Chamber of Commerce of the United States, and has continued its subscription to the Hooper-Holmes Bureau. During the year twenty-six companies made 15,360 reports, the Hooper-Holmes Bureau returning reports on 905 names. In February President Stanley discontinued the arrangement with S. S. Perry, who had up to that time represented the association in Washington, his duties being assumed by the war board. The association has purchased $5,000 of bonds of the Third Liberty Loan and $2,000 of bonds of the Fourth Liberty Loan. It has also financed the purchase of $2,000 of bonds of the Fourth Loan for the office staff.

A report of the association finances, together with a membership statement is given on page 790.

MR. GADSDEN TELLS WHAT THE WAR BOARD HAS DONE

In the absence of Chairman McCarter the report of the American Electric Railway Association War Board was presented by P. H. Gadsden. This is reprinted elsewhere in extended abstract. The report was not read in full, but the speaker outlined the situation at Washington with respect to the electric railway industry. He said that the war board is having excellent success in securing the attention of government officials. However, the railways have not had as good treatment as have other utilities. It is the experience of utilities, Mr. Gadsden said, that in the states where public utility commission control exists, the utilities are treated more fairly than where appeal has to be made to municipalities. It was clear to the war board, however, that federal aid was needed. The board has, therefore, secured the co-operation of government officials and organized labor in presenting the situation clearly to the President. Probably no other topic of war-time importance has been put up to the President with greater emphasis from all quarters.

There is opposition to the granting of federal aid to the electric railways, but in Mr. Gadsden's belief, there is hope of ultimate federal assistance. The situation in the industry is so bad today, however, that it is necessary to explain to the public just how critical the electric railways' condition is. The publication of data by the war board has helped in this direction. He recommended monthly publication of local statements so as to keep a utility's clientele posted as to the actual circumstances.

In outlining the details of the work, Mr. Gadsden took occasion to say that the war board had been highly gratified by the co-operation of the industry in furnishing skilled men whenever there was need for the solution of special problems. He mentioned particularly the courtesy of the North American Company in detailing Mr. Doolittle for special duties in connection with rates for carrying United States mail, and of the Westinghouse Electric & Manufacturing Company in "loaning" Clarence Renshaw and the General Electric Company, J. F. Layng, for the fuel-saving campaign.

On the subject of the awards of the National War Labor Board Mr. Gadsden estimated that the net income of the electric railways of the country is not more than $25,000,000 to $30,000,000. And yet the decisions as to wages if generally applied will increase the expense by possibly $100,000,000. In such case it is doubtful if the industry can earn one-half its interest charges. The Labor Board apparently assumed that fares could be increased to meet the increased costs, but this has not proved true. Even if fares could be increased the result of such increase is problematical. In this connection Mr. Gadsden gave a number of examples showing how in certain cases special conditions have been taken into account. He also explained that an opportunity had arisen for the representation of the electric railway industry on the War Labor Board.

Mr. Gadsden said in conclusion that for the first time there has been set up in Washington a body of men with authority to speak for the electric railway industry as a whole. There has heretofore been a lack of unity among the electric railways. In the future the industry must keep together. When peace comes it must not slip back into the old channels or the good so far accomplished will be lost. The authorities at Washington have come to recognize the magnitude and the importance of this industry. It should be realized that every detail, every new franchise, is a matter of national concern. In peace time there must be some machinery set up, some body of men appointed, that will have power to act for the industry.

DISCUSSION OF WAR BOARD REPORT

The discussion of the report presented by Mr. Gadsden was opened by P. J. Kealy, Kansas City Railways, who amplified a reference by Mr. Gadsden to the War Labor Board ruling in the Kansas City Railways' case. Mr. Kealy said that the contention of the Railways' attorneys to the effect that the Labor Board has jurisdiction in increasing fares, because this is a necessary corrollary to the fixing of wages, seems to have a legal basis. (See page 801 of this issue.) At this point A. W. Brady, at the request of W. Caryl Ely, repeated a statement, made at the executive committee of Oct. 31, expressing appreciation of the committee for the work of the several men who have assisted the war board in its work. On Mr. Ely's motion a committee was authorized to prepare suitable resolutions to the same effect, and the president appointed Mr. Ely and James H. McGraw as such committee.

WHY THE INTERURBAN NEEDS MONEY NOW

The discussion of the needs of the interurban electric railways was led by Arthur W. Brady, president Union Traction Company of Indiana. He said that the needs and problems of urban properties were very similar in different parts of the country but that those of interurban roads differed widely, so that the obstacles encountered in one locality might be of a widely different nature from those of another. The remarks that he would make, Mr. Brady said, would relate particularly to conditions in the Central West.

One of the reasons why interurbans are so short of money at present is that some lines were overbuilt. In the early days steam road service was poor and there was a demand for additional transportation. This was sometimes furnished by means of interurbans paralleling the steam lines. The public greeted the entrance of such roads into the field of transportation most cordially and the necessary capital for financing their construction was easily raised. During this wave of enthusiasm many interurban lines were built that could not possibly continue to operate successfully and maintain their lines and equipment in satisfactory condition. Lately some of these have had to be taken up.

A second point that has contributed largely to present conditions is increased automobile development. This began after many of the interurban roads had been built, and robbed the promoters of much revenue on which they had figured for satisfactorily maintaining their operation.

As an example of the rapidity of the automobile development Mr. Brady said that in some sections ten years ago there was but one automobile to every 125 or 150 persons while now there is one for every twelve to fifteen people.

A third, and perhaps the greatest reason for the present condition, is found in the legal restrictions imposed on interurban railways, and by the failure of public officials to recognize their actual needs. Many of the statutory and other restrictions, like the 2-cent fare laws, were aimed primarily at steam roads. Due to competition, however, the effect has been to limit the interurban fare, although the roads found that they could not continue to operate profitably at this low rate. Since the United States Railroad Administration has increased the steam road rate to 3 cents per mile, electric railways in some sections have been able to obtain the advantages of this increase so that the present situation for them is not without hope.

One point that should be impressed on all is the need for increased teamwork by all roads. Public service commissions are here to stay and they are beginning to realize the necessities of interurban railways, and the railways themselves do not object to commission regulation. If the roads can live through the present strenuous times there is hope for the future.

DISCUSSION OF INTERURBAN NEEDS

Referring to the utility commission situation George E. Pellissier, Holyoke (Mass.) Street Railway, said that the weakness of commission regulation is that the commissions do not assume the responsibility for results which is commensurate with the authority that they exert. J. D. Mortimer, North American Company, called attention to the relation of electric railway fares and steam road suburban commutation rates which even as increased are understood not to be profitable in all cases. C. L. S. Tingley, American Railways, spoke a good word for the commissions in stating that in some instances there is evidence of a desire to see that justice is meted out to the electric railways.

On the subject of interurban fare limitations W. H. Sawyer of E. W. Clark & Company instanced one case in which the intrastate fare is in effect controlled by the Interstate Commerce Commission's limitation on the interstate fare. His dealings with the Railroad Administration have convinced him that there is no desire to impose unnecessary hardships upon the electric railways and that relief will be given in due course. Mr. Sawyer particularly emphasized Mr. Brady's statement that there is a great opportunity to impress public bodies with the railway situation through forcible presentation of facts by qualified experts. A. Swartz, Toledo & Western Railroad, followed with the suggestion that in some cases possibly the electric railways need more "nerve." In one case he had in mind the electric road had raised its rate above the steam road rate without ill effects. Passenger business is not the only source of revenue for electric railways as many have found a field for usefulness in freight haulage. Here, however, the competition from the motor truck is becoming serious.

J. H. Pardee, J. G. White Management Corporation, said that there was a ray of hope for the interurban railway in that the abandonment of certain roads will call attention to the essential nature of the service. When the public realizes how important electric transportation is the burdens will be removed. Mr. Mortimer threw out the suggestion that the present is a good time for the interurban railway to work its problems in a broad way in co-operation with the United States Railroad Administration. A very proper question is "Can the electric railways be fitted better into the national system of transportation?" Other timely questions are these: "Has the interurban railway fully utilized its opportunity for doing business, utilizing its plant to full efficiency?" and "Has the industry looked at the transportation problem comprehensively?" By way of answer to these queries Mr. Swartz said that the Public Utilities Commission of Ohio and the Central Electric Railway Association are endeavoring to co-operate with the federal authorities along this line.

T. A. Ferneding, Dayton, Springfield & Xenia Southern Railway, said that around Dayton, Ohio, the electric lines had suffered loss of express business since federal control had become effective, express matter being now handled on the steam roads. He thought that this business might in time be recovered. On the subject of freight business Mr. Tingley said that two points should be kept in mind in utilizing electric railways for this purpose. First the steam roads have not favored the handling of freight by electric railways, and, second, the charges which are collectible may not be profitable, due to shortness of haul and large volume of business. However, the service is inherently a useful one and it can be furnished.

Mr. Gadsden brought the discussion to a close by explaining the work of the war board in relation to the topics under consideration. As far as motor truck competition is concerned the board has been in close touch with the Highways Transport Committee and is working out a basis of co-operation. Progress has been made also in the line of co-operation with the steam roads. A question raised by the board was whether the electric railways are in a position to haul more freight, and its conclusion was that the roads have all of the business that they can handle at present.

Afternoon Session

President Stanley called the association to order for its afternoon session at 2:15 p.m. and announced that the first subject of the program would be the award of the Association medal for the best paper read before a company section during the year. The report of the committee which made the award was presented by James H. McGraw in the absence of T. S. Wheelwright, chairman.

AWARD OF COMPANY SECTION MEDAL

In reporting for the committee Mr. McGraw spoke of the good work which in his opinion can be accomplished by company sections not only through their study of technical problems but in the way of improving public relations. He spoke of the company section as a tower of strength for any company which established one. He then said that the award of the medal this year was to M. Fariñas, traffic inspector, transportation department, Manila Electric Railroad & Light Company, for a paper entitled "Trainmen as Witnesses." This paper is published in abstract on page 800 of this issue. Honorable mention was given to P. Castillo of the same company for a paper on "Some Duties of a Carhouse Starter." An abstract of this paper appears on page 801.

In referring to the fact that both awards this year were to the company in Manila Mr. McGraw recalled the fact that C. N. Duffy, general manager of that company, was largely instrumental in starting the first company section—that in Milwaukee while he was connected with the Milwaukee company. In the absence of the winner of the medal Mr. McGraw gave it to J. H. Pardee, vice-president of the company, for transmission to the winner. In accepting the medal Mr. Pardee also paid a tribute to Mr. Duffy and said that he had recently resigned from the railway at Manila to accept the appointment of vice-president of a large cocoanut oil company in the Philippine Islands.

James D. Mortimer, Milwaukee, then gave a brief introduction to each of the papers which were to follow. The topical discussions were then begun in consecutive order as follows: "Lightweight Cars," by Henry G. Bradlee, president Stone & Webster Management Corporation, Boston, Mass.; "The Zone System," by Thomas Conway, Jr., professor of finance, University of Pennsylvania; "Higher Unit Fares," by L. S. Storrs, president The Connecticut Company, New Haven, Conn.; "Public Aid," by Homer Loring, of Loring & Company, Boston, Mass., and president Fort Dodge, Des Moines & Southern Railroad, Boone, Ia., and "Public Ownership," by Richard McCulloch, president United Railways, St. Louis, Mo. An abstract of Mr. Bradlee's remarks follows. Abstracts of the other addresses appear elsewhere in this issue.

LIGHT-WEIGHT CARS

In the address on the subject of light-weight cars, Mr. Bradlee referred to a remark made earlier in the day that twenty years ago there had been a rapid development of interurban lines. The public, he said, was so impressed with advantageous features of the long cross-seat cars used on these lines that great pressure was brought on the managements of city lines to install similar cars. Many companies yielded, and many operators actually believed that these cars were most desirable. Finally they waked up to the fact that these cars weighed 1500 lb. per seat. When half full of passengers they weighed 3000 lb. per passenger.

Realizing this situation, Stone & Webster secured the services of Mr. Birney to bring down the weight of cars. Mr. Birney's first design was for a double-truck car weighing only 700 to 800 lb. per seat and for a single-truck car weighing 500 to 600 lb. per seat. This seemed fairly satisfactory, but a study of European practice showed that small cars were used there and that the London motor buses weighed only about 350 lb. per seat. Mr. Bradlee said that his associates concluded that in these circumstances a trolley car could be built of as light a weight. Mr. Birney then went to the automobile factories to make a study of light bodies and got the motor manufacturers interested in the design of motors for these cars. The first Birney design was a car for twenty-nine people weighing 350 lb. per seat but this has later been changed to a car with thirty-five seats weighing 370 lb. per seat.

Mr. Bradlee then quoted a number of estimates made when these cars were put in operation as to the saving which could be accomplished, and said that in practice these savings had proved to be correct. One estimate was for a line operating two cars on a thirty-minute headway giving eighty seats per hour. With the smaller cars, three cars were used on a twenty-minute headway giving eighty-seven seats per hour with a saving of $3,500 in operating expenses. The figures for other typical installations were given, and it was shown that the saving in operating expenses, based on prices before the war, was such that the cars would pay for themselves in from two and one-half to three years. Cars are now much more expensive but wages and power have also increased in price. The speaker thought that in three to four and a half years the cars would pay for themselves in operating expenses. This was from the saving in platform labor and power. The former could be secured by conversion of old cars, and his companies had probably changed over half as many cars as it had bought. This saving might be divided into 40 per cent for platform labor and 60 per cent for power and other expenses. There was another saving also in power economy and distribution capacity. This he estimated at 30 per cent even with the increased schedule mentioned. There was also undoubtedly a saving in track maintenance, but he had no figures on this.

The speaker said that thus far he had discussed only the savings, but there was increased riding, and he quoted figures from Tampa, El Paso, Houston, Seattle, Tacoma and other cities. In general he assumed that a 50-per cent increase in mileage was followed by 25 per cent increase in receipts, although the figures in many cities were higher than this. This would, of course, decrease the time in which the cars would pay for themselves. The speaker said that his figures applied only to his own properties and he would not predict what they would be on other properties under other conditions. They were, however, for properties in cities of from 25,000 to 600,000 inhabitants and in all parts of the country, and the same car was used everywhere.

At first, the introduction of the car was approached with some apprehension, as he and his associates did not know whether people would care for them. They had proved very popular, however, and where one line had been equipped there was demand for the same car on other lines. It might be thought that the car would slow down the schedule, but actually it is usual to get from 5 to 10 per cent greater mileage per car. Accidents have decreased materially, and such few end-on collisions as have occurred have done no serious damage. In Keokuk the company is making use of one-woman cars.

The speaker thought that in cities of medium size 75 per cent of the service might be supplied by these cars. In smaller cities all of it could be so supplied. In the very largest cities the car had not been tried, but the speaker thought there was a considerable field for it there. He did not regard the car as a cure-all but a very decided help. It did not remove the necessity for increased fares and reduced burdens, if the industry is to continue.

REMARKS ON HIGHER UNIT FARES

In introducing the discussion on higher unit fares Mr. Storrs stated that he had not included in his paper any discussion of the exact financial results secured by 6-cent and similar fares, but he would mention a few instances from his personal experience. One company with an increase in fare from 5 cents to 7 cents suffered a decrease of 32 per cent in revenues, while another company of the same size and with the same increase in fare secured a revenue increase of 18 per cent. Another company with an increase from 5 to 6 cents was not able to change the current 2 per cent loss as compared to the same period of the preceding year, but when it increased the fare further to 7 cents it secured a revenue increase of 18 per cent. Still another company, with annual revenues of $11,000,000, was able after twelve months of operation with a 6-cent fare to secure only $30,000 of additional revenue. On the basis of such experiences, Mr. Storrs said, he hesitated to make any prediction in regard to the effect of a higher unit fare under present abnormal conditions.

REPORT OF COMMITTEE ON RESOLUTIONS

James H. McGraw then submitted a report prepared by the committee on resolutions appointed at the morning session. The resolution submitted, which was adopted, expressed the appreciation of the association for the excellent work accomplished by the members of the Electric Railway War Board and its staff in Washington during the past year.

DISCUSSION ON LIGHT-WEIGHT CARS

Walter Jackson, ELECTRIC RAILWAY JOURNAL, emphasized some of the advantages of light-weight cars as discussed by Mr. Bradlee. He said that the most of these cars now in use were to be found in cities of small population. Most of these cities had quite a jitney service at the time of the advent of the safety car. The first favorable results that were noticed from the use of light-weight cars were that they created traffic as well as recaptured it.

These cars are helping to solve the labor question. The one-woman car has come and the two-woman car is on the way. By the use of labor-saving devices a different type of laborer can be used for platform service. As long as cars are used which require laborers we will have to use laborers for conductors. If we make the labor lighter we can use the type of labor now serving behind counters as salesmen.

W. B. Wheeler, Westchester Electric Railroad, explained the operation of the pedal control of one-man cars as used in New Rochelle, N. Y. (See issue of ELECTRIC RAILWAY JOURNAL for May 18, 1918, page 977, and Aug. 10, page 249.) There are fifteen cars now in use and the labor saving has been about 40 per cent. An hourly rate 3 cents higher is paid on one-man cars.

G. E. Pellissier, Holyoke Street Railway, took up the general transportation situation with reference to possible extension of service to cover bus lines in sections which could not support electric railways. He thought that a railway could operate electric buses more efficiently than any jitney line could be privately conducted, provided operating conditions were equitable.

DISCUSSION ON ZONE FARES

Walter Jackson, ELECTRIC RAILWAY JOURNAL, then discussed the zone system. Mr. Jackson pointed out that it is not generally true that European zones are equally divided on a mileage basis in accordance with successive increments of fare. For example, in the capital of Hunland the Berliners found that the underground system would not develop the suburbs if the fare increment of 2½ pfennings was the same for each station. Accordingly they adopted a compromise under which the farther the passenger rides the more stations he can reach for a fare increment. In regard to congestion in European cities Mr. Jackson said that this had existed before electric railways came. It arose on account of the different land system existing in Europe, as a result of which the general public is not able to secure easily from the outlying estates of the aristocratic land-holders the land necessary for expansion. The surface lines in Berlin and Hamburg have a flat fare, and both of these cities are as congested as Cologne or any other city where a zone system is used.

Mr. Jackson averred that a system with 5- or 10-cent areas is not a zone system at all; it is a combination of unit fare systems glued together. A system with such charges offers a temptation to the passenger to get off at a zone boundary instead of paying the next increment of fare. In England the companies are not afraid to go to the smallest coins in order to make everybody ride. In his opinion, railways must become merchants of transportation. Furthermore, he stated that the traffic surveys mentioned by Professor Conway referred to riding now in existence and not to new riding that would be attracted by a zone system.

Lastly, Mr. Jackson directed attention to Professor Conway's statement that the public reasons by analogy and cannot readily understand why the zone fares in one city should be different from those in another. If this were so, Mr. Jackson said, the railways would themselves be to blame, for they have for many years fostered the idea that the price of a trip in a village or in a metropolis should be the same flat amount. When the public understands, however, how the zone system is being developed so that every passenger in any community shall pay for the service rendered to him in that community, it will not be slow in appreciating that a difference may well exist betwen New York and Timbucktoo.

Wallace B. Donham, receiver Bay State Street Railway, said that this company had tried the zone system of 6-cent central areas and 2-cent zones and found that it did not provide the needed revenues. The greatest difficulty was due to the inability to collect fares. Large amounts are lost through stealing by employees and through evasions by the passengers. The question which it is now proposed to put up to the public is whether no service is better than a 10-cent fare. In the next thirty days, Mr. Donham said, he believed it would be necessary to shut down 150 miles of the system, and that the fare unit for the balance must be raised or else the whole mileage of the company would largely be shut down.

This railway is now facing an increase in wages, which Mr. Donham said was deserved. To meet this, however, the public must furnish the necessary funds. It is expected that a 10-cent fare will be opposed. But nearly all other industries have doubled their prices. Railway materials costs have increased 50 per cent and this, together with the increased traffic cost, makes a 10-cent fare a necessity. Mr. Donham said he considered it better to go to a maximum fare at once than to be asking the public at frequent intervals for an increase, as this constantly stirs up public resentment.

T. N. Naroschecitsch, chief engineer Moscow (Russia) Tramways, discussed the conditions of these lines which have resulted from the war. A zone system of fare collection was tried but had not been successful. The repair shops of the railway have been taken over for use in the manufacture of shells and the equipment has been allowed to deteriorate.

REMARKS ON PUBLIC OWNERSHIP

Mr. Kealy remarked that, although almost all of the discussion had concerned the serious plight of the electric railways at the present time, it was generally recognized that existing conditions were more or less temporary. Under the circumstances he did not feel that it was the proper time to sell any business. To cry poverty and at the same time to make a good sale of utility property would be a job which he would not care to undertake. Moreover, in most states there are constitutional restrictions against municipal ownership on a widespread basis, and probably two years would be required in order to secure the necessary amendments and popular authorization. Within this time the electric railway industry will either be dead or headed toward recovery.

Mr. Mortimer then moved that the association recommend to its member companies full co-operation with public authorities looking to the acquisition of utility properties. Upon motion the resolution was referred to the executive committee for such action as it deems proper. The text of Mr. Mortimer's resolution follows:

DRAFT OF PROPOSED RESOLUTION

The American Electric Railway Association Conference should adopt the following statement as embodying its views and recommendations to member companies:

1. The war has greatly magnified the problems that theretofore confronted the electric railway industry by (a) raising commodity prices and wage levels to unprecedented figures so far above anything considered probable when the industry was planned and our current arrangements for franchises and finance were established, that continued operation of most electric railways is threatened; (b) increasing the cost of capital for all industries, including electric railways, to such an extent that no railway can borrow or invite capital for necessary expansions of its business or for refunding purposes at interest or dividend rates at all comparable with the low returns now being earned; (c) preventing the electric railway industry from earning a compensatory return without large adjustments in its fares or tariffs and relief from many burdens imposed at times when the business was generally thought to be profitable; and (d) making necessary a consideration of the further problems of the electric railway as embraced in the economic and social adjustments that will likely take place after the coming of peace.

2. Even before the commencement of the world conflict, it was apparent that important changes would sooner or later have to be made in the relations between public utilities and the communities they serve. Regulation by commission has been tried in many states as a means of lawfully providing for advisable changes in these relations. But it has generally proved unsuccessful, because of restrictive law resulting from incomplete legislation or court decisions, incompetence or lack of courage, or both, on the part of the regulating commissions, failure of the electric railway managers to fully understand all the problems of the industry or sense the tendencies of the times, activity on the part of reformers to force public ownership by unnecessarily restricting the ability of the communities to fairly assist the railway utilities, or tardy response of the commissions in the granting of necessary relief required by law.

3. Of all businesses that have suffered war-time burdens, the electric railways have received the least public sympathy. It was probably too much to ask the public to vote an increase in car fares; human nature is such that it cannot, uninformed, act to force an immediate increase in its financial sacrifice. The public generally appreciates the importance of electric railway service, but takes it largely as a matter of course, expecting to find it day after day as it does sunrise and sunset, winter and summer, political elections and taxes. While regrettable, it is true that the public under the leadership of political salesmen often confuse the necessity of financial relief with fixed ideas respecting past failures of the railways to perform their full transportation duty. It is also to be regretted, but it is nevertheless true, that the public cannot properly assume its full share of patriotic support of the government while permitting an important public service to decay for want of necessary revenues.

4. There still remain a few public representatives who are so unfamiliar with the economic and business aspects of the industry that they believe the municipal franchises or permits possessed by electric railways are of immense value; these public authorities were not alone in this view. Some of the people having to do with our industry were, until recently, of the opinion that franchises are of great value to the private companies, possessing values in excess of the value of the railways to the public. But the fact is now apparent to all careful thinkers that franchises are unnecessary and valueless in most cases, except as they may be required by law to permit a railway to occupy the streets and to prevent ouster in a political strife, without compensation for investment.

5. Electric railway service is needed by all the communities now enjoying it. But it cannot be generally continued under present conditions. The private owners prefer to sacrifice what were under pre-war conditions prospective profits, rather than see the communities deprived of street railway service or witness the diminution of such service. In most cases they claim no value attaching to the so-called perpetual franchises granted by the governmental authorities. Continuity of service should be insured by the public authorities even though it be necessary to acquire the utilities by purchase or lease.

6. The advantages of public ownership of electric railways are sufficiently great to warrant the public authorities taking the necessary steps to acquire such utilities to the end that such advantages may be realized at a time when

they will do the most good for the most people and that there may be no cessation or impairment of transportation facilities.

7. The American Electric Railway Association recommends to its member companies that they facilitate in every reasonable way the public acquisition of the present electric railway properties, and, in the event of transfer of title, arranging such terms of payment as conveniently accord with the financial limitations of the present laws of the respective states or municipalities; and that they assist in the promotion of such enabling legislation as may be deemed necessary by the public authorities to bring about the fullest measure of public ownership of electric railways and their future expansion to fully meet the needs of their respective communities.

RESOLUTION PRESENTED BY MR. GADSDEN

P. H. Gadsden, of the war board, continuing the discussion, said that undoubtedly municipal ownership is one solution of the electric railway problem, possibly the best one in some cases. It would, however, be unfortunate to advocate it generally under present circumstances. He said that he would offer a resolution in regard to the existing conditions and by way of preamble he outlined briefly the present situation of the electric railways.

Mr. Gadsden said that the whole structure of the franchise relationship between electric railways and the various communities has broken down under the strain of the war. The rapid increase in the cost of all material, the extraordinary demands of labor made necessary by the rise in the cost of living, the alarming decrease in the purchasing power of the nickel, have brought the electric railways of this country face to face with bankruptcy.

Practically every other industry except public utilities, whose rates are regulated by law, has been able readily to adjust its method of doing business to meet the war demands, and the radical increases in the cost of operations and of manufacture have been promptly reflected in the selling price, and so passed on to the consumer. In all other departments of our commercial and industrial life where the economic laws of supply and demand have been unhampered and allowed free play, the inevitable increase in the cost of production has been taken care of in the perfectly normal way of increased cost to the consumer.

It is only in those industries where the public has attempted to fix a just and fair price for service rendered and where the artificial standard has been substituted for the natural one, that we find this complete breakdown under war conditions.

Industry generally was never so prosperous notwithstanding the increase in the cost of labor and material. The public utilities, and especially the electric railways, present practically the only exception to this rule of prosperity. They, on the contrary, are steadily being destroyed by the war.

A tabulation of 388 electric railways, representing over 63 per cent of the electric mileage of the United States, shows a falling off in income of 82 per cent for the first six months of 1918 as compared with the corresponding period of last year. Many of the companies are facing an actual operating deficit in spite of the increase in gross receipts. The scale of wages established by the National War Labor Board in cases already decided, when applied to the industry generally, will add over $100,000,000 to its already greatly increased operating expenses. As a consequence of the rapidly mounting costs of operation and the steadily declining net income, the financial standing of the electric railways has been seriously affected, and it is no longer possible to attract new capital for the efficient operation of the properties in the interest of the public.

These facts lead inevitably to the conclusion that the present relationship between the companies and the public, as evidenced by existing franchises with fixed rates of fare, is economically unsound; that the present system of regulating fares by franchises or commissions is admittedly not sufficiently responsive to violent and radical changes in operating conditions. Under the present system, before the company can justify an increase of its fare it must first show that for a longer or shorter period it has suffered loss under the existing fare, which loss cannot be compensated for by the new rate. In any other business the prudent manager is able to provide against increases in cost by promptly advancing his selling price.

The electric railway must stagger along under the 5-cent fare for months until its credit is destroyed, its service impaired, its equipment deteriorated, and it has become obvious to the community that it is on the brink of destruction, before its case has been sufficiently made out to justify an increase in its rate.

The declaration of war found the electric railways thoroughly unprepared for the problems thrust upon them. Without in any way lessening our efforts to win the war by supplying this essential service to the public, it would seem to be the part of wisdom for us to take up for serious consideration the problems of peace.

Of all the problems of readjustment which this nation will have to meet and solve after the war, none will be more serious or more difficult than that of the electric railway industry. In the light of our experience as emphasized by war conditions, it is manifest that to insure the efficient operation of the electric railways of the country after the war, there must be a recasting of the entire basis of the relationship existing between the electric railways and the communities they serve.

In many cases, electric railway franchises which had come to be considered as valuable assets have in the light of recent experience been proved to be liabilities. Already there is a growing recognition of this fact in different parts of the country, as evidenced by the "operation at cost" plans recently adopted in Boston, Chicago, and Cincinnati.

In the past, the sole interest of the community has been thought to be in the service rendered, but with a broader conception of the underlying problems involved, there is a growing tendency to request a community of interest in the problems of profit and loss, as having a direct and immediate bearing upon the rate of fare.

In view of the circumstances outlined, Mr. Gadsden offered the following resolution, which was adopted:

Now, therefore, be it Resolved by the American Electric Railway Association:

1. That it is the deliberate judgment of this association, that, in the light of the experience of the industry during the war, the entire subject of the relationship between electric railway companies and the public should have, now and during the reconstruction period following the war, the

most earnest consideration of the representatives of both the public and the companies.

2. That among other things, a radical revision of electric railway local franchises should be made, if the industry is to continue to render efficient service to the public.

3. That a committee be appointed by the president of the association whose duty it shall be to make a study of reconstruction problems, particularly those relating to local franchises, and report their recommendations at an early date.

The meeting was then adjourned.

Manufacturers' Executive Committee Meets

A regular meeting of the executive committee of the American Electric Railway Manufacturers' Association was held in New York on Nov. 1, with President Thomas Finigan in the chair. Routine business was transacted and a resolution of condolence to the bereaved family of the late Henry Clay Evans were passed. Among other items the resolution recited that Major Evans had been a member of the executive committee since 1906 and had served continuously from that time. He had also been vice-president of the Manufacturers' Association during two terms.

The meeting was attended, in addition to Mr. Finigan, by W. H. Heulings, Jr., Charles C. Castle, M. B. Lambert, B. A. Hegeman, Jr., Charles C. Peirce, L. J. Drake, George Stanton, L. E. Gould and Fred C. J. Dell, secretary.

Insert on Universal Car

Through an error in the insert published in last week's issue of this paper showing types A and B of the proposed universal car, the caption for type A car was used with type B car and vice versa. The design of the cars is so different, one having a center entrance and the other end entrances, that this transposition was probably detected by most readers. Nevertheless, it was thought best to reprint the insert as a supplement to this week's issue of the paper. Readers are requested to destroy the supplement of the issue of Oct. 26.

Tramway Conditions in Vienna

The tramways in Vienna, it is said, are now practically the only means of transport. They have to carry soldiers, coal and food, and in the last four months they conveyed 1900 corpses to suburban cemeteries. The number of cars is reduced to 780, twenty of which have to be withdrawn each week on account of repairs which cannot be made. Not only is there a shortage of material for repairs, but the shopmen are so underfed that they have no strength to do the work. The only material available for insulation in motors is silk, and this is extremely expensive. The management avers that in order to insure a fairly normal service during the winter, it will be necessary at once to stop car operation at 9 p.m.

This is fire and accident prevention day throughout the country. The date was set somewhat later than usual to avoid interference with the Fourth Liberty Loan campaign. The National Fire Protection Association and the National Safety Council have been co-operating in arranging for meetings, school exercises, parades and other local celebrations.

New Association Officers

Executive Committee Elects J. H. Pardee President and R. I. Todd and P. J. Kealy Vice-Presidents —Other Business Transacted

The American Association executive committee met on Oct. 31. In addition to routine business, reports were received from the secretary-treasurer and the war board. In the absence of Chairman McCarter, the report of the war board was presented by Mr. Gadsden and printed copies were distributed. It is given practically in full elsewhere in this issue. The report was accepted with a resolution of thanks to Mr. McCarter and other members of the board for their services. A supplementary resolution conveyed the association's thanks to Messrs. Gadsden and Faber, both of whom have served without compensation; to President L. J. Wolf and the Aurora, Elgin & Chicago Railroad for making it possible for Mr. Faber to serve; and to Mr. Hill and the California Electric Railway Association for his participation in the work.

The resignation of Mr. McCarter as chairman of the war board was received and accepted in view of his statement that press of other duties made such action a positive necessity.

The matter of representation on the National War Labor Board was discussed and referred to the following committee: J. D. Mortimer, T. S. Williams and L. S. Storrs.

An invitation for the association to be represented at the conference of the National Municipal League, to be held at Rochester, N. Y., on Nov. 20 to 22, was referred to the incoming president. Attention was also directed to the meeting of the war service committees of the Chamber of Commerce of the United States, to be held at Atlantic City on Dec. 4 to 6, and the question of representation was referred to the war board.

A resolution was passed thanking the ELECTRIC RAILWAY JOURNAL for the donation of a silver cup to be awarded to the company section organized with the largest membership.

A letter was read also from Gen. George H. Harris, acknowledging the receipt of a cablegram of sympathy from the executive committee on the death of his son.

The executive committee then proceeded after brief discussion of the program of the conference to be held the following day, to elect a successor to President Stanley and fill the vacancy caused by the resignation of Vice-President Brush, in the manner provided for by the constitution. As a result, J. H. Pardee, president J. G. White Management Corporation, was elected president and the following were elected to the respective vice-presidencies: Richard McCulloch, president United Railway of St. Louis, first vice-president; T. S. Williams, president Brooklyn Rapid Transit System, second vice-president; R. I. Todd, president Indianapolis Traction & Terminal Company, third vice-president; P. J. Kealy, president Kansas City Railways, fourth vice-president. E. B. Burritt was re-elected secretary-treasurer.

Those present at the meeting were: J. J. Stanley, J. H. Pardee, Richard McCulloch, T. S. Williams, M. R. Boylan, F. R. Phillips, S. M. Curwen, W. S. Rugg (representing Guy E. Tripp), Thomas Finigan, H. H. Vreeland, W. Caryl Ely, Arthur W. Brady, L. S. Storrs, P. H. Gadsden and E. B. Burritt.

Politics and Public Utilities

The Tendency of the Politicians Is to Make Capital Out of the Public Utilities and to Act as if Losses to Them Are a Gain to the Public—Municipal Ownership Now a Prominent Political Issue—The Next New York Legislative Session Important

BY WELTON W. HARRIS

THE public utility situation in New York State is approaching a crisis—a political crisis. The same is true in New Jersey and in Illinois. While not so acute perhaps in many other states, they are bound to be affected by the outcome in these three great states.

Federal action toward regulation of fares has been frowned upon by the administration, notwithstanding the intimate connection of public utility service and our war program.

The settlement of matters by local bodies involves infinite loss of time and money, but so it is to be.

The example of Buffalo, now so familiar, shows that the public service may be caused to suffer when politics becomes the ruling consideration in the problem. New York City now bids fair to go over the rocky Buffalo route. Note the signs of the times.

Theodore P. Shonts, president of the New York Railways, announces in the annual report for the year ended June 30 that the company, unless permitted to charge a higher street car fare, will be forced into early receivership.

The receivership of a company serving the largest city in the world, the most important center of war work activity in the United States, could be nothing less than a calamity.

Here is a $70,000,000 company:

1. Whose service is vital to the largest city in the United States and to the nation's war program.
2. Whose stock is not watered.
3. Which has never paid a dividend on its stock.
4. Yet under the present posture of affairs it has almost no hope of escaping receivership.

Why?

Politics—that is the answer.

THE POLITICAL SITUATION IN NEW YORK CITY

The political situation—and without it the utility situation cannot be understood—in the First Public Service District of New York State (which includes the City of New York only) is this:

The New York City Board of Estimate and Apportionment has power to prevent fare increases, because the fare is determined by franchise.

The Public Service Commission has power of regulation both of service and of finance that are just as vital. *And these two bodies are at "outs."*

The Board of Estimate is Democratic. One of its members, Alfred E. Smith, is the Democratic candidate for Governor.

Mayor Hylan particularly and the board generally, supported by the Hearst papers and the Pulitzer papers, have given every evidence that they believe it is good politics to act as though public utility corporations were *prima facie* "enemies of the people." It seems to be the idea that if they can be made to suffer losses, those losses represent just so much public gain. No stress whatever is laid upon the preservation of the people's service. It does not seem to be realized that the company's power to give good service is in deadly peril and the responsibility for this is upon these city officials.

Governor Whitman, by reason of his office, is responsible for the personnel of the Public Service Commission. And he is Smith's rival for the governorship.

THE CANDIDATES' IDEA OF COMMISSIONS

Hence, the Mayor and Board of Estimate lose no opportunity to decry the services and motives of the Public Service Commission as "creatures of Whitman" and "attorneys for the corporations." In the Brooklyn *Eagle* of Oct. 20, Smith is quoted as follows:

> The Public Service Commissions are failures. The original plan was that these commissions should stand between the public and the utilities they were organized to regulate. After ten months' experience as a member of the Board of Estimate I have come to the conclusion that the commission for the First District—the present New York City Commission—occupies the position of attorney for the corporations.

There is the situation. And the public utility companies have to get along with both these public bodies. Existence itself being in their hands, the companies have naturally been forced to sit silent even when their work has been misrepresented, and even when plain untruths about them have been charged.

A State investigation of the "bad service" charged was used as an argument for the nomination of a Gubernatorial candidate.

The entire "shindy" fairly crucified the operating companies which had done herculean things to meet the conditions. Their public reputation, most precious asset! was ruthlessly muddied. A pretty mess!

Under the Rochester case decision the Public Service Commission's hands are tied. They are shorn of vital powers. They cannot do the one thing necessary to be done—alter the fares. In short, we have not had a fair trial of public service commission regulation.

And the result is such situations as exist in Buffalo, New York City, and in Rochester, Syracuse, Utica and other cities served by the New York State Railways, whose officers declare they, too, face bankruptcy.

MUNICIPAL OWNERSHIP OFFERED AS REMEDY

But Candidate Smith assumes that public service commission regulation is a failure. And now he comes out with a public announcement of his remedy—municipal ownership.

It will be worth while to read this announcement carefully to determine for oneself whether scientific study of the utility problem or political opposition to Governor Whitman's candidacy stands out in it with the most prominence.

In the Brooklyn *Eagle* article he says:

> The transit and public utility question is one of supreme moment to New York City, and it seems to me that municipal ownership is the only answer. . . . One has but to look at the transit conditions in New York City to realize that regulation by commission is as much a failure as the old method involved in the policy of dealing with utilities by special and general legislation. The public service commissions are failures. . . .
>
> The present disgraceful conditions should be brought home directly to the Public Service Commission and in turn to the Governor, whose only concern during his four years of office has been patronage.
>
> The only answer now that promises relief is municipal ownership. This is being widely recognized. At the last meeting of the Conference of Mayors of cities in the State a resolution was introduced asking the Legislature to extend to municipalities the right to acquire, own and operate public utilities. The resolution was unanimously adopted. But it is strange to say what every city wants they have been totally unable to get from a Republican legislature.

Politics is in the saddle. New York electric railways have a hard battle ahead. Casualties are bound to be many.

Winter Russell, president of the People's Ownership League, announces that public ownership and operation of public utilities has received pledges of support from thirteen nominees for New York State offices and fifty for Senate offices. He gives the following list:

> Six Democratic State office candidates, headed by Alfred E. Smith, nominee for Governor, answered a positive "yes" to the league's questionnaire.
>
> So did five Socialist State candidates, headed by Charles W. Ervin, nominee for Governor; one Socialist Laborite and one Prohibitionist.
>
> Governor Whitman and his associates on the Republican State ticket ignored the questionnaire.
>
> Fifteen women candidates for State or Senate offices promised support. Twenty-five Socialist, twelve Democratic, eight Republican and five Prohibitionist candidates for the Senate also pledged their backing.
>
> All candidates were asked if they favored public ownership and operation of water and sewage, street railroad, gas and electricity, and telephone systems.

NEXT LEGISLATIVE SESSION IMPORTANT

The coming session of the New York Legislature promises to rank in importance with even the legislature of 1907. In that year, under Governor Hughes, the Public Service Commissions were established. Upon the legislation of the coming session the future of New York's electric railways, in a great degree, depends. Between now and then the legislators must come to know the facts.

The elections in New Jersey and the coming session of the Legislature promises to be equally important. In New Jersey the Court of Errors and Appeals determined that the Public Service Commission had power to change the rate of fare regardless of rates stipulated in franchises. Acting under this decision, the Board of Public Utilities has recently granted increases in fare to the Public Service Railway and to the Trenton & Mercer County Traction Corporation. Both of these cases have been made the center of political battling of the greatest acridity. The awards are being fought in the State courts and may go even to the Supreme Court of the United States to determine the powers of the commission. An effort will be made in Trenton to shear the commission of power. A similar movement threatens in Pennsylvania and Maine.

Both parties have in their platforms come out for municipal ownership. Candidates are being pledged to vote for a revision of the constitution or for some measure which will shear the public utility board of its present legal powers.

In Illinois the settlement of the long-standing traction question in Chicago will be determined by a referendum. A "service-at-cost" proposition will be put before the people for their ratification and the reports are that the chance of this kind of settlement seems good.

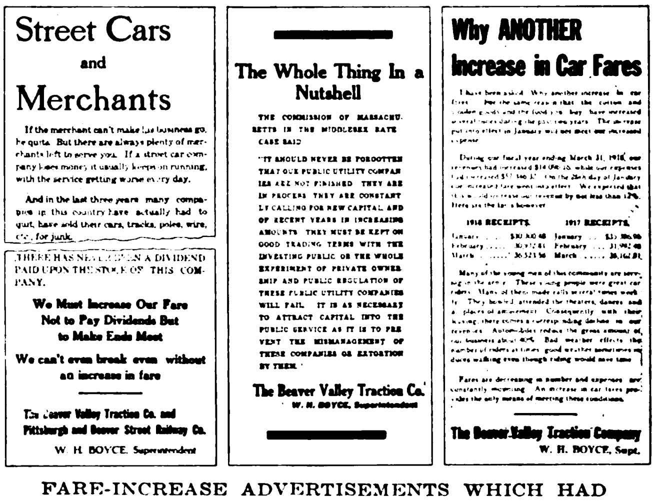
PUBLICITY THE ONE PROTECTION

The situation can be met by the companies in only one way: complete, thorough and frank publicity. The message to be driven home—and it must be done in numerous ways—is that "service is worth whatever it costs," and in the word "service" must necessarily be included a return to the capital used in giving the public service. Once the public really understands the true bearings of the situation the purely political argument will fall upon deaf ears.

It Pays to Advertise

WITHOUT the filing of a solitary formal protest with the Pennsylvania Public Service Commission and with no complaint from the people affected, the new 7-cent fare on the Beaver Valley Traction Company and the Pittsburgh & Beaver Street Railway lines went into effect on Sept. 6. The company operates through thirteen boroughs.

The increased cost of labor, material and supplies have hit the lines hard. An increase of fares to offset this increase was granted last winter, and since that time the companies have been operating on the basis of single fares for 6 cents or ten tickets for 55 cents. The companies found this insufficient and a new schedule was filed providing for a cash fare of 7 cents and eight tickets for 55 cents.



FARE-INCREASE ADVERTISEMENTS WHICH HAD EXCELLENT RESULTS IN PENNSYLVANIA

Street Cars
and
Merchants

If the merchant can't make his business go, he quits. But there are always plenty of merchants left to serve you. If a street car company loses money it usually keeps on running, with the service getting worse every day.

And in the last three years many companies in this country have actually had to quit, have sold their cars, tracks, poles, wire, etc., for junk.

THERE HAS NEVER BEEN A DIVIDEND PAID UPON THE STOCK OF THIS COMPANY.

We Must Increase Our Fare Not to Pay Dividends But to Make Ends Meet

We can't even break even without an increase in fare

The Beaver Valley Traction Co. and Pittsburgh and Beaver Street Railway Co.
W. H. BOYCE, Superintendent

The Whole Thing In a Nutshell

THE COMMISSION OF MASSACHUSETTS IN THE MIDDLESEX RATE CASE SAID

"IT SHOULD NEVER BE FORGOTTEN THAT OUR PUBLIC UTILITY COMPANIES ARE NOT FINISHED. THEY ARE IN PROCESS. THEY ARE CONSTANTLY CALLING FOR NEW CAPITAL AND OF RECENT YEARS IN INCREASING AMOUNTS. THEY MUST BE KEPT ON GOOD TRADING TERMS WITH THE INVESTING PUBLIC OR THE WHOLE EXPERIMENT OF PRIVATE OWNERSHIP AND PUBLIC REGULATION OF THESE PUBLIC UTILITY COMPANIES WILL FAIL. IT IS AS NECESSARY TO ATTRACT CAPITAL INTO THE PUBLIC SERVICE AS IT IS TO PREVENT THE MISMANAGEMENT OF THESE COMPANIES OR EXTORTION BY THEM."

The Beaver Valley Traction Co.
W. H. BOYCE, Superintendent

Why ANOTHER Increase in Car Fares

The Beaver Valley Traction Company
W. H. BOYCE, Supt.

Since the last of July the company has been advertising extensively to show the public why another fare increase was necessary. Some of the advertisements are reproduced herewith. The absence of protests against the increase, it is felt, speaks well for the value of the publicity work.

Trainmen as Witnesses*

Hearty Co-operation with Employers in Connection with Accidents Will Result in Justice to the Injured Person and the Railway

BY M. FARIÑAS
Traffic Inspector Manila Electric Railroad & Light Company, Manila, Philippine Islands

ACCORDING to definition a witness is a person who has seen or known something and is, therefore, competent to give evidence concerning it. One who has witnessed an accident should be able to tell in a clear and intelligent way all that he saw, describing particularly the nature of the accident, the exact date and time and place at which the accident occurred. A good witness should have good hearing, good eyesight and good judgment, so that he may answer accurately and quickly any question that may be asked him concerning an accident which he had witnessed. A clear and clean-cut declaration to the judge of what the witness has seen is a great help to the company in establishing responsibility and adjusting accident claims.

An employee acting as a witness for the company must be particularly careful in his statements to be sure that they can be substantiated, for it is more than likely that the judge will be more readily influenced by the declarations of witnesses for the plaintiff. Hence an employee giving evidence for the company is at a disadvantage, since he is very much in the position of a man giving evidence in his brother's behalf. One employee would naturally have an inclination to help another, and for this reason the judge may doubt some of his statements unless there is sufficient proof to substantiate them. The most valuable witness the company can secure in the case of an accident is one who is not employed by it in any capacity, because the judge will give his evidence more weight than he would the evidence of a witness connected with the company.

In the case of an accident to a passenger on one of the company's cars, or to anyone for that matter, it is the duty of the trainmen to secure a number of competent witnesses, being careful to get their names and addresses, no matter how slight the injuries to the person affected or the damage to the property may be. Care should be taken to secure such witnesses as in the opinion of the trainmen can give a clear description of the accident, because upon the evidence of these witnesses the company must rely almost entirely to defend itself and to establish beyond a doubt that the accident was not caused through the carelessness of any of the trainmen.

A great many of the accidents reported to the company are caused by passengers alighting from or attempting to board moving cars. Many of these accidents are not serious and in some cases the injured person says that it is not necessary to take his name as he considers the matter closed. However, the trainmen should not be influenced by this but should secure witnesses among the passengers or bystanders if there be any, because, although a person may be injured very slightly, he may later be influenced to bring suit against the company for damages. In this case the company would be in a very poor position to defend itself if the trainmen had not secured competent witnesses.

Trainmen should promptly report to their superiors all accidents so that the claim department may be notified immediately to take proper care of the injured person and to secure all the evidence in the case. It should be borne in mind that the motorman and the conductor are held jointly responsible for securing such witnesses and such evidence as will enable the company to put up the best defense possible under the circumstances.

THESE DATA ARE DESIRABLE

The information they secure should contain the following: (1) The date of the accident, giving as nearly the exact time as possible. (2) The place where the accident occurred. (3) The conditions of traffic at that point. (4) The number of the car. (5) The names and numbers of both motorman and conductor. (6) The nature of the accident, whether a collision, a derailment, or an accident of some other nature. (7) The names and addresses of any of the persons injured.

In the case of an accident to a vehicle, the number of the vehicle should be taken, as well as the driver's name, address and license number, and the name of the owner of the vehicle.

After this information has been secured, the names and addresses of as many witnesses as possible should be taken. It is necessary that the trainmen secure all information possible before leaving the place where an accident occurred so that they may be in a position, due to their accurate knowledge of the conditions under which the accident occurred, to give a clear and intelligent description of the conditions causing the accident when they are put on the stand as witnesses.

One can readily see trainmen who secure information as outlined above can be of great assistance to the company in settling claims for damages and thus be instrumental in saving large sums of money which the company without such data might unjustly be required to pay.

Trainmen should make every effort to avoid discussions or arguments with passengers, should always be polite and courteous, and should seize every opportunity to make their passengers their friends, for you must remember that you may wish to have your passengers act as witnesses at any moment. No distinction should be made in the treatment of passengers, whether they be Chinese, Japanese, Filipino, or of any other race, and the passenger with 10 centavos in his pocket is entitled to and should receive the same courteous treatment and privileges as are accorded a passenger who may have 20 pesos. In this way the public will be satisfied with the service and will be willing and ready to help as witnesses in the case of an accident.

Trainmen should so conduct themselves as to win the friendship of the passengers, but by no means should they attempt to be familiar with them. In answering questions or explaining matters pertaining to the company's business to passengers, or in attempting to settle arguments, trainmen should not speak boisterously but in a quiet, even tone, intelligently explain the conditions to the passengers, thus securing their co-operation as witnesses if this be needed.

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*Paper read before M. E. R. & L. Co. Section American Electric Railway Association, Feb. 12, 1918, and awarded the company section medal at the New York conference, Nov. 1, 1918.

Some Duties of a Carhouse Starter*

This Functionary Has Numerous Opportunities for Making Himself Useful to His Employer, to the Public and to His Fellow Employees

BY P. CASTILLO

Carhouse Starter Manila Electric Railroad & Light Company, Manila, Philippine Islands

THE duties of a carhouse starter are so numerous that it is necessary to select only the most important in order to bring this paper into reasonable compass. Let us begin with his first duty, which is to make himself thoroughly familiar with all of the schedules. By this I mean that a starter should read all of the schedules, study them and, if need be, commit them to memory in order that he may be familiar with every detail that they contain. His next duty is to keep extra lists properly in order to avoid unequal deals between his men. That is, he should see that the extra list is kept in proper condition so that each man gets a square deal, his *pro rata* share of the work. The starter should also keep an accurate record of those who are absent from duty, whether from sickness or on vacation leave. He should also keep a record of the men who are familiar with the duties on the several lines and several types of cars. He should so manage his department as to have sufficient cars and men on hand on holidays and at other times of rush traffic so as to be able to supply cars and men when called for by the various line inspectors to handle any increased traffic on their lines and thereby so render efficient service to the public.

The starter should inspect the motormen before they are allowed to go on duty, both in the morning and in the afternoon, to ascertain if they have their entire equipment for the service, such as watch, rule and time books, copies of special orders, insignia of service and clean uniforms. Conductors should be subjected to the same inspection, and they should have watch, punch, towel or rags for cleaning seats, rule book, copies of special orders, insignia of service and clean uniforms. The starter should further see that trainmen report promptly ten minutes before their cars are due to leave the carhouse.

He should also instruct all trainmen regarding defects which have been brought to his attention by the inspectors: namely, defects in trolley wires and tracks, excavations made by water and gas companies near the tracks, etc. He should watch for the notes on trouble sheets and study them carefully so as to be able to handle wisely any contingency which may arise. He should have an equipment list and see to it that all cars go out on schedule time in a neat condition, with a full equipment, including controller handles, reverse keys, coupling pins, turtle backs, and destination signs and screens.

One of the most difficult duties of a starter is the handling of men and work in such a manner so that all of the men will be contented, so as to prevent as far as possible trouble or disagreement which might arise among them due to the division of work.

The starter as well as the trainmen should give exact information to the public concerning such matters as car service schedules, time on transfer points, special fares, etc. It is the duty of all trainmen, and for that matter of all the employees of the company, to be courteous in their dealings with the public. Another duty of a starter is carefully to check and correct the comparative daily report of cars in service, both in the morning and in the afternoon. He should also report the hours of operation and take care of reports. By this I mean that he should see and correct all of the trainmen's reports and eliminate mistakes as far as possible. He should give a complete written report to the superintendent of transportation for all accidents, unusual occurrences and violations of the rules by the trainmen during the day and night around the car house, including the condition of tracks, switches, trolley wire, etc. This report should be made daily and should be as complete as possible.

In addition to the points mentioned above, there are many others just as important which the starter should bear in mind. For instance, he has to handle reports of accidents, derailments, blockades, "trolley wire down," fires, etc., each of which troubles should be reported to his superiors in the company as soon as he receives the information. If he is unable to locate any of his superiors at the time he must consider himself responsible and handle the trouble to the best of his ability.

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*Paper read before M. E. R. & L. Co. section American Electric Railway Association, Feb. 12, 1918, and awarded "honorable mention" in the company section medal competition at the New York conference, Nov. 1, 1918.

Labor Board Should Raise Fares

Brief in Kansas City Case Urged Power and Duty of Board to Remove Limitations on Wage Increases

ALTHOUGH the National War Labor Board has thus far taken the position that it has no power to authorize electric railways to increase fares and can only recommend action by regulatory authorities in deserving cases, many believe that it is foolish for this board to "settle" wage controversies by making a wage award and then simply suggest that permission for fare increase be given to the companies to pay the award.

The legal points underlying the reasoning of those who believe the War Labor Board has authority to increase fares directly in order to back up its wage awards were well set forth in the recent brief filed by Frank Hagerman and Clyde Taylor in the Kansas City (Mo.) Railways case before the board. The decision in this case is noted on another page.

The arguments in the brief, fortified by citations, were based on these propositions:

I

1. The United States is empowered to wage war.

2. War is an appeal to force to maintain governmental existence and rights.

3. The power to wage war is the power to do anything necessary, expedient, convenient or conducive to its successful conclusion.

4. Maintenance of industrial peace in, and uninterrupted operation of, electric railway and certain other industries are essential to successful prosecution of war.

5. The government, therefore, pursuant to its war power, may and has empowered the War Labor Board to prevent industrial strife and avoid interruption of function in these industries by authoritatively fixing wages for labor therein.

II

1. The grant of a power, such as to fix wages, carries authority and duty to employ all means necessary to effectuate the power; to do all things to attain the end, to accomplish the object, to make the right available; to do that without which the power would be unavailing or remain empty and dormant.

2. The power to insure industrial peace and to maintain industry at its maximum efficiency by fixing wages therein, carries power and duty to remove restrictions and limitations on the employer which, while standing, effectively prevent the payment thereof; to render nugatory and no longer of avail all that hampers, interferes with or stops the wage as fixed, reaching the pocket of him for whom it is fixed.

3. Where, as in Kansas City, a company has no resource from which to pay wages, except income from sale of its product, and that income is so limited by a prior local regulation that the wages fixed cannot be paid, then the board has the power, and it is its duty, to remove that limitation to the extent necessary to enable the wage to be paid. Otherwise, in the language of Justice Story, dealing with exactly such a situation: "It would otherwise result that the power could never be exercised; that the end would be required, and yet no means allowed for its accomplishment; this would be a perfect absurdity; it would be to create powers and compel them to remain forever in a torpid, dormant and paralytic state." (3 Story's Constitution, Sec. 12, 32.)

III

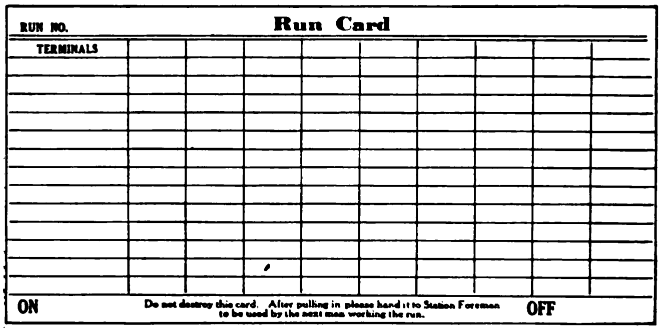
Acts pursuant to national authority are the "supreme law of the land . . . anything in the Constitution or laws of any state to the contrary notwithstanding." (Article 6, Constitution.) Any legislation or regulation of a state, although in pursuance of an acknowledged power reserved to it, which conflicts with the actual exercise of the power of the nation, must give way before the supremacy of national authority. The War Labor Board, exercising national authority, is none the less empowered to strike down regulations rendering impossible obedience to its mandate, notwithstanding such regulations are imposed by state or city authority.

Individual Hand-Made and Printed Run Cards

ORDINARILY the trainman who wants to keep track of his runs for the day may be seen copying the figures from a blackboard or typewritten sheet onto the back of an envelope or, at best, in a pocket memorandum book. For a small railway, the practice of the Duluth Street Railway may be recommended. On this property each man receives a 3-in. x 6 in. "Run Card" which has space for the run number, the terminals and the "on" and "off" times. On this standard card, the trainman copies off all the trips covered by the run number. When he turns over the run to another man he also turns over his card. Typewritten cards are prepared for new men until they have acquired sufficient experience to copy the figures themselves.

The Twin City Rapid Transit Company goes even further in insuring punctuality, while also serving the convenience of its men. This company prints individual 3-in. x 5-in. run cards for the daily, Saturday and Sunday runs of each line. This card also indicates the reliefs. The back of the card details the two and even three sets of running times used over the route. These cards are given to the individual motormen.

These run cards are also printed on flexible paper, except for the matter on the back, and are bound together in a booklet to give the line inspector a set of sheets covering every regular, tripper and pull-out run on his division. The running times for the inspector's booklet are shown on a single sheet. Typical pages are reproduced.

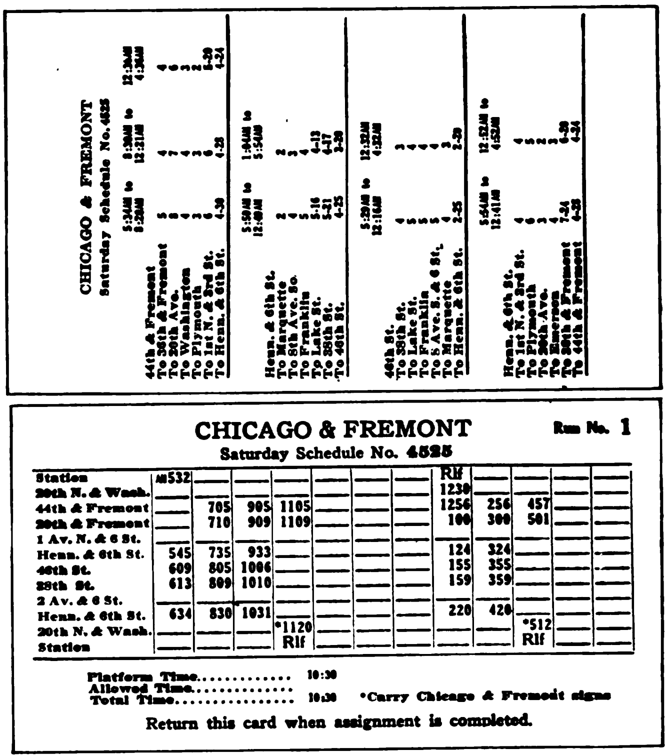


RUN NO. **Run Card**

TERMINALS

ON Do not destroy this card. After pulling in please hand it to Station Foreman to be used by the next man working the run. OFF

RUN CARD, DULUTH. THE TIMES OF THE TRIPS ARE TYPEWRITTEN ON THIS CARD



CHICAGO & FREMONT
Saturday Schedule No. 4525

	5:34AM to 8:28AM	8:30AM to 12:21AM	12:30AM 4:30AM
44th & Fremont			
To 38th & Fremont	5	4	4
To 20th Ave.	8	7	6
To Washington	4	4	3
To Plymouth	3	3	2
To 1st N. & 3rd St.	6	6	5-29
To Henn. & 6th St.	4-30	4-28	4-24

	5:50AM to 12:40AM	1:04AM to 5:54AM
Henn. & 6th St.		
To Marquette	2	2
To 8th Ave. So.	4	3
To Franklin	5	4
To Lake St.	5-16	4-13
To 38th St.	5-21	4-17
To 46th St.	4-25	3-20

	5:29AM to 12:16AM	12:32AM 4:32AM
46th St.		
To 38th St.	4	3
To Lake St.	5	4
To Franklin	5	4
To 5 Ave. S. & 6 St.	5	4
To Marquette	4	3
To Henn. & 6th St.	2-25	2-20

	5:54AM to 12:41AM	12:52AM to 4:52AM
Henn. & 6th St.		
To 1st N. & 3rd St.	4	4
To Plymouth	6	5
To 20th Ave.	3	2
To Emerson	4	3
To 38th & Fremont	7-24	6-28
To 44th & Fremont	4-28	4-24

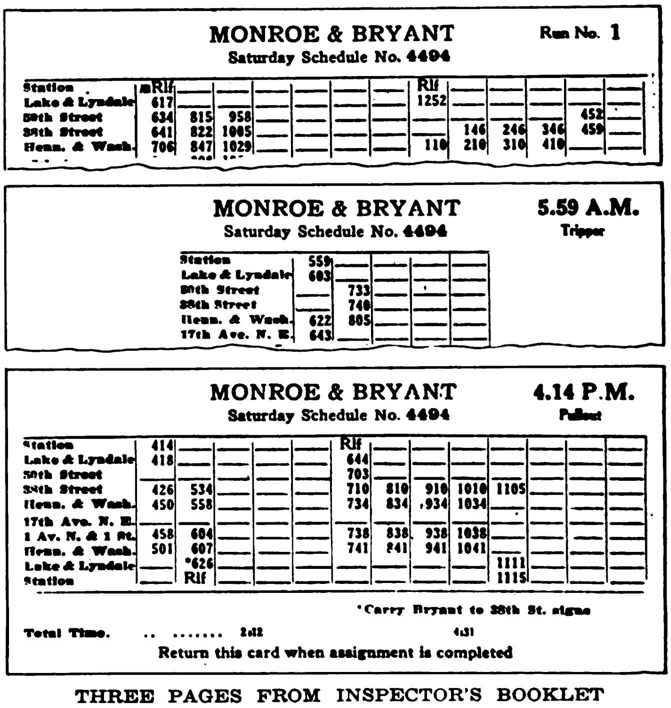
CHICAGO & FREMONT Run No. 1
Saturday Schedule No. 4525

Station	AM532							Rlf				
20th N. & Wash.								1230				
44th & Fremont		705	905	1105				1256	256	457		
20th & Fremont		710	909	1109				100	300	501		
1 Av. N. & 6 St.												
Henn. & 6th St.	545	735	933					124	324			
46th St.	609	805	1006					155	355			
38th St.	613	809	1010					159	359			
2 Av. & 6 St.												
Henn. & 6th St.	634	830	1031					220	420			
20th N. & Wash.				*1120						*512		
Station				Rlf						Rlf		

Platform Time.............. 10:30
Allowed Time..............
Total Time.................. 10:30 *Carry Chicago & Fremont signs

Return this card when assignment is completed.

FRONT AND BACK OF PRINTED RUN CARD, MINNEAPOLIS



MONROE & BRYANT Run No. 1
Saturday Schedule No. 4494

Station	AMRlf							Rlf					
Lake & Lyndale	617							1252					
50th Street	634	815	958									452	
38th Street	641	822	1005						146	246	346	459	
Henn. & Wash.	706	847	1029					110	210	310	410		

MONROE & BRYANT 5.59 A.M.
Saturday Schedule No. 4494 Tripper

Station	559				
Lake & Lyndale	603				
50th Street		733			
38th Street		740			
Henn. & Wash.	622	805			
17th Ave. N. E.	643				

MONROE & BRYANT 4.14 P.M.
Saturday Schedule No. 4494 Pullout

Station	414					Rlf							
Lake & Lyndale	418					644							
50th Street						703							
38th Street	426	534				710	810	910	1010	1105			
Henn. & Wash.	450	558				734	834	934	1034				
17th Ave. N. E.													
1 Av. N. & 1 St.	458	604				738	838	938	1038				
Henn. & Wash.	501	607				741	841	941	1041				
Lake & Lyndale		*626								1111			
Station		Rlf								1115			

*Carry Bryant to 38th St. signs

Total Time. 2:12 4:31

Return this card when assignment is completed

THREE PAGES FROM INSPECTOR'S BOOKLET

Recent Happenings in Great Britain

Conservation Again a Foremost Topic of Discussion—Many Towns Stop All Cars on Sunday

(From Our Regular Correspondent)

The Glasgow Corporation Tramways Department is giving consideration to the various ways by which coal consumption can be reduced in order to comply with the requirements of the fuel rationing order. In regard to the possibility of effecting a saving by more careful driving, Mr. Dalrymple, the general manager, has already taken action. He has issued to the motormen a concise statement of the need for saving current, and hints as to how they may effect it. He says that before the war it was declared by those who had gone carefully into the matter, that a saving of from 10 to 15 per cent in current was easily attained by the careful handling of the car. It is believed that under the conditions prevailing at present even a greater saving could be effected. In illustration of this, Mr. Dalrymple states that during the last financial year, which ended on May 31, it took on an average 1.56 units, to take a car 1 mile. When it is realized that a driver who is exceptionally careful can drive the car a mile and use only a little more than one unit of electricity, it will be readily understood what an enormous saving would be effected if all drivers were doing their best. Last year the car mileage reached 26,261,231. This took 41,054,757 units of current. If it takes 3 lb. of coal to generate a unit and each driver took 1¼ units per mile instead of 1½ the saving in coal would be about 10,000 tons per annum. This quantity of coal at 20s. per ton would mean to the department a financial gain of £10,000. At least 50 per cent of this saving should be handed over to the drivers.

LENGTH OF DAY REDUCED

To meet the demand for economy in the consumption of coal efforts are being made by the tramway undertakings all over the country to practice economies consistent with the requirements of the public. Services are being reduced by starting the cars later in the morning and stopping them earlier in the evening; by running fewer cars during the non-rush hours of the day, and by restricting or suspending Sunday services. The number of stopping places is being reduced as far as practicable, and more attention is being given to the question of careful driving.

It is stated that the total suspension of the Sunday service in Huddersfield together with the curtailment of the service at noons and nights, is effecting in that town the economy in fuel which the government has urged upon all municipal authorities. Huddersfield tramway passengers appear to be the only ones in Yorkshire so far submitting to this deprivation, but the Sunday service has been entirely suspended also at Sunderland, Preston, Swindon, Torquay, Bournemouth, Ilford, Exter, Northampton, Nottingham, and Ayr, while no trams run on Sunday mornings at Salford, Blackpool and Hartlepool.

Sunday trams are to continue at Halifax, and no further restrictions of service are to be made at present. The feeling of the tramways committee there is that if the coal situation demands further economies from tramways the Board of Trade should accept the responsibility of reducing the facilities for tram riding below the existing services.

SKIP STOPS IN NEWCASTLE

In Newcastle the tramways committee in reducing the number of stopping places on the routes has made it compulsory that at the remaining places all cars, whether full or empty, must stop. Passengers are asked to assist the management by refraining from boarding full cars. Everything is being done to keep an adequate service of cars on each route such as present necessities allow due to shortage of labor and materials.

At a recent meeting of the City Council of Sheffield, when it was decided to adopt a recommendation of the electric supply committee that the price of current should be advanced in order to meet the increased cost of coal and wages, the chairman of the tramways committee stated that the tramways undertaking would be very seriously affected. That undertaking was one of the largest consumers of current in the city, and last year paid £95,950 to the electric supply committee. The increase in the price of current would necessitate changes in the tramway committee's estimates, and it seems inevitable that Sheffield's tram fares would go up. Almost all the other corporations in the country except Sheffield have found it necessary to increase tram fares.

INCREASED TRANSIT FOR DUBLIN

The necessity for increased transit facilities in the port of Dublin, and improved canal communications, was the burden of evidence given recently before the Irish sub-committee of the Parliamentary committee appointed to inquire into matters relating to inland transport. H. M. Dockrell, past-president of the Dublin Industrial Development Association, dealt mainly with the possibilities of promoting the expeditious and efficient conveyance of goods to and from the port and points within the city and suburbs. He said that better use should be made of the tramways, and that they should be linked up with the quays as far as possible, so that goods could be put on the tramway and distributed through the city. Replying to questions, Mr. Dockrell said that the tramways carried gravel from Howth to outlying suburbs, and also carried parcels and delivered them in a very efficient way. He suggested that the trams should go down the quays alongside the vessels and deliver goods around Dublin and suburbs.

BIRKENHEAD PROFITS INCREASE

The annual report of the Birkenhead Corporation Tramways Department shows that the income for the past year was £97,837, or £17,090 in excess of that for the preceding twelve months. Expenses were increased by £11,708, and there is a profit of £44,023, or £5,382 more than in 1916. During the year, 20,538,476 passengers used the cars. This was an increase of 2,588,043 over 1916 and 5,370,518 over the pre-war year. These figures, however, do not include the many wounded soldiers and sailors, who are allowed free use of the cars. The collections on the cars for war charities have realized from February, 1916, to February, 1917, £3,021; from February, 1917, to February, 1918, £1,808, and from February, 1918, to July £1,508, a total to date of almost £6,338.

TRAMWAY ASSOCIATION CONFERENCE

The seventeenth annual conference of the Municipal Tramways Association was held during September at Leicester. Ernest Hatton, engineer and general manager of the Newcastle Corporation Tramways, read a paper "Some Notes and Considerations on the Post-War Position of Electric Power Supply." Mr. Hatton dealt with the Board of Trade proposal for taking over existing power-generating stations with a view to the establishment of a national system of supply. He hinted at the possible electrification of the railways of the country, in which case, he said, the whole policy with regard to electric supply would require to be treated from a much wider standpoint. In the discussion which ensued, the Board of Trade proposal was criticised. While some delegates favored the idea of a national system, others expressed the view that this would result in higher prices to consumers.

The Town Council of Edinburgh, which has had in hand the promotion of a provisional order for the construction of tramways to Queensferry, has resolved to withdraw the application for powers and postpone the scheme. The Admiralty had promised general support to the bill, but later withdrew because the corporation could not concede a 50 per cent reduction of fares to naval ratings, and the extension of the tramway to Port Edgar along the high ground to the south of Queensferry. At the special meeting of the Town Council the Lord Provost said that the attitude of the Admiralty was very indeterminate and that the proposal as regards the fares was impossible and preposterous. The present circumstances would not always be the same, and after the clearance of the situation in various respects the Town Council would proceed to an issue against all comers. A. C. S.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Attitude of New York Cities

Secretary of Mayors' Conference Tries to Explain Opposition to Rate Increases

In a statement issued by William Parr Capes, secretary New York State Conference of Mayors, at the request of the Empire State Gas & Electric Association, Mr. Capes says that "to interpret correctly the attitude of the municipalities of a state toward their public utilities is an exceedingly difficult assignment at any time, and it is particularly so just now when war conditions make necessary so many and unprecedented changes."

In an effort to explain the attitude of cities in New York toward utilities, Mr. Capes cites official acts of the Conference of Mayors, composed of the elected and appointed representatives of fifty-nine cities. His summary, excluding acts relating to other than electric railway utilities, is as follows:

> It has asked the Legislature to place on the statute books a permissive municipal ownership law.
>
> It has opposed the combined effort of many street railways to increase fares from 5 to 6 cents.
>
> It has kept all cities informed of every proposal before the Public Service Commissions to change rate schedules.
>
> It has asked the Legislature to amend the public service commission law so that the public will have the same protection under it that the public service corporations now enjoy.

M. O. Bill Being Drafted

With regard to municipal ownership legislation, it is said that the conference has organized a committee to draft a bill. This committee has already held one meeting, and a sub-committee is now preparing a tentative draft of a bill. It will be the endeavor of this body to present a measure, permissive in character, that will give to municipalities authority to own, operate, acquire or lease any kind of a public utility, with at least one referendum on the question of establishment or purchase after the cost is determined. This legislation is desired in order that "a municipality may be in a position, if the necessity arises, either to force a corporation to give good service at a reasonable price or to provide that service itself."

Platform of the Mayors

In Mr. Capes' opinion, the attitude of the municipalities may be summarized in this way:

> In the solution of rate and service problems the cities desire mutual co-operation.
>
> They will oppose any subterfuge to increase the cost of service. Armies may camouflage their movements, but utilities cannot. The cities will insist on straight-forward dealings with the public.
>
> The cities will continue to exercise an eternal vigilance over rate proposals and proceedings. They will insist that relief sought be granted by the proper officials, in the proper way and only where and during the time it is needed.
>
> They want authority to provide service under municipal ownership and operation when mutual co-operation is denied or fails, and when State regulation is not effective.
>
> They will insist on the right of municipalities to obtain proof as to the merits of any claims for increased rates.
>
> They will press their claim that whenever any doubt exists as to the reasonableness of a proposed rate increase, such proposal should not become effective pending a determination of the issue.
>
> They will continue to oppose any effort to allow, seek, or compute a return on a capitalization basis. The by-gone evil practice of overcapitalization will continue to haunt the utility corporations until the excess shall have been eliminated.

Cities Want to Co-operate

Mr. Capes further believes that if the public service corporations would show the same desire to co-operate in the solution of utility problems as the cities have evidenced, rather than to seek by devious methods what may be only justice, there would be less delay and fewer controversies. The fact that the conference has accepted the invitation to explain the attitude of the cities on public utility problems is said to be evidence of the desire of the municipalities for mutual co-operation.

Seattle Men Appeal to Washington

The platform men of the Puget Sound Traction, Light & Power Company, Seattle, Wash., announced that unless the War Labor Board ordered before Oct. 26 a continuance of increased wages then being paid them, they would quit their positions and seek other work. The recent agreement, by which platform men are receiving 50, 55 and 60 cents an hour instead of 33 and 40 cents, expired on that date, and up to Oct. 24 officials of the company had not agreed to renew it. The men have been getting the higher pay since Aug. 1.

A. W. Leonard, president of the Puget Sound Traction, Light & Power Company, has joined with the local union in telegraphing the War Labor Board at Washington, D. C., asking an immediate hearing on the Seattle wage question, and pointing out that promise of an immediate hearing would do much to keep the men at work pending the wage readjustment.

The War Labor Board has already made a preliminary inquiry into the matter.

The employees of the Seattle & Rainier Valley Railway have also submitted an application for wage increases to the War Labor Board. The platform men on this line are receiving lower wages than Seattle trainmen, and they are asking for the same scale now being paid Puget Sound Traction employees.

Terminal Plan Approved

City Council of Cleveland Takes Action Toward Providing Union Station for Steam and Electric Roads

The ordinance providing for a union station on the Public Square at Cleveland, Ohio, for both the steam and the interurban railways entering that city was formally approved by the City Council on Oct. 24, after several amendments had been made to it. A special election will be held on Dec. 10 or Dec. 17 to pass upon the ordinance.

Electrification Provisions

The Cleveland Union Terminals Company, to which the franchise is granted, accepted all the amendments suggested by the city with the exception of those relating to electrification of all steam and interurban lines within the city limits and the control of rapid transit and interurban rates of fare and service. Compromises were reached on both provisions.

Steam railways using the station are to be electrified between East Thirty-seventh Street and West Thirtieth Street within five years, under the compromise amendment, although the station itself is to be electrified when completed. Complete electrification of all roads within the city limits could not be accomplished, according to John L. Cannon, president of the company.

The amendment relating to control by the city provides that all local rapid transit service may be thus regulated within a zone of 15 miles from the Public Square, with the exception of trains of steam and interurban railways, already under State control.

Completion Within Five Years

Provision is made that the entire project shall be completed within five years after the close of the war. A municipal ownership clause was included after Mayor Harry L. Davis had declared that the entire ordinance would be disapproved if it was omitted. It seems the new charter requires this provision. The ordinance providing for a union station on the lake front will remain binding upon the New York Central, Big Four and Pennsylvania roads until they are actually using the new union terminal. They are also obligated to pay back taxes of several years on the Bath Street tract.

Beginning of construction of the improvement will depend entirely upon the United States Railroad Administration, Mr. Cannon said. The administration favors the proposed plan, but whether it will allow the construction of new tracks and depot buildings is a question that must yet be settled.

Labor Board Decides Brooklyn Case

Permits Men to Join Labor Unions but Does Not Require Company to Deal with Unions—Company Asks Departmental Trustees to Report on the Men Who Have Been Recommended for Reinstatement

On Oct. 24 the War Labor Board handed down its decision in the case of the New York Consolidated Railroad (a rapid transit subsidiary of the Brooklyn Rapid Transit Company). Earlier articles in this paper have given some of the testimony presented in this case. No question of wages, hours of labor or working conditions were involved, but the case arose because it was alleged that certain men were discharged because of their union affiliations with the Brotherhood of Locomotive Engineers. An abstract of the decision of the Labor Board is given below:

ABSTRACT OF LABOR BOARD DECISION

"There are but two questions involved in this case:

"1. The right of the workers upon this line freely to organize in trade unions of their own selection and to bargain collectively with the company through chosen representatives without interference on the part of the company;

"2. Discrimination against individual employees alleged to have been dismissed for exercising their right to join a particular trade union and the right of said discharged employees to reinstatement in their positions.

"The company denied the jurisdiction of the board either to entertain consideration of the controversy or to make an enforcible award, on the grounds that there was no controversy between the men of the New York Consolidated Railroad Company and their employers and because the matter out of which the question arose was itself in violation of the spirit and principles of the War Labor Board. The contention of the 'no controversy' between the men and the company was, in part, based upon statements filed with the board, signed, as claimed by the company, by all but four of the motormen on the subway and elevated lines, of date of Aug. 9, 1918.

MEN MAKE OUT A CASE

"On the question as to the existence of a controversy within the meaning of our principles, we find the following to be the facts: (a) That a strike vote, prior to the interposition of this board, was taken, which embraced a considerable proportion of the motormen admittedly employed on the subway and elevated lines of the company; (b) That the employees and former employees of the company have filed a complaint against the company in due form and have appeared as witnesses at the hearings in person and by representatives, setting forth in detail a number of substantial grievances which they desired to have adjusted; (c) That the jurisdiction of the board was invoked by the Department of Labor, under the rules and practice of the National War Labor Board, after investigation by said Department.

"We have considered and weighed the evidence, consisting of signed statements of employees to the effect that no controversy exists, but an examination of the names signed to these statements shows that many of the signatories are employees and former employees now actually appearing as complainants against the company. The complainants charge, in effect, that these statements were in some degree procured as a result of coercion, and this claim would seem to have basis in fact on account of the anomalous situation presented of men who signed the statements to the effect that there was no controversy at the same time prosecuting their grievances before us with vigor.

"In view of the foregoing, it follows that the ruling must be that the case is one which comes properly under the jurisdiction of the National War Labor Board.

PRESIDENT WILSON QUOTED ON LABOR

"Among the principles proclaimed by the President of the United States in his proclamation of April 8, 1918, to govern the relations between workers and employers for the period of the war, is the following: 'The right of workers to organize in trade unions and to bargain collectively through chosen representatives is recognized and affirmed. This right shall not be denied, abridged, or interfered with by the employers in any manner whatsoever.'

"That this provision of the President's proclamation was violated by the company, it would seem to us admits of no doubt. We are brought to this conclusion primarily by the admissions of the president of the company and other high officials as to their attitude of opposition to the men joining the unions chosen by them as most desirable for their welfare, by the espionage of the officials of the company in the neighborhood of the meeting place of the organization and elsewhere, by the fact that the dismissals were abnormally large in number during the two months when the issue as to the unions was acute, as compared with dismissals for years prior to that time, and finally by the showing that the men who exercised their right to join unions admittedly opposed by the officials of the company were charged with demerits which accumulatively brought about their discharge with such rapidity and under such circumstances, after their membership in unions was disclosed, as to lead us to the conclusion that dismissals, in a large number of cases, were caused by their legitimate union activities and not on account of inefficient service or improper conduct, the reasons assigned by the company for the dismissals.

CONSTITUTION OF BENEFIT ASSOCIATION CRITICISED

"The company seeks to avoid the charge of denying its workers the right to collective bargaining by pointing out that there is no opposition on the part of the company to membership in the organization known as the Brooklyn Rapid Transit Employees' Benefit Association. The employees claim, however, that this association is within the direct environment, if not actually under the control, of the company itself.

"The form of the Benefit Association seems to have been changed from time to time, but one feature which has persisted is that the president of the company has appointed the president of the association, and the president of the association has either himself conducted the elections or appointed persons to do so. It is claimed that this has never resulted in a suggestion of unfairness, but where the issue is acute and a company-formed association is offered as a substitute for an association of the voluntary formation of the men, the slightest suspicion of an opportunity for unfairness on the part of the employer is itself a reason for questioning the usefulness of such an organization.

MEN CAN JOIN ANY UNION

"Without further discussion of the merits of this last-named association, it is easy to see why it is not regarded by a considerable portion of the men as a satisfactory medium for their collective action; and under the principle hereinbefore set forth the men are free to join such organization as they may select themselves and to appoint such persons as their representatives whom they may regard as most suitable to them. Following the section of the proclaimed principles of the board above set forth, it must be ruled that the employees of the company who desire to become members of the Brotherhood of Locomotive Engineers, or any other legitimate labor organization, shall be permitted to do so without denial, abridgement, or interference upon the part of the company.

"To avoid a misconception of many employers we wish to say that we are not here deciding that the railroad company must recognize, deal with, or make a contract with the Brotherhood of Locomotive Engineers.

"We are not unionizing the employees of the company in the sense of making its organization a closed shop.

"Under our principles the company, not being bound otherwise by any contract or agreement with the union, may refuse to receive and deal with any committee but one of its own employees. But it cannot bar its employees from joining such unions and organizing such unions as they choose. If these empioyees see fit to follow a lawful course toward the company advised or directed by a national or international union including in its membership many others than their own number, it is their right, and the company may not prevent them from so doing and may not complain.

"For the foregoing reasons we make the following findings:

"1. *Right to Organize.* The right of the workers of this company freely to organize in trade unions, or join the same, and to bargain collectively, is affirmed, and discharges for legitimate union activities, interrogation of workers by officials as to their union affiliations, espionage by agents or representatives of the company, visits by officials of the company to the neighborhood of the meeting place of the organization for the purpose of observing the men who belong to such unions, to their detriment as employees of the company, and like actions, the intent of which is to discourage and prevent men from exercising this right of organization, must be deemed an interference with their rights as laid down in the principles of the board.

"2. *Reinstatement.* We therefore recommend, as the only just basis for a proper settlement of this controversy, that the New York Consolidated Railroad Company reinstate to their positions the following employees whom we find to have been dismissed primarily because of legitimate union activities, with full pay for all time lost from the dates of their several dismissals, minus any intervening earnings in other employments."

The board then gives the names of twenty-nine men whom it recommends for re-employment and the names of eleven whom it does not recommend should be reinstated. The board then says:

"We have reached these conclusions with the hope that they may be made the basis for accommodation between the employer company and the dissentient employees. We think our principles may be misunderstood by both sides, and we have, therefore, set them forth with as much elaboration as seems proper. We leave to the company and its employees, without further specification, full opportunity to come to an agreement in the light of these principles, and our recommendations have been made with the hope that a just and full accommodation, satisfactory to both parties, in a proper spirit may be reached without interfering with the continued usefulness of the important transportation system which the company has the responsibility for carrying on."

COMPANY ASKS DEPARTMENTAL TRUSTEES TO REPORT ON DISCIPLINE CASES

On receipt of this decision the company addressed a letter to the three departmental trustees who represent the motormen and motor-switchmen on the Benefit Association board. At the same time a copy of this letter with a copy of the decision and extracts from the statement made by President Williams at one of the hearings outlining the policy of the company was sent to each motorman and switchman. In this letter, which is signed by Vice-President Dempsey, the company explains that it desires in every way consistent with the safety and efficiency of operation and with the best interest of the employees to conform as far as possible to the recommendations of the board.

It explains that while it has never sought to influence elections to the office of departmental trustees, it is preparing changes in the constitution of the Benefit Association along the lines suggested by the War Labor Board and these changes will be submitted to the employees for approval.

The letter also refers to the recommendation of the board in regard to the reinstatement of the men named and to the statement of the board that the company and its employees might come to an agreement in the light of the principles enunciated. With this sentiment the company expresses itself in hearty accord, and in accordance with the constitution of the Benefit Association it asks that the departmental trustees investigate carefully the facts as to the separation from employment of the men named. It adds that if the trustees find that any injustice has been done, the employee will be reinstated and allowed back pay from the time of his dismissal.

In conclusion the letter says:

"We sincerely trust that the cordial and helpful relations which have always existed between the management and its employees will be additionally strengthened by such a determination of this matter as will appeal to your fellow employees to be just and wise, so that, in the words of the National War Labor Board, 'a just and full accommodation, satisfactory to both parties in a proper spirit, may be reached without interfering with the continued usefulness of the important transportation system which the company has the responsibility for carrying on.'"

More Wages Increased

War Labor Board Hands Down Seven Decisions—Recommends Higher Fares in Memphis and Kansas City

The National War Labor Board on Oct. 23 handed down findings in several additional electric railway cases. Two of these, for the New York Consolidated Railroad (Brooklyn Rapid Transit System) and the Columbus (Ga.) Railroad, concerned the right of employees to join unions without molestation. The former case is covered above.

In the Columbus case the board found that the company, in discharging five men for legitimate activity in respect to the union, and in imposing upon other men who then struck the condition that they could return only upon the surrender of their right to organize, clearly violated the principles proclaimed by President Wilson. The board repeated in brief its policy as outlined fully in the Brooklyn Rapid Transit case and recommended the employment of all the men who offered to return.

Five other cases, however, had to do primarily with wages. In one instance, that of the Des Moines (Iowa) City Railway, the board ruled that the complaint of the men against existing wage rates must be dismissed because the men have not sought to avail themselves of the broad form of arbitration provided in their contract with the company. Should the men invoke this arbitration and the arbitration clause for any reason prove inoperative, they may then apply to the War Labor Board.

In the four other wage decisions the board pursued the policies laid down in preceding wage cases. A summary of the present decisions follows:

MEMPHIS (TENN.) STREET RAILWAY

New Wage Scale for Motormen and Conductors: First three months, 36 cents an hour; next nine months, 38 cents an hour, and thereafter, 40 cents an hour.

New Wages of Other Employees: Under the submission the term "repair men" includes only shop and carhouse repair men, as follows: Motor gang, electrical work, break repairs, car placing, air brakes, headlights, carpentry and painting. The rates now paid to these repair men are increased by 8 cents an hour, and all such repair men, except apprentices, will receive not less than 36 cents an hour.

Time of Award: Effective Aug. 1, for the duration of the war, with opportunity for reopening at six months' intervals. The company has until Feb. 1, 1919, to make back payments of wages.

KANSAS CITY (MO.) RAILWAYS

Conditional New Wage Scale for Motormen and Conductors: First three months, 43 cents an hour; second three months, 46 cents an hour; thereafter, 48 cents an hour; one-man car operation, 53 cents an hour. Rate of hostlers same as that for motormen and conductors.

Conditional New Wages for Other Employees: The wages of employees other than motormen and conductors are increased by the same per cent that the maximum of the wage scale paid to motormen and conductors is increased, provided that if this per cent increase does not bring the wage of any adult employee up to a minimum of 42½ cents an hour, he or she shall be paid such a minimum. Women employees receive equal pay with men for the same work, and the guaranteed minimum for women is increased from $60 a month to $75 a month, as now obtains in the case of the men.

Conditional Schedules and Hours: When the elapsed time consumed by swing runs exceeds thirteen hours, an addition of pay for the period excess consumed time is allowed, as follows: For the fourteenth hour, fifteen minutes; for the fifteenth hour, thirty minutes; for the sixteenth hour, forty-five minutes, and for the seventeenth and each successive hour, sixty minutes.

These allowances are applied to successive periods of one half-hour each, less than one-half of such period to be neglected and more than one half of each such period to count as allowed time for the full allowed period. Whenever there is a break or lay-off time in any of the scheduled runs of forty-five minutes or less, such period is paid for at the rates prescribed in this award and is considered to be a part of the platform time.

For all time required in excess of the regular schedule time, time and one-half is paid. Night cars are all straight runs, with no more than eight hours' time and with ten hours' pay.

The employees asked that all employees running on schedule of less than nine hours be placed on a nine-hour basis, that nine hours be known hereafter as the working day, and that all those having a schedule of less than nine hours be paid for nine hours' work. This demand was not supported by adequate testimony or argument and is not in accord with previous decisions of the board.

Time of Award: This award takes effect as of Aug. 17, 1918, effective up to and including Aug. 17, 1919, or for the duration of the war. Either party may reopen the case before the board at six months' intervals. The company is allowed until Dec. 1, 1918, to settle for back pay.

KANSAS CITY & WESTERN RAILWAY, KANSAS CITY, MO.

New Wage Scale for City Motormen and Conductors: First three months, 38 cents an hour; next nine months, 40 cents an hour, and thereafter, 42 cents an hour.

New Wage Scale for Interurban Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents, and thereafter, 45 cents.

Time of Award: Effective Sept. 1, 1918, for the duration of the war. The case may be reopned at six months' intervals. Back wages must be paid by Dec. 1, 1918.

PHILADELPHIA (PA.) RAILWAYS

New Wage Scale for Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents an hour; and thereafter, 45 cents and hour.

New Wage Scale for Women Turnstile Operators and Cashiers: First three months, 32 cents an hour; next nine months, 33 cents, and thereafter, 35 cents. A lunch period of 45 minutes daily must be allowed.

New Wage Scale for Starters: Increased by same percentage that maximum rate for motormen and conductors is increased.

Time of Award: Effective Oct. 1, 1918, for the duration of the war. The case may be reopened at six months' intervals. Back pay must be settled by Dec. 1, 1918.

In the case of the Memphis, Kansas City and Philadelphia awards, the War Labor Board also decided that for the purpose of securing a proper interpretation, the secretary of the board should appoint an examiner to hear any differences that arise and promptly render his decision. From this an appeal may be taken by either party to the board. The effect of the appeal to stay the decision of the examiner is to be determined by the rules of procedure of the board.

OTHER HIGHER FARE AWARDS

In connection with the Memphis award the board said that the company is entitled to a reconsideration of the fare question by the proper authorities, and it recommends that the fare be increased at least 1 cent.

In Kansas City the terms of submission provided that the wage award should be limited to the financial ability of the company to pay. On this point the board stated:

> The board finds that the company, under present revenues, is financially unable, and its general financial condition will not permit it, to pay the wages awarded to its employees, or to readjust its schedules as directed. Accordingly, the board finds that, in order to enable it to put this award into effect, the company should be permitted to make such charges for its services as will produce sufficient income to pay the wages herein specified, as well as the other expenditures and charges necessary to the rendition of proper and uninterrupted service.
>
> The increase in fares is only for the period of the war, and the general equities of the same do not turn upon the history of the relations between the local railways and the municipalities in which they operate. Nor does the claim for an increase in fare rest upon any right to a dividend upon capital long invested in the enterprise. The increase in fare is directed solely because of the immediate pressure for money receipts now to keep the electric railways running so that they may meet the local and national demand for their service and pay the just and fair scale of wages to their employees as herein awarded. Overcapitalization, corrupt methods, etc., if any there have been, are not relevant to the question of national policy in the present exigency.
>
> In strict justice, the public must pay an adequate war compensation for a service which cannot be rendered except at war prices.

Service Restored in Buffalo

Strike Settlement Resolution of Council May Go Before the Voters for Their Approval

Local and interurban service was restored on Oct. 26 on all the lines of the International Railway in Buffalo, Niagara Falls and Lockport. An agreement settling the strike was reached between the City Council and the company on the day previous, but the platform employees of the company refused to return to work until all points in dispute between the union and the company had been settled.

Under the new agreement between the city and the company, the railway will operate its cars in Buffalo for thirty days for a 5-cent fare. At the end of thirty days a 6-cent fare will be made effective with a 1-cent rebate slip. The city in turn authorizes the Public Service Commission to investigate the company's financial condition and determine a reasonable rate of fare to continue until May 1, 1920. The company agrees to bond itself in the sum of $150,000 to insure the redemption of the rebate slips should the utilities board determine that a 5-cent fare is a reasonable rate.

The resolution of the City Council settling the matter is subject to another referendum. Petitions are now being circulated and less than 4000 signatures are needed to force a vote on the Council's action. Under the city charter six months must elapse between referendums, so that the next referendum cannot be held until Feb. 20. If a sufficient number of names are signed to the petitions within thirty days, application can be made to a Supreme Court justice for an injunction restraining the company from putting a 6-cent fare with rebate slips into effect until after the referendum. It is generally believed that the 6-cent fare will be voted down a second time.

In the new agreement with its employees, the International Railway has the right to employ women on the cars if it is unable to secure a sufficient number of men. President Connette is already considering the advisability of employing women as drivers and conductors under the same conditions as men are working. The company's platform men will receive their back pay dating from June 1 as computed on the basis of the award of the War Labor Board amounting to approximately $265,000, but the time of payment is left to the War Labor Board to determine.

The International Railway will name eight directors under the new agreement with the city. **The City Council** will name eight, and these sixteen directors will select the seventeenth member. The City Council will probably name among its directors, an expert electric railway operating man, probably some employee of the Public Service Commission. This board of directors will elect a president of the company and a general counsel.

The mandamus proceedings brought by the Public Service Commission against the company directing it to resume the operation of cars will be discontinued. The writ was upheld by the Appellate Division of the Supreme Court in Rochester, but the Court of Appeals sent the case back for a rehearing and additional evidence.

Cleveland Women to Go

Florence E. Allen, attorney, representing the women conductors of the Cleveland (Ohio) Railway, who are protesting against the decision of the Federal Department of Labor which would deprive them of their jobs on Nov. 1, has received the following communication from Chairman Taft, of the Federal War Labor Board:

"File your complaint in legal form against the company and the local Amalgamated Association, asking an order from this board against both company and union, that your clients be retained, or, if discharged, reinstated under the principles of the board. Upon that complaint a summons will issue, requiring the defendants to answer within a week. The issue will then be regular before the board and will be considered on the question of jurisdiction and its merits."

Miss Allen said: "This means that the question will be decided on the basis of whether the Cleveland Railway has exhausted every effort to obtain men for the positions in which they have employed women. It can be shown that the company did make every effort to obtain men and is still making that effort without result."

J. J. Stanley, president of the company, refrained from commenting on the matter further than to say that unless a modification of the recent order from the Labor Department was received, the company would be compelled to allow the women to go on Nov. 1.

New Orleans Labor Award

Settlement There Reported in Press, but Official Award Not Yet Available

On Oct. 21 a crisis arose in New Orleans, La., which threatened the closing down of gas, electric light and railway service, by a walkout of all engineers, firemen and shopmen of the New Orleans Railway & Light Company. This was due to the War Labor Board, which in July awarded a wage scale to the engineers, firemen and shopmen and on Sept. 20 suspended its scale of July for all except motormen and conductors.

By the decision of the War Labor Board of last July engineers and all shopmen received the same wage increase as the motormen and conductors—a 71 per cent raise. The company paid the carmen at the increased rate almost immediately, but only partially observed the award as regards the shopmen. Those who were paid, were paid only until the Aug. 20 pay day.

While the situation was serious on Oct. 21, the men in conference with officers of the company agreed to wait until Oct. 25 to receive the award of the War Labor Board. On that date the following press dispatch was received in New Orleans:

"The case of the Amalgamated Union vs. New Orleans Railway & Light Company, which involved the wages of the platform men, the mechanics, and workmen other than platform men, was heard in July and an award made on the thirty-first of that month. The wages of the platform men were increased from a minimum of 24½ cents an hour to a maximum of 42 cents an hour.

"The award, however, directed that the mechanics, other than the platform men should have a proportionate increase. This was an inadvertence and an error, in that the mechanics, other than the platform men, had really had a higher rate of wages than the platform men. The increase amounted to 71 per cent, and it was far too great, and led to excessive wages for the latter class of employees.

"We have given great consideration to this case, and have reached a conclusion that the platform rates should be as already found—38 cents an hour for the first three months; 40 cents an hour for the next nine months; and 42 cents an hour a year thereafter.

"We further set aside our award as to the mechanics and workmen other than the platform men, which was suspended in its operation early in September, and we now award for those employees an increase of 10 cents an hour, with the limitation that for all employees except apprentices, the minimum wage shall be 38 cents an hour, and with the further limitation that none of these increases shall operate to carry the rate for journeymen to a figure in excess of the present union craft rates in New Orleans.

"The section notes with satisfaction that the Commission Council of New Orleans has recognized the equity of the suggestion of the section that the rates charged by the company for various services shall be increased to meet the added obligations imposed, by its award, upon the company."

Nelson H. Brown, manager of the railway department of the company, has stated that the back wages of the mechanics and other employees of the carmen's union, involved in the dispute, will be paid as soon as possible by the company.

Chicago Award Interpreted

Examiners appointed by W. Jett Lauck, secretary of the National War Labor Board, to interpret the award of the arbitrators in the case of the employees of the Chicago (Ill.) Elevated Railroads, have made their decision. The matter came up through an appeal filed by the Chicago Elevated Railroads. The examiners are Arthur Sturges and M. Joseph Chiesa. They have decided that flagmen and crossing tenders come under the jurisdiction of the United States Railroad Administration and are subject to the railroad wage, with back pay to Jan. 1, 1918.

Under their decision all ticket agents have been placed on an eight-hour day, with a minimum wage of $3.05 a day. This reduces the workday of the bulk of the ticket agents from ten and twelve hours to eight hours. The former minimum wage paid women ticket agents was $1.95 and men ticket agents $2.11 a day. The minimum rate is now $3.05 a day.

The request of the company for modification of the award on wages of porters, lamp men, extra guards and other miscellaneous employees has been referred to Messrs. Taft and Walsh, joint chairmen of the National War Labor Board, for a decision.

Coal Saving by Skip Stop

On Oct. 26 the United States Fuel Administration issued figures on the saving effected by the skip stop on electric railways. It said:

"Six months' operation under the skip-stop system adopted by the street railroads of the country as a coal conservation measure, shows a saving in coal, or its power equivalent, in twenty-four states of 687,122 tons, annually. Reports from the other states are not yet available.

"Massachusetts reported the greatest saving, of 191,000 tons; Pennsylvania comes next with 169,200 tons. Missouri was third with 52,422; New York 50,000; New Jersey, 30,000; Illinois, 25,000; Ohio, 23,000, and Michigan, 22,000. Other states showing a saving of 10,000 tons or more are: Tennessee, 18,000; Connecticut, 15,000; California, 11,000; Minnesota and Wisconsin, 10,000.

"While complete reports from the street railroads of the entire country are lacking, the skip-stop method of operation has, it is estimated by the Fuel Administration, effected a saving from old methods of about 10 per cent in power and consequently in fuel necessary to produce that power."

Seattle Purchase Vote

Matter of Taking Over Railway Lines There to Go Before Voters Informally on Nov. 5

The City Council of Seattle, Wash., by a unanimous vote, recently decided to secure from the voters of the city an "advisory vote" on the proposition of the purchase of the railway lines of the Puget Sound Traction, Light & Power Company, for $15,000,000. This expression of opinion will be obtained at the general election to be held on Nov. 5.

VOTE MERELY ADVISORY

Councilman Fitzgerald, who introduced the resolution, stated that the result will be merely advisory, and that even if the people voted against the proposition, the Council could go ahead. It is the general opinion, however, that if the voters disapprove of the purchase project, it will be dropped. Mayor Hanson approves this attitude.

If the people refuse to sanction the purchase the Council will be placed in an awkward position. The city has offered to buy the railway lines. The company has agreed to sell. The United States Shipping Board, which demanded better transportation in Seattle as the price of future orders, is said to expect that the deal will be completed.

VOTE ON SEPARATE BALLOT

If the vote is favorable, the ordinance authorizing the deal will be passed as an emergency measure. This procedure will put the city in possession of the railway thirty days sooner than if the usual course were followed, for without the approval of the people, it is said it will be impossible to muster the seven votes necessary to pass an emergency ordinance.

It is stated by Prosecuting Attorney Lundin that the purchase question will have to be submitted to the people on a special ballot.

Councilman Oliver T. Erickson, a municipal ownership advocate and promotor of the present municipal railway system, is opposed to the purchase of the traction properties, on the ground that the price is exhorbitant. In a statement to the public, Mr. Erickson indorsed the sentiments of an engineer who wrote to him about the purchase of the railway property. This man said:

A $5,000,000 TRIBUTE

"Seattle cannot afford to do less than justice, even to the traction company, and $10,000,000 would be ample, substantial justice. All over that is extortion, tribute, indemnity. Is it worth the price demanded? If it be so considered, then at this critical hour of paying such a price, at least make it clear that the $5,000,000 of tribute shall not be a charge against public ownership, but a burden to be borne by the general taxpayer as the future shall demonstrate the street railway profits unequal to the load."

Wage Increase Refused at Worcester and Springfield

The request of car service men for a flat rate of 60 cents an hour and of other employees for a 40 per cent wage increase on the Worcester (Mass.) Consolidated Street Railway and the Springfield (Mass.) Street Railway was refused at a conference in Worcester on Oct. 23. Francis H. Dewey, president of the Worcester company, and Clark V. Wood, president of the Springfield road, informed the joint committee of employees that on account of the financial condition of each company it is absolutely impossible to consider wage increases at this time. The joint committee urged that the matter be submitted to arbitration, either by the War Labor Board or some other tribunal, but the companies declined.

The present maximum rate received by car service men at Worcester is 43 cents an hour, and at Springfield the maximum daily wage is $3.87. On June 15, 1918, Henry B. Endicott, executive manager of the Massachusetts Committee on Public Safety, arbitrated the wages in the two companies, increasing the maximum rate at Worcester from 34.5 cents to 43 cents and raising the Springfield maximum from $3.105 to $3.87 a day. It is estimated that this award will cost the latter company alone $400,000 a year in increased operating expenses.

Seattle Purchase Reports Made

In view of the prospective purchase of the lines of the Puget Sound Traction, Light & Power Company by the city of Seattle, Wash., unusual interest attaches to the report of E. G. Shorrock & Company, certified public accountants who, at the request of Mayor Ole Hanson, made an analysis of the earning power of the lines. Mr. Shorrock's analysis, which is based on a report on the earnings of the company prepared by Thomas F. Murphine, Superintendent of Public Utilities, indicated that Councilman Oliver T. Erickson, who predicted a deficit of practically $1,500,000 a year in the operation of the lines, was grossly in error. The Shorrock report shows a probable net loss of $135,000 a year, after an interest charge of $750,000 a year had been deducted, whereas the average annual interest charge, assuming that the principal is reduced as per schedule, will be only $87,500.

The report of Smith, Robertson & Moorehouse, public accountants appointed by the City of Seattle to list the property of the Puget Sound Traction, Light & Power Company, embraced eighty-one closely typewritten pages, consisting of some forty-three schedules. The report frankly states it is incomplete and suggests that a more thorough accounting of the property be made before the contemplated purchase is consummated. The report shows that according to the best evidence obtainable, the railway property of the company cost a total of $15,302,000, this being the production cost of the actual physical property. Much real estate is listed, as are numerous small items of property used in the operation of the lines.

The report has been referred to the utilities and finance committees with the understanding that these committees would call it up for consideration at the earliest practical date.

News Notes

Influenza Stops Another Road.—Railway service in Bowling Green, Ky., was suspended recently by William R. Speck, receiver for the Southern Traction Company, who stated that he had been operating with shop men, but even the latter were ill of influenza, and it had become impossible to man the cars.

Bay State Men Want More.—A subcommittee of the State conference board of the unions of men employed by the Bay State Street Railway, Boston, Mass., has served notice on Receiver Wallace B. Donham "that it will be impossible for the men to continue operating cars on the system at the present rates of pay."

Wage Dispute Compromised.—Motormen and conductors of the Springfield (Ohio) Railway and the management have compromised the dispute over increased wages. The new scale provides for the payment of 38 cents an hour for the first three months; 40 cents for the next three months and 42 cents thereafter.

Dinner to Newspaper Men.—On Sept. 15 W. H. Boyce, superintendent Beaver Valley Traction Company, New Brighton, Pa., gave his fourth annual dinner to newspaper men in the territory served by the lines of that company. A number of journalists from Pittsburgh also attended. The affair was held at Junction Park, New Brighton, Pa. Included in the entertainment was a program of singing, moving pictures and vaudeville.

Emergency War Courses in Employment Management.—The employment management division of the War Industries Board has established a series of courses for men and women in employment management. They are held in Harvard, Boston University, Massachusetts Institute of Technology, University of Rochester, Carnegie Institute, University of Pittsburgh, University of California and University of Washington. Courses are being arranged at the Universities of Cincinnati and Chicago, and in New York City the Bureau of Municipal Research has charge. The courses extend from six weeks to two months. There are no tuition fees.

Employees Object to Governor Acting.—Employees of the Kentucky Traction & Terminal Company, Lexington, Ky., recently refused to permit Governor A. O. Stanley, of Kentucky, to name an arbitrator to aid in settling a dispute between the operators and the company. In explaining their position, the men said: "In the minds of the men it is impossible for the Governor to make a fair and impartial appointment." It was claimed that Mr. Stanley was related to men connected with the company and that he was a close friend of several directors and officers.

Program of Meetings

A. S. M. E.

The annual meeting of the American Society of Mechanical Engineers will be held in New York Dec. 3 to 6 inclusive. Numerous general engineering papers will be presented and there will be a series of addresses by prominent engineers and government officials on the broad aspects of management and bearing on the general subject of "human engineering."

The machine shop sub-committee has arranged a session on engineering standards of measurements, and the sub-committees on gas power textiles are to conduct sessions. One joint session will be held with the American Society of Refrigerating Engineers.

U. S. Chamber of Commerce

All members of the country's more than 300 industrial war service committees will assemble at Atlantic City, N. J., on Dec. 4, 5 and 6 for a great war emergency and reconstruction conference. Announcement to this effect was made on Oct. 28 by the war service executive committee of the Chamber of Commerce of the United States. The main purposes of the conferences will be the determination of practical methods whereby industry may co-operate still more closely with the government through a more centralized scheme of organization. Questions of reconstruction, too, will be taken up. However far away the end of the war may be, it is necessary to begin to outline a general program of organizing business for the period of reconstruction.

Speakers who already have accepted invitations to appear include Secretary of Commerce William C. Redfield, A. C. Bedford, James A. Farrell and Paul Warburg.

The conferences will include general sessions at which questions common to all industries will be taken up, sessions of committees within particular industries at which specific industrial problems will be discussed, meetings of related war service committee groups, and conferences of individual war service committees. National counselors of the Chamber of Commerce also will hold separate sessions.

The main conferences attended by the delegates will be held on the Million Dollar Pier.

Financial and Corporate

July Railway Showing Unfavorable

Net Earnings and Operating Income for July Show Largest Decrease So Far Reported

The comparison of revenue and expenses of electric railways for the months of July, 1918 and 1917, as compiled by the information bureau of the American Electric Railway Association, in so far as the first of the two tables is concerned, presents a somewhat distorted view of the situation and shows a more favorable state of affairs than really exists.

STRIKE DISTORTS SHOWING

This is because there are included in the reports from the Western District the operations of a large and important company, whose earnings during July, 1917, were greatly reduced by a strike which prevented service for more than half of the month. In consequence the increase shown for this district, both in operating revenues and in net income, is an increase over the very much lowered earnings of last year and not above those of a normal period. The operations of the company are large enough to distort the entire table.

The company does not report taxes and is not, therefore, included in the second table, which gives those properties which do. This table, both of itself and when compared to that for June, published in the September issue, indicates an increasingly unfavorable state of affairs in all but the Western district. Net earnings show a decrease of 7.54 per cent for the country as compared to a year ago and operating income a decrease of 12.08 per cent. This in spite of the fact that the Western district, which embraces about a third of the total mileage, indicates an increase of 4.40 per cent in the first item and 3.42 per cent in the second item, while the Southern district shows an increase of 2.52 per cent in the first and a decrease of only 0.17 per cent in the second.

BAD SHOWING IN EAST

This is accounted for by the extremely unfavorable showing made in the Eastern District. The net earnings for the 2154 miles of line reporting in this territory show a decrease of 15.29 per cent, while the operating income, at the same time, shows a decrease of 22.22 per cent. This is the worst showing that has ever been made in these tables, with the exception of that for January, 1918, when a decrease of 29.14 per cent in net earnings and 37.91 per cent in operating income was revealed. In this latter case, however, the cause was to be found in the unusually severe weather, which not only crippled service so that earning capacity was cut down, but added to the expense of operation.

EXPENSES JUMP $189 A MILE

An increase of $85 per mile of line in operating revenue, accompanied by an increase of $189 per mile of line in operating expenses and of $18 per mile of line in taxes is fully sufficient to account for this showing as far as the roads in the Eastern District are concerned.

The returns from the city and interurban electric railway companies, as shown in detail in the accompanying tables, have been classified according to the following geographical grouping: Eastern District—East of the Mississippi River and north of the Ohio River. Southern District—South of the Ohio River and east of the Mississippi River. Western District—West of the Mississippi River.

Revenue Gains Lost

The income statement of the subsidiaries of the American Public Utilities Company, Grand Rapids, Mich., for the twelve months ended June 30, 1917 and 1918, follows:

	1918	1917
Gross earnings from operation	$4,452,125	$3,819,820
Operating expenses	2,794,743	2,151,001
Net earnings from operation	$1,657,382	$1,668,819
Miscellaneous income	80,702	100,354
Gross income	$1,738,084	$1,769,173
Expenses	111,580	80,764
Interest	1,376,854	1,217,471
Net income available for depreciation and dividends	$249,650	$470,937

The gross sales of all the subsidiaries during the last fiscal year increased $632,304 or about 16.6 per cent, quite in excess of the showing of growth made in the two preceding years. The operating expense increased in greater amount, however, the rise being $643,742.

During the year the subsidiaries secured rate increases which will add $750,000 a year to the gross earnings. Of this amount $300,000 was realized in the last fiscal year.

The Jackson Light & Traction Company, Jackson, Miss., had an increase in gross earnings from $314,281 to $331,093. The gross of the Wisconsin-Minnesota Light & Power Company, which operates the street railway system in Eau Claire and an interurban line out of that city, was $1,773,874 for the last fiscal year as compared to $1,532,347 for the preceding one.

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR JULY, 1918 AND 1917

Account	United States				Eastern District				Southern District				Western District			
	Amount, July, 1918	Per Mile of Line			Amount, July, 1918	Per Mile of Line			Amount, July, 1918	Per Mile of Line			Amount, July, 1918	Per Mile of Line		
		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917		1918	1917	% Increase Over 1917
Operating revenues	$12,226,031	$2,198	$2,009	9.41	$8,034,712	$2,286	$2,141	6.77	$1,228,708	$1,709	$1,526	11.99	$2,962,611	$2,229	$1,902	17.19
Operating expenses	8,186,958	1,472	1,268	16.09	5,490,510	1,562	1,357	15.11	763,255	1,062	864	22.92	1,933,193	1,455	1,237	17.62
Net earnings	4,039,073	726	741	†2.02	2,544,202	724	784	†7.65	465,453	647	662	†2.27	1,029,418	774	665	*16.39
Operating ratio, per cent	1918, 66.97; 1917, 63.12				1918, 68.33; 1917, 63.38				1918, 62.14; 1917, 56.62				1918, 65.28; 1917, 65.04			
Av'ge number of miles of line	1918, 5,562; 1917, 5,477				1918, 3,514; 1917, 3,501				1918, 719; 1917, 665				1918, 1,329; 1917, 1,311			

COMPANIES REPORTING TAXES

Operating revenues	$7,527,642	$2,118	$1,992	6.33	$4,554,490	$2,115	$2,030	4.19	$455,920	$1,914	$1,612	18.73	$2,517,232	$2,167	$1,998	8.46
Operating expenses	5,258,599	1,480	1,302	13.67	3,314,050	1,539	1,350	14.00	281,471	1,182	898	31.63	1,663,078	1,432	1,294	10.66
Net earnings	2,269,043	638	690	7.54	1,240,440	576	680	15.29	174,449	732	714	2.52	854,154	735	704	4.40
Taxes	508,695	143	127	12.60	319 943	149	131	13.74	37,221	156	134	13.87	151,531	130	119	9.24
Operating income	1,760,348	495	563	†12.08	920,497	427	549	†22.22	137,228	576	577	†0.17	702,623	605	585	3.42
Operating ratio, per cent	1918, 69.88; 1917, 65.36				1918, 72.77; 1917, 66.50				1918, 61.76; 1917, 55.71				1918, 66.08; 1917, 64.76			
Av'ge number of miles of line	1918, 3,553; 1917, 3,520				1918, 2,154; 1917, 2,142				1918, 238; 1917, 235				1918, 1,161; 1917, 1,143			

† Decrease. *Increase in net earnings in 1918 due to strike on one of the important lines in 1917 which cut the net of that year below normal

Tube Traffic Up 8 Per Cent

Owing to Heavier Burden of Operating Costs, However, Operating Net Gains Only Two Per Cent for 1917

During 1917 the traffic of the Hudson & Manhattan Railroad, New York, N. Y., continued to show an increase. The year's gain was 5,573,539 passengers or 8.4 per cent. The resulting increase in revenue was $287,857 or 7.5 per cent. The other items of operating revenues—with the exception of the sale of power, which fell off $103 or 0.5 per cent—showed gains as follows: Advertising, $6,928 or 6.2 per cent; other car and station privileges, $9,029 or 12.3 per cent; miscellaneous revenue other than transportation, $35,850 or 83.4 per cent, and miscellaneous transportation revenue, $2,595 or 20.9 per cent. The total increase in operating revenues was $342,157 or 8.4 per cent.

This gain, as in the case of practically all electric railways, was largely absorbed by the higher operating costs. The operating expenses rose $288,832 or 17.8 per cent. This was the result of increases of $25,107 or 9.4 per cent in maintenance of way and structures, $200,832 or 72.8 per cent in power expenses, $62,874 or 9.3 per cent in transportation expenses and $29,936 or 16.9 per cent in general expenses, together with decreases of $28,845 or 13.2 per cent in maintenance of equipment and $972 or 29.4 per cent in traffic expenses.

As the result of the increased expenses the net operating revenue advanced only $53,325 or 2.2 per cent. Owing to the rise in taxes and income deductions and the decrease in income from outside operations, the final result was $686,847 available for income bond interest as compared to $722,135 in 1916, a loss of $35,288 or 4.9 per cent.

Last year, it will be recalled, outside engineers confirmed the judgment of the directors that it was urgently necessary promptly to set up an adequate cash reserve of at least $1,000,000. Therefore an appropriation of $340,000 was made to the reserve account for the period ended Dec. 31, 1916. An initial appropriation of $50,000 to this reserve had been made as of June 30, 1916, making the 1916 appropriation $390,000. During 1917 the sums of $375,000 and $310,000 were appropriated from net income for the first and the second half of the year respectively, and the balance carried forward on Dec. 31 was $53,206. No interest has been paid on the company's 5 per cent income bonds since the middle of 1916.

COMPARATIVE INCOME STATEMENT OF HUDSON & MANHATTAN RAILROAD FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Passenger revenues	$4,110,435	92.8	$3,822,578	93.6
Miscellaneous revenues from railroad operations	316,570	7.2	262,270	6.4
Total railroad revenue	$4,427,005	100.0	$4,084,848	100.0
Maintenance of way and structures	$293,168	6.6	$268,061	6.5
Maintenance of equipment	190,234	4.3	219,179	5.4
Power	476,819	10.8	275,986	6.8
Transportation expenses	742,338	16.8	679,464	16.6
Traffic expenses	2,335	0.0	3,308	0.1
General expenses	206,571	4.7	176,636	4.3
Total railroad operating expenses	$1,911,465	43.2	$1,622,634	39.7
Net railroad operating revenue	$2,515,540	56.8	$2,462,214	60.3
Railroad taxes	308,438	7.0	293,610	7.1
Net railroad income	$2,207,102	49.8	$2,168,604	53.2
Net income from outside operations	850,073	19.2	918,077	22.5
Total operating income	$3,057,175	69.0	$3,086,681	75.7
Non-operating income	78,013	1.7	55,398	1.3
Gross income	$3,135,188	70.7	$3,142,079	77.0
Income deductions prior to bond interest	280,807	6.3	264,582	6.5
Net income applicable to bond interest	$2,854,381	64.4	$2,877,537	70.5
Bond interest on N. Y. & J. 5's, first mortgage 4½'s and first refunding 5's	2,167,534	48.9	2,155,402	52.8
Net income available for income bond interest	$686,847	15.5	$722,135	17.7

The table below gives some comparative statistics for the last two calendar years.

	1917	1916
Passenger revenue per revenue car-mile	$0.4943	$0.4696
Gross railroad operating revenue per revenue car-mile	.5324	.5018
Operating expenses (excluding taxes) per revenue car-mile	.2299	.1993
Net railroad operating revenue per revenue car-mile	.3025	.3025
Passenger revenue per passenger	.0573	.0578
Gross railroad operating revenue per passenger	.0617	.0617
Operating expenses (excluding taxes) per passenger	.0266	.0245
Net railroad operating revenue per passenger	.0351	.0372

Montgomery Property Sold

Ownership of the Montgomery Light & Traction Company, Montgomery, Ala., of which Richard Tillis has been president for a number of years, is reported to have passed on Oct. 25 to Isadore Newman & Sons, New Orleans. Aside from Ray Rushton, attorney for the company, no other parties were taken into the confidence of the signatories. It was stated that the sale represents an amount around $2,000,000. It was announced that the Newman interests were prepared to spend $250,000 in rehabilitating the railway lines. Isadore Newman & Sons for a long time were interested in the New Orleans Railway & Light Company.

Brazil Lines Doing Well

Rio de Janeiro and Sao Paulo Companies Enjoy Large Traffic Increases —Exchange Burden Heavy

The income statement of the Brazilian Traction, Light & Power Company, Ltd., Toronto, Ont., for the years ended Dec. 31, 1916 and 1917, follows:

	1917	1916
Gross revenue from securities owned and under contracts with subsidiaries	$6,005,138	$5,764,764
Interest received on advances to subsidiaries	198,560	254,709
Total	$6,203,698	$6,019,473
General and legal expenses, administration charges and interest	937,180	344,831
Balance	$5,266,518	$5,674,642
Amortization reserve	250,000	....
Preferred dividends	600,000	600,000
Common dividends	1,064,136	4,251,488
Surplus	$3,352,382	$823,154

The revenue of this company's subsidiaries is received in Brazilian currency—milreis—and the exchange rates prevailing between Brazil and London or New York determined the revenue expressed in Canadian dollars above. The reduction in net revenue for the last three years attributable to the decline in exchange from the rate prevailing during the five years preceding the war is approximately $9,800,000.

The gross earnings of the subsidiaries for the last year showed an increase of 8.54 per cent. The net earnings only slightly exceeded those of the previous year, owing largely to the increased operating expenses of the gas business on account of the high cost of coal.

During 1917 the company paid the usual quarterly dividends of 1½ per cent on its preference stock and in March one dividend of 1 per cent on its ordinary stock. Further payments on the latter capital are suspended, the undistributed surplus revenue being applied toward the liquidation of the floating debt and the provision of the necessary new property.

Furthermore, out of surplus revenues the Brazilian Traction, Light & Power Company, Ltd., set aside $250,000 for general amortization; the subsidiary Rio de Janeiro Tramway, Light & Power Company, Ltd., $500,000 for depreciation and renewals, and the subsidiary Sao Paulo Tramway, Light & Power Company, Ltd., $250,000 for depreciation and renewals.

The gross earnings of the Rio de Janeiro company increased 8.24 per cent during 1917, the tramway earnings rising 4.27 per cent. The increase in the net earnings of the tramway department was larger than for any year since 1913. The passengers carried increased from 198,677,975 in 1916 to 207,925,034 in 1917, and the car-miles from 24,667,154 to 24,904,684 respectively.

In Sao Paulo the gross earnings rose 7.59 per cent. The gross and net in every department were greater than in any preceding year. The year 1913 had held the record for passengers carried, but for 1917 the tramway receipts advanced 3.97 per cent over those of 1913. The passengers carried in 1917 totaled 58,619,758 as compared with 55,154,564 in 1916, and the car-miles were 10,351,057 and 10,153,657 respectively.

New Income Tax Ruling

An income tax ruling dealing with the tax on undistributed net income of corporations was issued on Oct. 24 to all collectors of internal revenue and others concerned. The ruling follows in part:

> In determining the amount of net income of the taxable year "remaining undistributed" six months after its close, and not "invested and employed in the business," there may in general be subtracted the amount of any interest paid by the corporation but not allowed to be deducted for income tax purposes, and also the amount of contributions properly made for charitable or war purposes.
>
> A corporation unable to show by tracing into particular assets or into the decrease of particular liabilities the employment of undistributed net income in the business is permitted to claim a benefit of what may be shown by a balance sheet for the date of the expiration of six months after the taxable year, or by a comparative balance sheet.
>
> If resort is made to the balance sheet in the effort to show the employment in the business of all undistributed net income of the taxable year or its retention for the reasonable requirements of the business, the net income for the six months after the taxable year is necessarily to be taken into account, and it must be shown that the undistributed net income of the taxable year as well as the undistributed net income of the six months is so employed or retailed.
>
> While a corporation retains profits without distribution of dividends, it may retain them in such form as it may elect, but when it makes any distribution of dividends the distribution must be treated as made from the most recent profits or surplus regardless of any previous designation of any portion of such earnings for investment purposes. The designation of an investment in obligation of the United States issued subsequent to Sept. 1, 1917, may serve to prevent the application of the additional tax of 10 per cent to the amount so invested, but it does not warrant the disregarding of the amount of net income for the taxable year so invested in determining the profits or surplus from which any dividends may be distributed.

Army Traffic Helps Augusta-Aiken

The gross earnings of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., and subsidiaries for the year ended Dec. 31, 1917, were $925,523 as compared to $838,455 in 1916. The operating expenses and taxes were $523,099 and $431,721 in the two years, and the 1917 net earnings at $402,424 were only a few thousand below those of 1916. The net surplus for 1917 was $61,954 as compared to $58,060 for 1916.

The earnings in the railway department increased $75,797 or 20 per cent during 1917, and the expenses $62,798 or 27.9 per cent. The earnings in the electric department rose $68,777 or 17.4 per cent, and the expenses $31,159 or 24.4 per cent.

The railway earnings for the first six months of 1917 were about the same as in 1916, but during the remainder of the year they were about $74,000 greater. This increase was attributable to the establishment of Camp Hancock within 2 miles of Augusta.

Of the total increase in railway expenses approximately $37,000 was caused by the increase in wages and in the cost of materials and supplies. The remaining $25,000 was caused by the giving of extra service to the army camp.

During 1917 all capital expenditures for construction not absolutely essential on account of the war were kept at a minimum. It was necessary, however, to expend $53,434 for transportation and lighting facilities at Camp Hancock and $34,253 for line extensions and transformers to connect new business.

Eastern Pennsylvania Has Heavy Expenses

The gross earnings of the Eastern Pennsylvania Railways, Pottsville, Pa., and its subsidiary companies for the calendar year 1917 amounted to $995,182, a gain of $71,351 or 7.62 per cent. The earnings from the railway department rose 2.75 per cent and for the electric light and power department 15.57 per cent.

The increase in earnings, however, was more than offset by the rise of operating expenses to $659,745, an increase of $90,590 or 15.91 per cent. The taxes decreased 11.8 per cent, but deductions for underlying companies rose 6.76 per cent and for the Eastern Pennsylvania Railways 12.63 per cent. As a result the balance available for renewals, depreciation and dividends at $44,754 represented a loss of $46,812 or 51.13 per cent.

During 1917 it was deemed advisable to increase the reserve for renewals and depreciation. In addition to $39,000 included in operating expenses for this account, therefore, a further credit of $98,744 was made by charging surplus. At the end of the year the reserve balance was $150,249. The 1917 total for repairs and maintenance was $174,281, of which all but $12,049 was charged to the maintenance accounts.

Essential Industries Corporation Prepared

The Capital Issues Committee, it was announced on Oct. 30, has approved issues of securities to be put out by the Essential Industries Finance Corporation, the announcement of whose organization was made in the ELECTRIC RAILWAY JOURNAL for Sept. 28, page 590.

The company is incorporated under New York laws and its business is to finance public utility companies and industries necessary to the prosecution of the war and necessary to after-the-war rehabilitation.

Eugene V. R. Thayer, president of the Chase National Bank, is the president of the company and Frederick Strauss of J. & W. Seligman & Company, recently appointed a member of the Federal Reserve Board to take the place of Paul M. Warburg, and Gerhard M. Dahl, vice-president of the Chase, are the vice-presidents.

According to one of its officials, the company already has applications for loans from several companies. As stated previously it is proposed to make the resources of the corporation available to existing utility corporations which need aid in enlargment of plant for essential purposes, but not to undertake construction for new enterprises.

Financial News Notes

Plans to Abandon Road.—The bondholders' committee of the Ocean City (N. J.) Electric Railroad has notified the City Commissioners that the company plans to "junk" the road because of its inability to meet running expenses, but that it will sell the road to the city for $84,000. Mayor Champion desires the property owners and taxpayers to hold a public meeting to discuss the matter. The road does not traverse the main business section of the city.

Abandonment Hearing Held.—At Exeter, N. H., on Oct. 22, the State Public Service Commission heard the petition of the Exeter, Hampton & Amesbury St. Railway for authority to abandon the greater portion of its lines and service. Allen Hollis, president of the company, said he would not continue as president under existing conditions and thought a receivership and liquidation inevitable if the company's petition be not granted. The hearing was continued by the commission to a future date.

Wants to Abandon Conway Line.—James H. Hustis, receiver of the Boston & Maine Railroad, of which the Conway (Mass.) Electric Street Railway is controlled, has filed a petition in the U. S. District Court asking permission to discontinue the Conway line, which runs between Conway and South River, Deerfield—a distance of about 6 miles. It is claimed that owing to the construction of the new automobile highway the road is not a paying proposition. There will be a hearing on the petition before the District Court on Nov. 11.

All Indianapolis Public Directors Named.—Edward A. Kahn has been named a director of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., by Mayor Charles W. Jewett, to serve as one of three members of the board chosen by public officials for appointment to the directorate of the company. The other two public directors are Alfred F. Potts, nominated by Governor James P. Goodrich, and B. A. Worthington, nominated by the directors of the Chamber of Commerce. These men, with Robert I. Todd, Ferdinand Winter, John J. Appel and J. W. Lilly, constitute the present board of directors. The public directors of the company serve only until Jan. 1, when new appointments will be made.

Traffic and Transportation

Bartlesville's Seven-Cents

Review of Advertising Campign That Quickly Brought Result Desired by Interurban Line

The Oklahoma State Corporation Commission granted the Bartlesville Interurban Railway the right to increase its fares from 5 cents to 7 cents and upward, pro rata, for extended service, and this increase became effective on Aug. 1. The Bartlesville public is reconciled and this Doherty company is now enabled to make some needed improvements. Frank Johnson, superintendent of the company, in a report to the New York office said:

COMPANY A CONSCIOUS SINNER

"Before entering upon this campaign we realized that we were giving poor service. However, we knew that before making any extensive repairs or purchasing additional equipment, additional revenue must be obtained in order to better our service. With these facts in mind we launched an advertising campaign with a view to putting our case directly up to the people and convincing them of our difficulty.

"On June 11 we opened our campaign, running talks in both local papers. After the publication of six talks we found we were getting very little criticism except from some of the most prominent business men, and these criticisms were, for the most part, constructive.

"In view of the fact that the bulk of the people apparently were not reading our talks we had posters painted, reading as follows:

"'Is the interurban justified in increasing its unit fare from 5 to 7 cents? Read "Pup" talks in both papers and offer your objection.'

"These posters were painted on 14-in. x 22-in. cardboard and carried inside the cars. The appearance of this poster did the work. Criticisms both constructive and destructive were frequent. The 7-cent fare became the topic of car riders, several letters were printed by the newspapers and we also received some personal letters. Before entering our campaign we were prepared for a long series of talks and any criticisms that might develop. However, after running sixteen talks it seemed that we had accomplished our purpose and we closed the campaign.

INDORSEMENTS SECURED

"We then drew up three resolutions, the general form of which was listed as the seventeenth talk. W. H. Merritt, general manager, first obtained the approval of the Bartlesville Chamber of Commerce to one resolution; then went to the Dewey commissioners and secured their approval and signatures to the second, and then went before the Bartlesville City Commissioners and secured their approval and signatures to the third resolution. This was a wise and judicious move, and without a doubt contributed largely to the speedy and favorable action of the State Corporation Commission. L. A. Ramsay, then secretary of the company, carefully compiled a very complete, concise and clear statement of financial conditions, which was embodied in the petition for our increase. After this was done Messrs. Merritt and Ramsay in person presented our petition to the State Corporation Commission. This presentation was made about July 2, and so pleased were the commissioners with the manner of presentation that we were permitted a hearing ahead of many cases filed before us. To be specific, our hearing was set for July 12, and at that time Messrs. Merritt and Ramsay again appeared before the commission. No opposition was offered and they were practically assured of the commissioners' approval.

FORTY PER CENT INCREASE

"On July 19 we received authorization from the State Corporation Commission to put a 7-cent unit fare into effect on and after Aug. 1. On July 27 painted posters were placed in our cars notifying the public of the increase. Only July 30 and 31 the newspaper ad. listed as our eighteenth talk was run and the fare became effective on Aug. 1.

"This we believe gives in detail our procedure in obtaining the 7-cent fare, and I can think of no higher compliment to pay Mr. Merritt than in citing these two facts:

"1. Within forty days after starting the campaign authorization was given for a 40 per cent increase in fares.

"2. The Corporation Commission said:—'Never in our history have we had a better or more complete petition presented to us.'"

Wants Staggered Hours Continued

In a letter to the Public Service Commission for the First District of New York, Dr. Royal S. Copeland, Health Commissioner of the city of New York on Oct. 30 informed that body that he thought he would soon be able to discontinue his regulations concerning the opening and closing of business houses. Dr. Copeland pointed out the advantages of the plan with respect to congestion of traffic and suggested that the staggered hours for business houses be made permanent if the city railways would adjust service to them.

Schenectady Case Heard

Company Wants to Charge Six-Cent Fare in City and Three Cents a Mile on Interurban Line

The fare case of the Schenectady (N. Y.) Railway was heard on Oct. 23 by the Public Service Commission, Second District, Chairman Charles B. Hill residing. The application of the company is for permission to increase its passenger fares to 6 cents within the city of Schenectady and for a 3-cent-a-mile flat rate on its interurban lines. The cross-examination of witnesses was deferred until Nov. 6.

COMPANY FORMERLY DID WELL

It was brought out by the testimony of James P. Barnes, general manager, and the auditor of the railway, that the company up to the end of 1917 had earned an average of $225,000 a year net income and had from 1906 to 1917 inclusive paid an average of 4 per cent dividend and retained a surplus of $682,894, most of which was reinvested in the property. Having already encountered a deficit for the eight months ended Aug. 31, 1918, and using this as a basis to estimate what the annual deficit would be, which was estimated at an average of $116,735 a year, the company believes it is justified, because the War Labor Board imposed upon it very decided increases in the cost of labor, in asking for relief before it actually encounters another series of deficits estimated at an average of $200,000 a year for the next five years. The increase in the amount of earnings devoted solely to labor is shown by the company's reports to be 33.65 per cent in 1910 to 52.21 per cent in 1918. Corresponding increases in the cost of material and other labor in the meantime make the deficit obvious.

The contention of the opponents was that this deficit resulted from the failure of the lines inside the city of Schenectady to earn an amount commensurate with the cost of their operation and should not be charged against the interurban lines which showed a net income last year of about $115,000 or three times the net income received in the city of Schenectady.

SURPLUS ALREADY REINVESTED

There was some question as to whether or not the surplus of $682,000 should not be used now in the lean years inasmuch as it was accumulated when the company was earning very much more than it can possibly earn under the present conditions. It was pointed out, however, that this sum was not available because it has been reinvested in rolling stock and equipment and does not truly represent liquid assets.

The Schenectady Railway operates 140 miles of line. In addition to the property in Schenectady the company operates to Warrensburg, Lake George, Glans Falls, Saratoga, Ballston Spa, Ballston Lake, Troy, Albany and Watervliet.

Railway and Health Board Co-operate

The epidemic of Spanish influenza in Kansas City was grappled with energetically by the city authorities on Oct. 7. Schools, theaters and churches were closed, and all gatherings of more than twenty persons were interdicted. Health authorities suggested that the Kansas City Railways be compelled as a preventive measure to carry not more than fifteen standing passengers on any car, but this suggestion was not crystallized into an order. The charge was made that the railway was not cleaning its cars sufficiently.

The head of the contagious diseases department of the city on Oct. 8 stopped five cars on the "Argentine" line, ordered the passengers out, sent three of the cars back to the carhouse to be cleaned and fumigated and, with his inspectors, fumigated the others where they stood on the tracks. As traffic had to be suspended temporarily while this was going on, considerable inconvenience resulted to the public. These cars run through a district where there are few paved streets. It had rained the night before and the floors were muddy after one trip. Later in the day the board of health members announced that full co-operation was being secured with the railway officials, and that cars would not be stopped or sent back to the carhouse.

Under normal conditions the company cleaned and fumigated its cars once a day, but it started to fumigate them twice a day when the epidemic broke out. After the health board officials started this fight on the epidemic the railway carried an advertisement in the daily papers pleading with the public to co-operate with it in keeping the cars clean.

New Orleans Case Nears End

The New Orleans fare situation seems gradually to be clearing. What is regarded as the closing phase of the case was expected to come before the court in that city on Oct. 31. The road over which the case has come was one with many turnings, but the end would now seem to be in sight.

No sooner had the Council passed the ordinance authorizing the New Orleans Railway & Light Company to increase its fares than organized labor secured from Judge Gage in the Civil District Court an order requiring officials of the company to appear on Oct. 16 and show cause why an order should not be issued restraining the company from increasing rates.

On the date set for the hearing Judge Gage postponed the case until Oct. 21 because the plaintiff could not produce the franchise contracts on which the injunction was based. The matter was again brought before the court on Oct. 21 and this time Judge Gage granted a rule *nisi* requiring the company to produce the documents asked for or to show cause on Oct. 25 why it should not do so. On Oct. 25, Judge Gage ruled against the petition to force the railway to produce the original franchises and contracts in court. He then set Oct. 31 as the date for the 6-cent fare case to come up for trial.

It was in connection with the case at New Orleans that the War Labor Board stated its general policy to suspend entire wage awards where organized labor sought to prevent fare increases recommended by the board as essential in connection with increased wages.

Fare Case Before United States Supreme Court

The Columbus Railway, Power & Light Company, Columbus, Ohio, has taken an appeal to the United States Supreme Court from the decision of Judge D. C. Westenhaver, who recently ruled that he had no jurisdiction in the fare case brought before him, but stated that a contract with the city could not be annulled because of the financial needs of the company caused by war conditions.

The rulings of the lower courts in this case have been reviewed in the ELECTRIC RAILWAY JOURNAL.

Women a Success in Detroit

Women are now acting as conductors on the Woodward, Jefferson and Hamilton lines of the Detroit (Mich.) United Railway and within a few days several of them will be assigned to the West Fort line. Quarters are being prepared at the West Fort line carhouse at Jefferson Avenue and the Rouge River for the accommodation of the women employees. A class of women for this line is now receiving preliminary training and the women will probably be placed on the cars for practice under supervision of male conductors within a few days.

The company has made a statement in regard to women conductors in part as follows:

"Women as street car conductors have made good in Detroit. In service now over a month they have proved satisfactory and their ability to do the work is unquestioned. Physically and mentally they have shown themselves well fitted for their duties and their dealings with the public have been all that could be desired. Car riders have found the women courteous, obliging and anxious to assist passengers in every way possible."

Twenty-five women conductors are at work on the Hamilton line and as many more are in training for this line. The Hamilton service, because of the labor shortage, has not been up to schedule requirements, but the company hopes that the employment of women will enable it to give service as required by the Hamilton line schedule and should result in a decided improvement. Shortage of male help has in fact seriously affected service on all of the lines of the company but in spite of this fact the company hopes to be able to confine women employees to work as conductors.

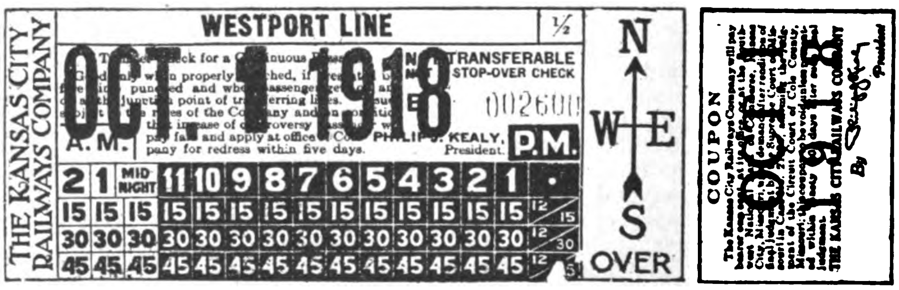
Coupon Receipts in Kansas City

The Kansas City (Mo.) Railways began on Oct. 1 the issuance of transfers bearing a coupon receipt for the extra cent under the 6-cent fare. Previously, the company had given to customers paying a 6-cent fare, a separate rebate slip. Conductors had been instructed to offer such coupons to every passenger so paying, this action being in response to a complaint that many passengers were not getting receipts. The trouble involved, to both conductor and passenger, in the process of finding out whether the passenger wanted either receipt or transfer, or both, had become burdensome. The transfer with coupon attached was devised to simplify the work of the conductor.

The Kansas City Railways had heretofore given transfers to about 70 per cent of its passengers. A much larger number of transfers is now being printed on the assumption that a transfer with coupon will be given to every passenger. However, many do not ask for coupons nor accept them when offered.

The coupons are being given as a result of the recent court decision in the fare costs affecting both Kansas City and St. Louis. The slips are worded as follows:

"The Kansas City Railways will pay bearer 1 cent at its office or at the Southwest National Bank of Commerce. Kansas City, Mo., upon demand after rendition of final judgment by the Supreme Court of Missouri in Case No. 21078, affirming the judgment of the Circuit Court of Cole County, Missouri, this coupon to be void unless presented within ninety days after such final judgment."


THE KANSAS CITY RAILWAYS COMPANY
WESTPORT LINE
½
OCT 1 1918
NON-TRANSFERABLE STOP-OVER CHECK
002600
PHILIP J. KEALY, President
A. M.
P.M.
MID NIGHT
N
W
E
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OVER
COUPON
THE KANSAS CITY RAILWAYS COMPANY
President

TRANSFER WITH REBATE COUPON

The coupon is signed by Philip J. Kealy, president of the company.

Transportation News Notes

Columbus Limits Car Capacity.—Patrolmen have been placed on all cars at Columbus, Ohio, to enforce an order to prevent crowding during the period of the epidemic of Spanish influenza.

Louisville Paper Suspends.—*Trolley Topics*, devoted to the interests of and for free distribution to employees of the Louisville (Ky.) Railway, has suspended publication temporarily as a measure of war economy.

Seven Cents for Owensboro.—The Commissioners of Owensboro, Ky., have authorized the Owensboro City Railroad to increase its fares from 5 cents to 7 cents, with four tickets for 25 cents. The new rate will likely not become effective until Dec. 1.

Indianapolis-Louisville Rates Increased.—The Indianapolis & Louisville Traction Company and the Interstate Public Service Company, operating between Indianapolis, Ind., and Louisville, Ky., were recently authorized by the Interstate Commerce Commission to increase passenger rates to 2½ cents per mile, an increase of ½ cent.

Injunction Against Fare Increase.—Judge Overton in Circuit Court at Lake Charles, La., has ordered a preliminary injunction issued without bond to the city of Lake Charles against the Lake Charles Railway, Light & Waterworks Company, which has raised fares to 7 cents. It is alleged the increase is contrary to a city ordinance fixing the rate at 5 cents.

Toronto Wants Flat Five Cents.—The Civic Board of Control of Toronto, Ont., has refused to consider the proposal of the Toronto Railway that it be permited to charge a straight 5-cent fare. The company has forwarded to the Mayor a request that the city cooperate with the company in an application to the Ontario Railway Board for permission to charge a 5-cent fare.

Wants Operating Details.—The committee of the whole of the Board of Aldermen of Yonkers, N. Y., to whom was referred the petition of the Yonkers Railroad for an increase in fares will request the company to submit a statement showing the cost of operating the road for the two years prior to the entrance of the United States into the war and for the period up to Sept. 1 last.

Six Cents for Another Jersey Road.—The Board of Public Utility Commissioners of New Jersey has granted the Monmouth County Electric Company, Red Bank, N. J., permission to increase its fare rate from 5 cents to 6 cents on its lines. The 1-cent increase is expected to bring the company $18,000 additional revenue yearly.

Plan to Relieve Freight Congestion at Toledo.—Chairman Charles Marshall and Inspector James C. Dugan of the Public Utilities Commission of Ohio, after a careful inspection of interurban freight depot facilities, have recommended the use of the Terminal Building as a consolidated freight station for all interurban lines at Toledo. Action is now awaiting word from the United States Railroad Administration.

Service Cut at Cleveland.—Fielder Sanders, Street Railway Commissioner, has ordered a reduction in the service on the Cleveland (Ohio) Railway after 7 p. m., and on Sundays until quarantine regulations are modified. Since the Spanish influenza epidemic, traffic has continued to decrease. Efforts have been made to reduce congestion during the rush hours by staggering the opening and closing hours of business houses.

Tacoma Fare Attacked.—The legality of the 7-cent fare charged by the Tacoma Railway & Power Company, Tacoma, Wash., has again been attacked. W. D. E. Anderson, real estate dealer, has filed information in the Superior Court against the company, alleging that the railway is collecting an exorbitant fare in violation of a State law and city franchises. He asks that a restraining order be granted prohibiting the collection of more than a 5-cent fare.

No Need for Government Action.—After an exhaustive investigation into transportation facilities in the City of Portland, Ore., Edward West, Pacific Coast director of the housing and passenger transportation branch of the Emergency Fleet Corporation, states "there is absolutely no transportation problem in the city which necessitates the government buying steam service for shipyard workers. There is no transportation situation here retarding construction of ships."

A Dissenter Repents.—The city of Ottawa, Ill., has capitulated to the Fuel Administration on the skip-stop matter. After the Chicago, Ottawa & Peoria Railway had adopted skip-stops there at the behest of the Fuel Administration the Council passed a resolution requiring the company to stop on signal. A letter to the Council from Harold Almert, director of conservation for Illinois, quoting the Lever act caused the members of the Council to change their minds.

Electric Will Handle Papers.—The *Daily News* of Galveston, Tex., has entered into a contract with the Galveston-Houston Interurban Railway for a special interurban car to leave Galveston at 4 a.m. daily for Houston to carry the *News*. The cars will also carry United States mail and passengers. The Galveston *News* heretofore has had a contract with the Galveston, Houston & Henderson Railroad, a steam line, which has operated a train leaving Galveston at 4 a.m.

Six-Cents for Winona. — Six-cent fares will prevail in Winona, Minn., under the provisions of a war-time emergency ordinance to be passed by the Council. The Wisconsin Railway, Light & Power Company had made formal request for a 7-cent fare at a recent meeting. Since then conferences have been conducted between Manager R. M. Howard and members of the Council. A compromise proposition, which it is understood will be accepted, will afford an advance of 1-cent in the fares.

More Skip Stops in Brooklyn.—The Brooklyn (N. Y.) Rapid Transit Company announced on Oct. 26 that, beginning on Oct. 27 skip-stop operation, similar to that in effect in the lower Fulton Street, Broadway, and Flatbush sections, Brooklyn, would be started on all lines running from the Fifty-eighth Street depot. The action has been taken at the request of the United States Fuel Administration. Such operation will be extended to all surface lines on the system as soon as the work of indicating stops is completed.

Louisville Limits Car Capacity.—Following a conference between the State Board of Health and officials of the Louisville Board of Safety and Louisville (Ky.) Railway, an agree- was reached limiting the number of passengers to be carried by cars during the influenza epidemic. Double truck cars are limited to fifty-five passengers, and double truck cars to sixty-five, including platform and standing space. Double truck cars are to carry forty-four seated and twelve standing inside, with four on the front platform, and six on the rear. Single-truck cars will be distributed in the same way as to platforms, but with ten fewer seated inside.

Lower Steps Demanded Again.—Because Mrs. John Vallance, Spokane, Wash., complained to the State Public Service Commission that the steps on cars were too high, the commission has ordered the Spokane Traction Company to lower the steps to a height more easily negotiated by tight-skirted women. The complaint was originally laid before the commission some time ago. The commission wrote the company asking that the steps be lowered. Recently Mrs. Vallance again took the matter up, alleging that the company had lowered the steps on only a part of its cars in compliance with the first order. The commission has again written the company demanding that the steps be lowered.

Winnipeg Wants Six Cents.—Formal application has been made by the Winnipeg (Man.) Electric Railway to the Mayor and Council of Winnipeg for permission to charge a 6-cent fare for adults, with tickets for school children at the rate of seven for 25 cents. In its petition the company points to the wage award noted in the ELECTRIC RAILWAY JOURNAL for Oct. 26, page 755, and says that by that decision the payroll of the company will be increased $361,952 annually. The total extra cost to the company for wages, advances in the price of materials, etc., will be increased $600,000 annually.

Financial statements are annexed to the application showing the expected results in detail.

Columbus Investigation Halted.—City Attorney Scarlett of Columbus, Ohio, has made known the fact that the special committee, appointed to investigate the finances of the Columbus Railway, Power & Light Company in connection with its request for a higher rate of fare, can make no contract with an accountant to check up the figures furnished by the company until ordinances are enacted which provide for this and making an appropriation to pay for the work. The committee had arranged with Edward J. Bemis, Chicago, Ill., to do this work, and his remuneration was to be $750. Mr. Scarlett stated that he had informed the Council of the situation several times, but no steps have been taken to get such ordinances through.

Toronto Service Order Stands.—Following the recent order of the Railway & Municipal Board of Ontario to the Toronto (Ont.) Railway to purchase 200 additional cars at once, the same body has instructed the company to place all of its cars in service forthwith. The company contended that cars were in the carhouses because it was impossible to secure men. New men are being offered $90 a month. The company's plea for time was not heeded. Chairman McIntyre of the board insisted that the word "forthwith" stand in the order. It was also indicated that the board would proceed to enforce the order to buy 200 new cars. A representative of the union of motormen and conductors argued that the company did not make the best use of the men available. He said it was for this reason that the men had opposed the employment of women.

Rates in Jackson Before Court.—The matter of rates for the Jackson Light & Traction Company, which operates the railway, gas and electric light and power services in Jackson, Miss., is before the courts. About a year ago the company made a start toward increased rates. All of its efforts were fought by the city officials, and litigation was started. This litigation, however, involved only the electric and gas rates. An agreement was reached with the city whereby the company was permitted to increase its rates 33⅓ per cent for lighting, 40 per cent for power, and 25 cents per 1000 cu. ft. on gas, until the matter is finally adjudicated in the courts. Railway fares had never been fixed by city ordinance or franchise. At the time the company put the new gas and electric rates into effect, it also announced an increase of 2 cents in car fares. The city officials immediately passed an ordinance fixing the fares at 5 cents. The company then secured an injunction restraining the city from enforcing this ordinance, and it is probable that the railway fare question will be settled at the same time the gas and electric rate questions are settled. The matter will probably come up in court in November.

Personal Mention

Mr. Pardee, President

Elected to Head American Electric Railway Association, Succeeding J. J. Stanley

John H. Pardee, who was elected president of the American Electric Railway Association at the conference of that association held in New York on Nov. 1, is president of The J. G. White Management Corporation, New York.

Mr. Pardee was graduated from Hamilton College in 1889, and is a member of the Theta Delta Chi fraternity. In 1891 he was admitted to the bar of New York, and began to practice law as a member of the firm of Petris, Zimerman & Pardee, Buffalo. His entry into the public utility field was made in the capacity of general manager of the Ontario Light & Traction Company and the Canandaigua Gas Light Company, Canandaigua, N. Y. This was an administrative appointment, the result of his successful reorganization of those properties as attorney for the principal financial interests. In 1902 he was appointed general manager of the Rochester & Eastern Rapid Railway, with headquarters at Canandaigua, N. Y. At this time he discontinued entirely the practice of law in order to devote all his energies to utility management.

In 1907 Mr. Pardee joined the organization of J. G. White Company, Inc., New York, as operating manager of the public utility properties controlled by that company. In 1913 he was elected to the office he now occupies as president of The J. G. White Management Corporation, then newly organized by the J. G. White interests for the purpose of specializing in the management and operation of railway, gas and electric properties and industrial enterprises. He is connected with the following companies in the executive capacities as shown: president Associated Gas & Electric Company, New York, N. Y.; president Eastern Pennsylvania Railways, Pottsville, Pa.; president Southern Utilities Company, Florida; president Cayuga Cement Corporation, New York; vice-president Augusta-Aiken Railway & Electric Corporation, Augusta, Ga.; vice-president Manila Electric Railroad & Lighting Corporation, Manila, P. I.; vice-president Philippine Railway, Iloilo, P. I.; vice-president The Helena Light & Railway Company, Helena, Mont.; vice-president The Sheffield Company, Sheffield, Ala.; vice-president Central Sugar Corporation, Salamanca, Cuba; vice-president Cardenas-American Sugar Company, Cardenas, Cuba; vice-president Matanzas-American Sugar Company, Matanzas, Cuba.

Mr. Pardee has been actively identified in the affairs of the American Electric Railway Association for many years. He has been a member of several important committees, and during the past year was first vice-president of the association, having successively held the other vice-presidencies. He was president of the New York Electric Railway Association for the year 1910-1911, following an official connection with that association dating from 1903.

The many business interests with which Mr. Pardee is actively affiliated have given him an especially broad knowledge of the general utility problems throughout the United States. He is also particularly familiar with the utility situation in the Philippine Islands, having made several trips to those islands in connection with the management of the properties operated there by The J. G. White Management Corporation.

Mr. Pardee is a member of numerous social and technical organizations, including the Metropolitan Club and The Engineers' Club, both of New York.

Howard Channels has been appointed master mechanic of the Atlantic & Suburban Railway, Pleasantville, N. J., to succeed William Simmerman.

M. E. McGraw has been appointed auditor of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, to succeed H. B. Cavanaugh.

R. C. Guernsey has been appointed secretary of the Fostoria & Fremont Railway, Fostoria, Ohio, to succeed James D. McDonel, deceased.

L. L. Jacobs has been appointed purchasing agent of the Trans-St. Mary's Traction Company, Sault Ste. Marie, Mich., to succeed C. H. Speer.

L. P. Chaney has been appointed chief engineer of power station of the Pensacola Electric Company, Pensacola, Fla., to succeed J. M. Anderson.

F. W. Aiells has been appointed engineer maintenance of way of the Peoria Railway & Terminal Company, Peoria, Ill., to succeed J. Telfer.

J. P. Tischendorf has been appointed auditor of the Cincinnati, Milford & Loveland Traction Company, Cincinnati, Ohio, to succeed R. G. Ware.

H. C. Howard has returned to Winnipeg, Man., and has resumed his former position as publicity agent of the Winnipeg (Man.) Electric Railway, succeeding F. H. Williams, resigned.

William M. Butler has been elected chairman of the board of trustees of the Boston (Mass.) Elevated Railway, succeeding Maj. Louis A. Frothingham, who has entered war service. Mr. Butler has been a trustee of the Boston company since the road was taken over under the public management, service-at-cost plan. He is president of the Boston & Worcester Street Railway and is a trustee of the Massachusetts Lighting Companies.

T. N. Naroshecitsch, chief engineer of the Moscow Tramways, has been spending some time in this country. He left Russia before the fall of the Kerensky government to purchase new rolling stock and equipment and placed orders for some cars with Japanese shops and for some motors in this country, but delivery has been delayed by the serious internal conditions in Russia.

Lieut. Augustus G. Reynolds, Third Battalion, U. S. Guards, has been promoted to captain and assigned to command Company A, Twenty-seventh Battalion, on guard duty at the Bath, Me., shipyards. Captain Reynolds has been an assistant in the office of the president of the Boston (Mass.) Elevated Railway for about twenty years. He is widely known in New England electric railway circles.

Matthew C. Brush, former president of the Boston (Mass.) Elevated Railway, and now vice-president of the American International Corporation, New York, N. Y., was elected chairman of the board of directors of the Boston Elevated Railway on Oct. 28. On the evening of Oct. 28 Mr. Brush was the guest at a dinner at the Algonquin Club given by officials and employees of the railway and officers of the Boston carmen's union. Russell A. Sears. attorney for the company, officiated as toastmaster at the dinner, which was entirely informal and at which there were ninety-two diners. Acting President J. Henry Neal spoke of his close association with Mr. Brush and the confidence that the latter inspired in those who worked with him. Thomas F. Shine, in behalf of the union, spoke of the good will of the employees toward Mr. Brush and their appreciation for what he had done for them. Mr. Brush was then presented with a grandfather's clock. In response, Mr. Brush spoke of the fine team-play and the family feeling that prevailed in the Elevated organization and called on all to give their best efforts to insure the success of the company under the board of public trustees.

Samuel L. Powers, has been appointed a trustee of the Boston (Mass.) Elevated Railway, succeeding Louis A. Frothingham, who has resigned to accept a commission in the United States Army. Mr. Powers is the senior member of the law firm of Powers & Hall, Boston, counsel for the New England Telephone & Telegraph Company, and has figured in many public utility court and commission proceedings. In addition he was a member of Congress in 1901-1905. Mr. Powers was born at Cornish, N. H., in 1848. He was educated at Dartmouth College and New York University and was admitted to the bar in 1875. He has practiced law in Boston since 1876. He was a delegate from Massachusetts to the International Treaty Convention in Paris in 1878. He is a trustee of Dartmouth College and the New England Conservatory of Music; president of the Eastern Blaugas Company; chairman of the Massachusetts Advisory Council, George Washington Memorial Association; president of the Boston Art Club; and vice-president and director of the Algoma Mining Company and the Corbin Copper Company. He is a member of the University, Newton, Middlesex and Exchange Clubs, and of the Atlantic Conference. Mr. Powers' keen wit and unusual knowledge of public utility affairs and statecraft have made him in much demand as a public speaker. His home is at Newton, Mass.

R. L. Warner, recently elected vice-president of the United Railways, St. Louis, Mo., expects to spend most of his time in New York until about the middle of November, after which he will probably locate in St. Louis. Naturally Mr. Warner was pressed for an interview by the St. Louis papers at the time of his election. He said then that he had given some attention to affairs in St. Louis, but that he was not acquainted with all the moves that had been made there in connection with the franchise settlement. It seemed to him that there was a parallel between the cases of some of the companies in Massachusetts and the company in St. Louis. He then explained briefly the service-at-cost plan of operation. Mr. Warner was careful to insist, however, that he had no preconceived ideas as to what solution was best in the St. Louis case, but is reported to have said that some such plan as service-at-cost would seem to be applicable there. Mr. Warner will devote his attention to the financial affairs of the company and to the matter of public relations. He is at present a member of the firm of Warner, Tucker & Company, Boston, brokers, one of his associates in which is Randolph Tucker, a son-in-law of Col. E. M. House, confidential adviser to President Wilson. Mr. Warner's business career was reviewed in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 721.

R. L. WARNER

Obituary

Howard H. Duff, for the past year assistant to Joseph B. Crane, vice-president of the Lehigh Navigation Electric Company, died on Oct. 24 with pneumonia superinduced by influenza. He was thirty-five years of age. Mr. Duff was a native of Jamaica and came to this country to engage in power engineering. Before he became connected with the Lehigh Navigation Electric Company a year ago he was with the Westinghouse Company at Philadelphia. He went to Allentown as an assistant to Mr. Crane with the Lehigh Valley Transit Company, the main subsidiary of the Lehigh Navigation Electric Company. One of his most creditable accomplishments in the past year was the rehabilitating of the Front Street power plant. He is survived by his widow and one child.

Charles C. Mumford, a federal trustee of the Rhode Island Company, Providence, R. I., former associate justice of the Superior Court of Rhode Island, died suddenly on Oct. 22 of heart disease, aged fifty-seven years. Mr. Mumford was graduated from Brown University in the class of 1881. He then studied law and served for many years in many offices connected with the courts, finally becoming associate justice of the State Superior Court. He also served in the House of Representatives, was United States commissioner and was for a time president of the Providence & Danielson Railroad and vice-president of the Sea View Railroad, both of which are now included in the system of the Rhode Island Company. He was later selected as a federal trustee of the Rhode Island Company.

Prof. William Leslie Hooper, head of the department of electrical engineering at Tufts College, died suddenly at his home in Somerville, Mass., on Oct. 3. Professor Hooper was associated with the electrical work in the development of the West End Street Railway at Boston and was often sought as a consultant by industrial and engineering concerns. For thirty-five years he had been a member of the faculty at Tufts. He was born at Halifax, N. S., in 1855, educated at Tufts, which honored him subsequently with the honorary degrees of Ph.D. and LL.D. From 1883 to 1890 he was assistant professor of physics at Tufts, under the late Prof. A. E. Dolbear, who founded the department of electrical engineering. Since 1890 Professor Hooper has been at the head of the latter department. In 1912 and 1913 he was acting president of the college. He was a Fellow of the American Academy of Arts and Sciences, a member of the American Institute of Electrical Engineers and past chairman of the Boston section. He was the author of a number of technical books.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Leather Up 80 Per Cent

Used by Railways Chiefly for Hand Straps—Demand Has Remained Fairly Steady

Leather for electric railways is confined to a comparatively few uses, but like leather for all other purposes, it has advanced considerably in price. In former years leather was used quite extensively for bell cord but has now been largely replaced by braided cotton cord. This change has been gradual, extending over many years and has been due to various causes, chiefly, however, because cotton cord is considered better for the service and at the same time it is cheaper. Leather bell cord is obtainable, however, for it is still used quite extensively by the steam railroads. Prices have advanced about 80 per cent during the past two years and as manufacturers carry little stock, it will be found that three weeks to two months are necessary for the filling of orders.

Probably the most extensive use of leather by traction companies is for hand straps. This demand is hardly more than 30 per cent normal due to the decrease in the construction of new rolling stock. The demand for maintenance purposes and for what new cars are being built has not changed very much because many of the sanitary straps on the market use leather as a foundation and cover it with such substance as celluloid. Leather for handstraps has advanced about 80 per cent in price during the past two years. No further advance is contemplated at present but if the war continues for another six months, it is predicted that there will be another increase in the spring. Manufacturers report that no stock is being carried and that due to the demands for leather for other purposes three weeks to two months are necessary in which to fill orders.

Another important use for leather on electric railways is in air brake packing and for gaskets. For this use trouble is being experienced in obtaining leather of the best quality as it is essential that for use in brakes the leather must be airtight. Due to the scarcity of leather, prices have advanced about 75 per cent during the past two years. Deliveries are reported as good, but the manufacturers urge that the railways advise them in advance of their month to month needs in order that the demand may be anticipated and the orders filled without delay. It is understood that there is a strong movement on foot to try to develop a substitute for leather for use in air brake packing and for gaskets due to the present shortage, the possibilities of a future decrease in quantity available and a consequent further increase in price of the finished product.

Effect of War on Deliveries

Statement by Boston Elevated Shows Condition Affecting Shipments of Rolling Stock and Power Plant Equipment

In a recent statement by the trustees of the Boston (Mass.) Elevated Railway showing why the company is unable at present to increase its service materially, the following comment in part on delivery conditions was included: "The company's motive power is sufficient to operate only the surface cars now available for service. An accident last winter to the company's 35,000-kw. turbine at the South Boston power station has not yet been repaired. The General Electric Company expects that it will be in operation shortly after Jan. 1, 1919, but not before, because government war work has had to take precedence. A new 25,000-kw. turbine ordered from the Westinghouse Electric & Manufacturing Company for delivery in September or October, 1918, will not be installed until Feb. 1, 1919, notwithstanding the fact that the War Industries Board issued priority orders to facilitate to the utmost early delivery. Power will for several months be lacking to operate additional cars or new cars unless they are used to replace cars now in service.

"Nor are the new cars immediately available. The 200 new surface motor cars ordered by the trustees at their first meeting in July for delivery beginning between Oct. 15 and Nov. 15, 1918, have been delayed and will probably not be in service before early spring of next year. The fifty new trail cars are likewise much delayed by government war work so that they will not be in operation before next January. The balance of the new Cambridge subway cars ordered in October, 1917, has been indefinitely delayed by government war work so that there is no prospect of their delivery during the present calendar year. The same delay has occurred in much of the equipment which is needed for outfitting these same new cars upon delivery. The only way to facilitate the completion of turbines and equipment in less time would be for the government to consent to give the company priority over war work, which of course, no one would want to occur."

Nic Le Grand Changes

Joins the National Safety Car & Equipment Company and Will Specialize in Safety Cars in the Future

Nic Le Grand, for many years connected with the St. Louis Car Company and lately in charge of sales as general sales agent, left that concern on Oct. 31 to become affiliated with the National Safety Car & Equipment Company, 418 Pierce Building, St. Louis. Mr. Le Grand's attractive personality, combined with his country-wide work in the development and sale of electric railway equipment, has brought to him an exceptionally large acquaintance in the electric railway industry. In 1902, after having had a general manufacturing experience, Mr. Le Grand began work with the St. Louis Car Company. In 1906 he resigned to engage in the supply business and after two years renewed his affiliations with the St. Louis Car Company, becoming its Eastern representative at New York. In 1909 Mr. Le Grand returned to St. Louis and became manager of the supply department of the St. Louis Car Company, in which capacity he served until Jan. 1, 1913, when John I. Beggs, president of that company, appointed Mr. Le Grand general sales agent.

Mr. Le Grand's new affiliation with the National Safety Car & Equipment Company will offer him an opportunity to utilize his long experience in car design and construction work. This new company, organized in September by George H. Tontrup, formerly manager of the American Car Company, will specialize in the sale of Birney safety cars as complete, ready-to-run units. It has made manufacturing arrangements with the Cincinnati Car Company and has announced that it also will handle a general line of electric and steam railway supplies.

New Export License Rules

Procedure for Obtaining Licensees' Priority Certificates and Steel Supply Permits Simplified

The War Industries Board and the War Trade Board announce in a new ruling (W. T. D. R. 258) that they have jointly adopted a set of rules and regulations for the purpose of simplifying the procedure of obtaining export licenses from the War Trade Board, priority certificates from the Priorities Committee of the War Industries Board, and permits from the Director of Steel Supply of the War Industries Board. On and after Oct. 14, 1918, anplications for licenses to export iron and steel articles, a number of which are used in the electric railway field, should be filed with the War Trade Board.

The Priorities Committee of the War Industries Board has awarded priority classification C to all articles on which priorities are issued which are on the export conservation list of the War Trade Board and are covered by export licenses issued on and after Oct. 16, 1918. No class C certificates will be issued with such licenses. If the article specified on the license is one on which priorities are issued, and if no individual priority certificate accompanies the export license, the license itself will be evidence that the article covered by it has been automatically awarded priority classification C. If higher priorities are warranted, individual certificates will be granted.

Licenses issued on and after Oct. 16 for the exportation of iron and steel or the products manufactured thereof which are not covered by priority license application will in itself constitute a permit and approval from the Director of Steel Supply for the filling of the orders for the properties of iron and steel specified in such export licenses to the extent that such delivery will not interfere with delivery when and as required by priority orders.

The material cited under this order includes among other things cast and wrought iron and steel pipes, poles, rails and splice bars, frogs and switches, railroad tie plates, track spikes and bolts.

Preparedness Conference for Reconstruction

Meeting to Be Held in Chicago, Dec. 5 and 6, Under Auspices of Local Trade Press Editorial Conference

Preparedness for reconstruction after the war has come into the minds of business men very definitely in the past few weeks. Nor is there hardly another industry in which reconstruction is of so much importance as the electric railway industry, which for more than four years has seen its property deteriorate.

In order to discuss preparedness a conference of trade and technical editors of America will be held in Chicago on Dec. 5 and 6 under the auspices of the War Service Editorial Conference of the Trade, Class and Technical Press of Chicago.

The committee appointed to arrange the program has been in touch with some of the leading men of the nation and has already secured a definite promise from James W. Gerard, former ambassador to Germany, to participate in the discussion. It has been decided to carry on the discussion by sections, with a general meeting in the afternoon of the second day, at which the conclusions which have been reached by each section will be reviewed, and the formulation of a platform will be attempted by the conference.

Although it has not as yet been fully decided just how many sections there will be and what each will take up, it is understood that the following conditions will be considered: Credit standing after the war; labor distribution and compensation; commodity price adjustment to avoid a period of depression; production curtailment and acceleration; market relations re-establishment to avoid demoralization; export questions on markets, prices, credits, etc.; the question of whether governmental participation shall be dictatory, as a partner, or as a referee.

National Standard Catalog Size Proposed

Recommendation of 7¾ x 10⅝ In. Adopted by Standardization Committee of the National Association of Purchasing Agents

At the third annual convention of the National Association of Purchasing Agents, held at Detroit, Mich., on Sept. 23, 24 and 25, a standard-size catalog to be known as the "national standard catalog size" was recommended and adopted.

The committee recommended that all catalogs meant for purchasing agents be made 7¾ x 10⅝ in. or its half size, 5¼ x 7¾ in., saddle stitched so that they may be opened flat to full size for filing. Also that circulars and single sheets of either 7¾ x 10⅝ in. or any multiple thereof may be folded for mailing.

Since the recommendation has become known, the National Retail Hardware Association of 15,000 members has adopted it as its standard, and several other associations have the matter under consideration through committees.

NEW YORK METAL MARKET PRICES

	Oct. 17	Oct. 31
Copper, ingots, cents per lb	26	26
Copper wire base, cents per lb	28.75	28.75
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.05	9.10
Tin, Chinese*, cents per lb	......	77.00 to 77.50
Aluminum, 98 to 99 per cent., cents per lb	†33.10	†33.10

* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Oct. 17	Oct. 31
Heavy copper, cents per lb	23.50 to 24.00	23.00 to 23.50
Light copper, cents per lb	20.50 to 21.50	20.00 to 20.50
Red brass, cents per lb	23.00 to 24.00	23.00 to 24.00
Yellow brass, cents per lb	15.00 to 16.00	15.00 to 16.00
Lead, heavy, cents per lb	7.50 to 8.00	7.50 to 7.75
Zinc, cents per lb	7.50 to 8.00	6.25 to 6.50
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.96	$16.00 to 16.50

ELECTRIC RAILWAY MATERIAL PRICES

	Oct. 17	Oct. 31
Rubber-covered wire base, New York, cents per lb	34	34
Weatherproof wire (100 lb. lots), cents per lb., New York	38.75 to 40.00	38.75 to 40.00
Weatherproof wire (100 lb. lots), cents per lb., Chicago	35.00 to 39.00	38.75 to 39.76
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S' C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, girder (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cents erp lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	2.90	*2.90
Sheet iron, black (24 gage), Pittsburgh, cents per lb	4.90	*5.00
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	5.80	*6.25
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	*4.35

	Oct. 17	Oct. 31
Galvanized wire, ordinary, Pittsburgh, cents per lb	3.95	*3.95
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	15 to 25	15 to 25
Waste cotton (100 lb. bale), cents per lb	13 to 13½	12½ to 13
Asphalt, hot (150 tons minimum), per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	‡$1.80	1.52
Linseed oil (boiled, 5 bbl. lots), New York, per gal	‡$1.82	‡1.54
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	64	64

* Government price. † These prices are f. o. b. works, with boxing charges extra.

‡Bid price, no quotation.

Rolling Stock

Murphysboro & Southern Illinois Railway, Murphysboro, Ill., A. B. Minton, president, is in the market for a second-hand double-end interurban car.

Coatesville (Pa.) Trolley Company, is in the market for two 5-ft. 2½-in. gage used electric street cars.

Mansfield Public Service & Utility Company, Mansfield, Ohio, has ordered seven safety cars from the Cincinnati Car Company through the National Safety Car & Equipment Company of St. Louis.

Twin City Rapid Transit Company, Minneapolis, Minn., is disposing of its small platform cars and will in the future purchase larger cars with triple gates it was announced last week. The company, it is understood, will soon place orders for a large number of trucks for the larger cars.

Seattle (Wash.) Municipal System has purchased twenty-five double truck passenger cars through the United Railway & Logging Supply Company, to be delivered on cars at St. Paul prior to Nov. 15 as previously reported. It had been expected that these cars would be shipped considerably earlier than this date, and would be in service about Nov. 1. The cars cost $6,611 each. About $150 each will be expended on the cars, to cover special features that the city desired. The original cost will be paid for by the Emergency Fleet Corporation, but the additional $150 on each car will be paid by the city. Six one-man cars were purchased from the St. Louis Car Company. Four of these cars have been received, and two more will be shipped in the near future. These cars were ordered about one year ago. Six one-man cars have been purchased from the American Car Company. These were ordered recently and are being taken from stock. The sum of $217,000 will be paid by the Emergency Fleet Corporation, this sum to cover six of the one-man cars, as well.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., as noted in the ELECTRIC RAILWAY JOURNAL for Sept. 21, is expecting delivery on Oct. 25 of six passenger cars the specifications of which are listed below. The purchase of this equipment is being financed by the United States Shipping Board, Emergency Fleet Corporation, in order to improve electric railway transportation facilities at the Bath, Me., shipyards.

Number of cars ordered	6
Name of road	Lewiston, Augusta & Waterville Street Railway
Date order was placed	July 17, 1918
Date of delivery	Oct. 25, 1918
Builder of car body	J. G. Brill Co.
Type of car	Closed Passenger
Seating capacity	52
Weight	44,000 lb.
Bolster centers, length	21 ft. 0 in.
Length over all	45 ft., 6 in.
Truck wheelbase	5 ft., 9 in.
Width over all	8 ft., 6 in.
Height, rail to trolley base	11 ft., 8 in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Nevasplit
Roof	Arch
Air brakes	G. E.
Axles	Brill
Bumpers	Hedley
Car signal system	E. S. S. Co.
Car trimmings	Brill
Center and side bearings	Brill
Control	K-35-G-2
Couplers	Brill
Curtain fixtures	National lock washer
Curtain material	Pantasote
Designation signs	Keystone
Door operating mechanism	Brill manual
Fare boxes	International C-15
Gear and pinions	Westinghouse
Hand brakes	National staffless
Heater equipment	Peter Smith hot air
Headlights	C-H Imperial
Journal boxes	Brill M. C. B. type
Lightning arresters	Westinghouse M. P.
Motors	4-West. 514-C. inside hung
Registers	International
Sanders	Brill
Sash fixtures	Brill
Seats	Brill
Seating material	Rattan
Slack adjuster	Gould
Springs	Brill
Step treads	Universal
Trolley catchers or retrievers	Wilson
Trolley base	U. S. 13
Trucks	Brill 77-E-1
Ventilators	Brill
Wheels	33 in. cast

San Francisco-Oakland Terminal Railways, Oakland, Cal., has purchased in addition to the cars reported in the *Electric Railway Journal* for Oct. 5, ten used cars for the Spokane street railway system for immediate shipment. These cars are to be used in providing transportation to and from the shipyards.

Trade Notes

Charles E. Goodnow, formerly assistant sales manager of the electrical and special wire department of the American Steel & Wire Company and more recently identified with building construction work in Washington and Brooklyn for the army and navy, is now with the Page Steel & Wire Co., 30 Church Street, New York. Mr. Goodnow's efforts will be devoted to sales and service on Armco iron welding rods and "Copperweld" electrical wire.

Walter A. Zelnicker Supply Company, St. Louis, Mo., announces the appointment of R. H. Wilson as assistant to the president, with office at St. Louis. Mr. Wilson has been with the company for years, latterly as Houston representative, and is succeeded there by E. O. Griffin, well known in Southwestern railroad circles for the past twenty years, first as storekeeper and assistant general manager of the International & Great Northern; and more recently as assistant to president, St. Louis Southwestern Railroad in charge of purchases.

The Underfeed Stoker Company of America, Chicago, is opening a number of new offices owing to the rapidly expanding business. A new district office has just been opened in Cleveland, at 604 Sweetland Building, in charge of H. F. Post, formerly connected with the home office. S. A. Williamson, until recently a member of the Cincinnati staff, has been chosen to take charge of a new office that is being established at Minneapolis. The address will be announced later. G. W. Bonnell, who formerly represented the company in the St. Louis territory, will shortly take charge of a new office being established at St. Louis. The address of this office has not yet been definitely decided upon.

New Advertising Literature

General Electric Company, Schenectady, N. Y.: Bulletin No. 47702, which describes rheostat and compensator operating mechanisms, and bulletin No. 47133 describing isolated and small plant alternating-current standard unit panels.

Beaumont Manufacturing Company, Philadelphia, Pa. Catalog 37 descriptive of standard gates for controlling the flow of granular materials from bunkers and also illustrating design of ash pits under boilers and the correct gates to use for this purpose.

De E. C. & Alexandre Grammond, Lyons, France: Catalog on rail bonds showing various kinds, laminated and solid, also figure eight and various other sections of trolley wire. Methods of calculating the proper size of wire for transmission and the desirable section of rail bond, with other useful tables are included.

Charles E. Goodnow, formerly assistant sales manager of the electrical and special wire department of the American Steel & Wire Company, and more recently identified with building construction work in Washington and Brooklyn for the Army and Navy, is now with the Page Steel & Wire Company, New York. Mr. Goodnow's efforts will be devoted to sales and service on Armco iron welding rods and "copperweld" electrical wire.

Franchises

Kansas City & Leeds Railroad, Kansas City, Mo.—After a clause has been written into the ordinance granting a twenty-year franchise to the Kansas City & Leeds Railroad, providing for the indemnification of Kansas City against damages resulting from the construction of the line, the upper house of the Council ways and means committee said recently that it would report favorably on the measure. It is planned to build the road, an interurban electric line, from Thirty-first Street and Hardesty Avenue in a southeasterly direction to Leeds and the Municipal Farm; later to continue it to Lees Summit.

Track and Roadway

San. Francisco-Oakland Terminal Railways, San Francisco, Cal.—An addition will be built by the San Francisco-Oakland Terminal Railways to its building at Grove and Twenty-second Streets, Oakland. The structure will be doubled at the top to accommodate women employees.

Kankakee & Urbana Traction Company, Urbana, Ill.—The Illinois Central Railroad on Oct. 26 filed a petition with the State Public Utilities Commission asking for authority to construct a grade at the Kankakee & Urbana Traction Company crossing near Rantoul so that the railroad could facilitate connection with Chanute Aviation Field.

Indianapolis Traction & Terminal Company, Indianapolis, Ind.—Mayor Charles W. Jewett and the Board of Public Works of Indianapolis has ordered the Indianapolis Traction & Terminal Company to make improvements and extend the service on College Avenue from Fairfield Avenue to the city limits either by entering into a contract with the Union Traction Company for transfer privileges on its tracks in College Avenue or by the construction of new tracks.

Salem & Penns Grove Traction Company, Penns Grove, N. J.—It is reported that the Salem & Penns Grove Traction Company will construct an extension to Pedricktown to connect with the Camden, Gloucester & Woodbury Railway, passing through Bridgeport, Paulsboro and Gibbstown.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Trenton & Mercer County Traction Corporation has informed the City Commission of Trenton that it will not extend its West State Street line past the State Hospital for the Insane because of the expense of $10,000 for paving. The city contends that the company would save 2½ miles on a round trip to the state institution.

Binghamton (N. Y.) Railway.—The construction of an extension from Hill Crest to the Hiresville plant is being considered by the Binghamton Railway.

Texas Electric Railway, Dallas, Tex.—It is reported that the Texas Electric Railway contemplates the construction of an extension to the camp at Provident City at an estimated cost of $25,000.

Ohio Valley Electric Railway, Huntington, W. Va.—The Ohio Valley Electric Railway will replace 5 miles of No. 0 trolley wire with No. 000 round wire. D. L. Evans, line superintendent, will have charge of the work.

Seattle (Wash.) Municipal Railway.—The city of Seattle, Wash., is preparing to begin construction of the proposed car line extension from Spokane Street along the west side of the Duwamish Waterway to the Seattle-North Pacific shipyards. This is one of the municipal projects ordered by the Emergency Fleet Corporation. The work will cost about $75,000. The city will pay 25 per cent, the shipbuilding company 40 per cent and the government 35 per cent. The extension will eventually become part of a double-track line on the Lake Burien division.

Tacoma (Wash.) Municipal Railway.—Double tracking of the Municipal Railway to the shipyards, with money loaned to the city by the Emergency Fleet Corporation will be started immediately. The government has advanced $50,000 as the first loan to get the work started.

Power Houses, Shops and Buildings

Interborough Rapid Transit Company, New, York, N. Y.—The Public Service Commission for the First District has received bids for the construction of an addition to the shops of the Interborough Rapid Transit Company, at Lenox Avenue and 148th Street, provision for which was made under contracts entered into for the dual system of rapid transit. Owing to the larger number of cars purchased and operated in connection with the new lines, it has become necessary to make additional room for the repair and inspection of subway cars. It was determined that such room could best be obtained and the desired end achieved by building an addition to the existing shop plant, rather than to undertake the entire construction of a new plant. The lowest bidder for the work was the concern of A. L. Guidone & Son, Inc., whose proffer was $182,999.

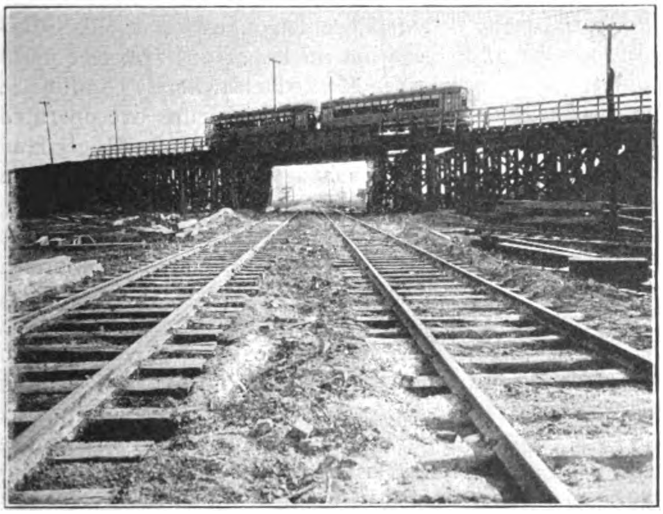


FIG. 2—THE VIADUCT OVER THE STEAM RAILWAY AND ONE OF THE NEW TWO-CAR TRAINS

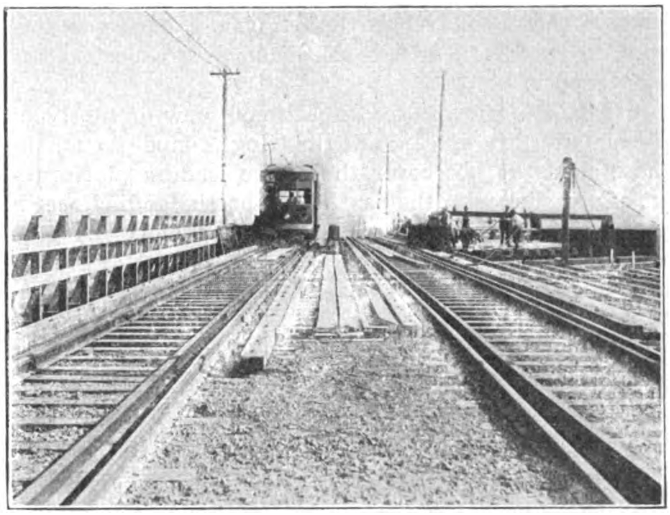


FIG. 3—VIEW OF THE VIADUCT DECK—CONSTRUCTING THE DRIVEWAY

was made as an approach to a viaduct over the tracks of a branch of the Pensylvania Railroad. It will be noted that only one roadway for vehicles is provided and the tracks are located on one side of this fill. Approximately 70,000 cu.yd. of cinders were used in bringing the subgrade up to the normal level and 30,000 cu.yd. of material was necessary for making the approaches to the viaduct just mentioned. The material for these was secured by stripping off the tops from some knolls located on the city property, through which a part of the line runs. This stripping was done by means of a steam shovel, and the material was hauled from one-fourth to one-half a mile to the site of the new street over a construction railroad upon which standard-gage dump cars and steam locomotives were operated. Except for the approaches to the viaduct, which are on a 4-per cent grade, the track is practically dead level. The roadway surface is about 1 ft. above high water.

The tracks are laid with 90-lb., A.S.C.E. standard T-rail to a gage of 5 ft. 2½ in. The center-to-center distance is 10 ft. 2½ in. The ties are of chestnut, 6 in. x 8 in. x 8 ft., spaced to approximately 2-ft. centers. About 6 in. of cinder ballast is tamped between the ties and the subgrade. The rails are joined with 4-hole continuous rail joints which are supported, a tie plate being placed under the other rail to level up the tie. On curves both rails are guarded and the running rails are braced at frequent intervals. For a short line running over a bit of marshy land the new extension makes an unusual number of crossings with other railway tracks. Two of these, over the Philadelphia & Reading Railroad and one branch of the Pennsylvania Railroad, are made at grade, as is also an intersection with the single-track line of the Philadelphia Railways. As noted before, a viaduct, shown in Fig. 2, is used in crossing another branch of the Pennsylvania Railroad. Both of these branches are new lines still under construction and are part of the war work going on in this vicinity.

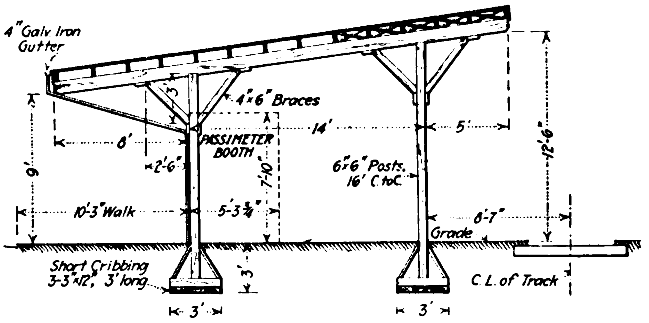


FIG. 4—STRUCTURAL DETAILS OF THE SHELTER SHEDS

The viaduct, which is being built by the railroad company, makes an angle of about 60 deg. with the railroad tracks necessitating the use of a skew bridge. The present span is about 75 ft. in length and covers three tracks. A second-hand three-girder half-through bridge, taken from some other portion of the railroad system, supports the trolley tracks, while the highway is carried on I-beams. The bridge work is supported on double wooden bents.

Owing to the vast amount of war work going on in the immediate vicinity, the railroad company expects this branch to become an important line in the near future and, to provide for further tracks, a few bents of wooden trestle have been constructed at each end of the present span. The trestle bents as well as those supporting the girder itself, rest on concrete foundations which have been run down into the ground a few feet to an underlying bed of gravel. The viaduct is built with a clearance of 18 ft. between the railroad track and the bottom of the girders. A view taken from the deck of the viaduct and looking toward the shipyard is shown in Fig. 3. The numerous derricks of the shipyard appear faintly in the background. The track construction on that portion of the extension between Eastwick Avenue and the shipyard was done by the Philadelphia Rapid Transit Company by a force-account contract with a local firm. That portion within the shipyard was done by the construction forces of the American International Shipbuilding Corporation according to plans and specifications furnished by the electric railway company. For this portion of the track, the construction details differ only in that 85-lb. A.S.C.E. rail was used.

The track bonding, which on the Philadelphia Rapid Transit Company system comes under the jurisdiction of the way department, consists of No. 0000 "Erico" bonds. These bonds have been given a dark coat of paint to render them less conspicuous to collectors of junk copper.

In Fig. 4 is shown a cross-sectional view of the type of shelter shed erected at the Hog Island terminal. These sheds do not cover the entire loading platform, but afford shelter to the passimeter booths and adjacent portions of the loading platforms. As shown by the drawing the construction is of a more or less temporary character. They were constructed by the shipbuilding company. To provide for an office and for comfort rooms for the railway employees two small buildings, one 16 ft. x 24 ft. and the other 16 ft. x 40 ft., have been erected at the terminal. One of these is located at the extreme end of the loop, and the other is near the entrance to the shipyard.

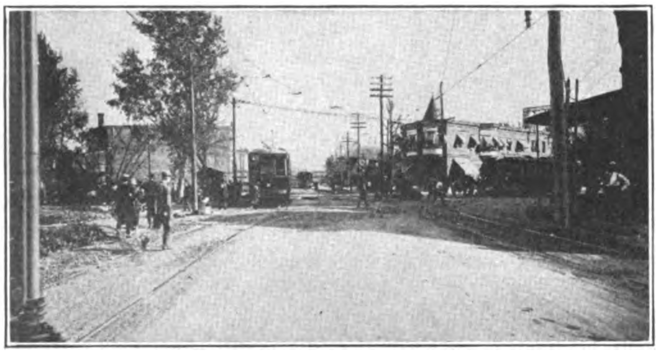


FIG. 5—EASTWICK AVENUE AND ISLAND ROAD—SUBSTATION STRUCTURE IN THE RIGHT BACKGROUND

Viewed from a traffic standpoint, the lines of the Philadelphia Rapid Transit Company, in the vicinity of Hog Island, may be likened to a fan. The Chester Short Line route, traversing Island Road and Woodland Avenue, and the Hog Island route traversing Island Road and Elmwood Avenue, constitute the handle of the fan, while the carhouse at Forty-ninth Street and Woodland Avenue is located at the point at which the ribs of the fan start to diverge.

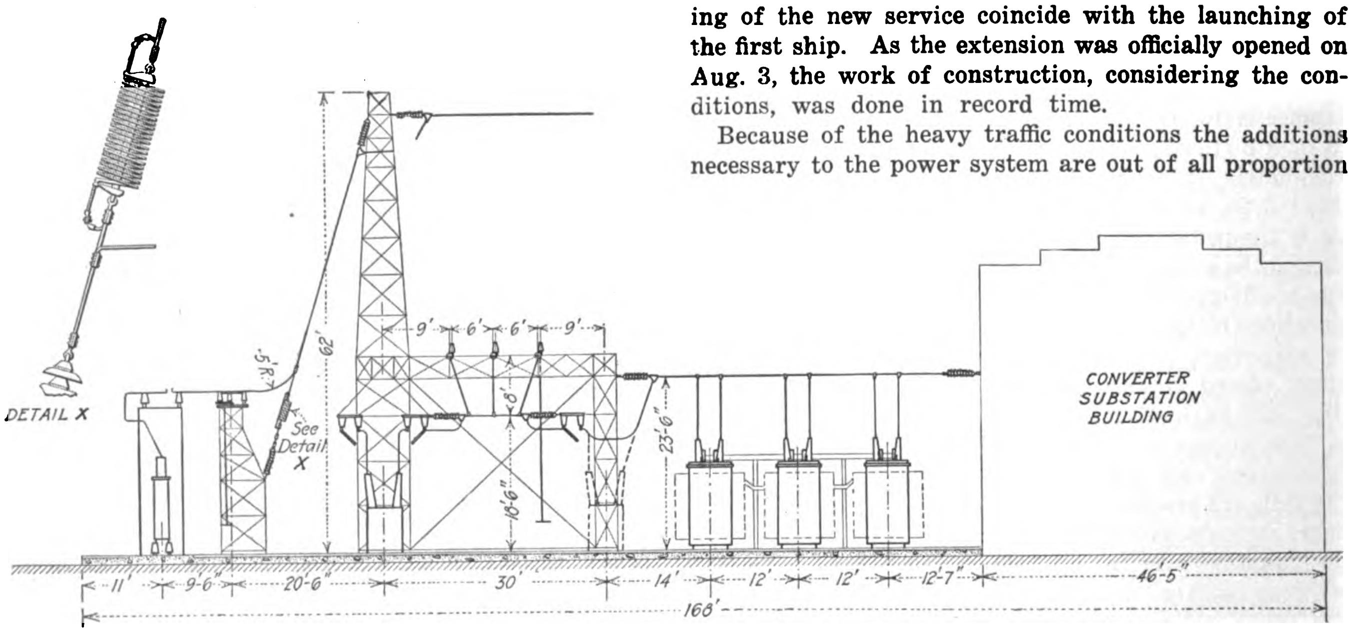


FIG. 6—GENERAL LAYOUT OF THE HIGH-VOLTAGE EQUIPMENT

As a consequence of this fan-like arrangement there would naturally be considerable congestion at this intersection even if it were not an important transfer point and the carhouses were located elsewhere. Adding to this congestion, a number of tripper runs are operated between this carhouse and Hog Island, on the Hog Island route, and between the carhouse and various points on the Chester Short Line. To relieve the congestion, several changes have been made at the carhouse. A non-operated track already existed on the Fiftieth Street and Greenway Avenue sides of the carhouse. Six of the carhouse tracks, however, were stub-ended at the Greenway Avenue end of the carhouse. To facilitate handling the tripper cars a second track was laid on Fiftieth Street and Greenway Avenue, and the opening in the Greenway Avenue end of the carhouse was enlarged to permit of two three-track ladders being connected between the Greenway Avenue track and the stub-ended carhouse tracks. These changes permit the tripper cars to be turned off the main line at Fiftieth Street and carried around the carhouse to Greenway Avenue and Forty-ninth Street. This point was made a transfer point for those tripper passengers who desired to take cross-town lines.

CONSTRUCTION WORK WAS DONE IN RECORD TIME

Possibly the greatest difficulty encountered in the way of construction incident to the extension was in connection with the special work required at the carhouse and the rather numerous grade intersections with other railway lines. These difficulties were due not to the complicated nature of the special work but to the short time in which the material was required to be delivered. While considerable of the subgrade fill had been made by the city, actual track construction work was not started by the railway until July 2. A week or so after this the time allowed for the construction program was shortened by nearly a month in order to have the opening of the new service coincide with the launching of the first ship. As the extension was officially opened on Aug. 3, the work of construction, considering the conditions, was done in record time.

Because of the heavy traffic conditions the additions necessary to the power system are out of all proportion to those required in the way department. Possibly the most important of these reinforcements is the new substation located at Eastwick Avenue and Island Road, approximately 3 miles from the end of the shipyard terminal. It supplies power not only to the cars of the

Philadelphia Rapid Transit Company but also to those of the Philadelphia Railways, while the latter are operating on the terminal tracks. In addition to furnishing power to the new extension it feeds the trolley on Island Road as far as Elmwood Avenue and on Eastwick Avenue for two sections or 3 miles. As the traffic on all of these lines is very heavy during the rush-hour period, it will be seen that the power demand on the substation is far higher than usually falls to the lot of a surface car substation in a suburban district.

TRANSFORMER OIL PIPING AND DRYING SYSTEM WELL WORKED OUT

To supply these demands the new substation is equipped with one 2000-kw., one 1500-kw. and one 1000-kw. synchronous converters. These are six-phase, 60-cycle machines, the direct-current voltage being 600. The energy for their operation is purchased from the Philadelphia Electric Company whose 66,000-volt, two-circuit, Philadelphia-Chester line runs about 400 ft. from the outdoor substation which has been installed to transform the line voltage to the railway company's standard primary distribution voltage, 13,200. The transformer equipment consists of three 2000-kva., 60-cycle, 69 000/13,200-volt, oil-insulated, radiator-type transformers built by the Westinghouse Electric & Manufacturing Company. In the foundation and overhead structure plans, provision has been made for the future addition of another similar group of transformers. To insure continuity of service both circuits of the high-tension line are connected into the substation.

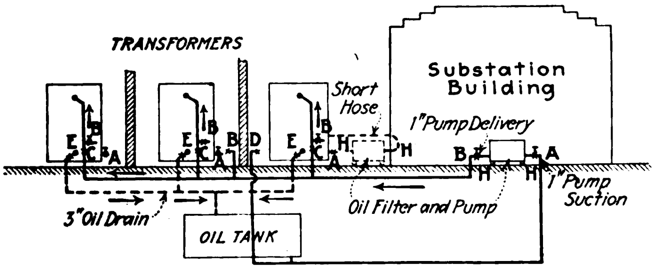

TRANSFORMERS
Substation Building
Short Hose
1" Pump Delivery
E
C
B
A
D
H
3" Oil Drain
Oil Filter and Pump
1" Pump Suction
OIL TANK

FIG. 7—OIL-PIPING DIAGRAM ILLUSTRATING CONNECTIONS TO FILTER AND PUMP

The high-tension line construction involved a special tapping tower in the line of the Philadelphia Electric Company and a turning tower upon which the high-tension tap-leads make a right-angle turn to reach the anchorages on the outdoor substation platform. In the design of these leads special precautions were taken to eliminate all sharp turns between the line and the lightning arresters. Electrolytic arresters are used, these being connected to the high-tension leads through Burke horn-gap disconnect switches. Similar switches are used to sectionalize the 66,000-volt bus, which is suspended from eight-disk Ohio Brass, suspension-type insulators. The low-tension buses are also sectionalized, thus permitting the greatest flexibility of connections in the outdoor substation. The 66,000-volt bus is of No. 00, B. & S. stranded copper wire. An elevation of the substation and connections is displayed in Fig. 6.

A particularly well-planned oil system, the piping diagram of which is shown in Fig. 7, has been installed in this substation. The tank is large enough to hold the oil from one transformer and is located in a pit near the transformer bank. This pit has been so designed as to permit the ready removal of the tank. Connections have been provided so that a filter pump and press can be used either indoors or outdoors in pumping oil from the tank to a transformer or for circulating the oil from a transformer through the filter press back into the transformer again.

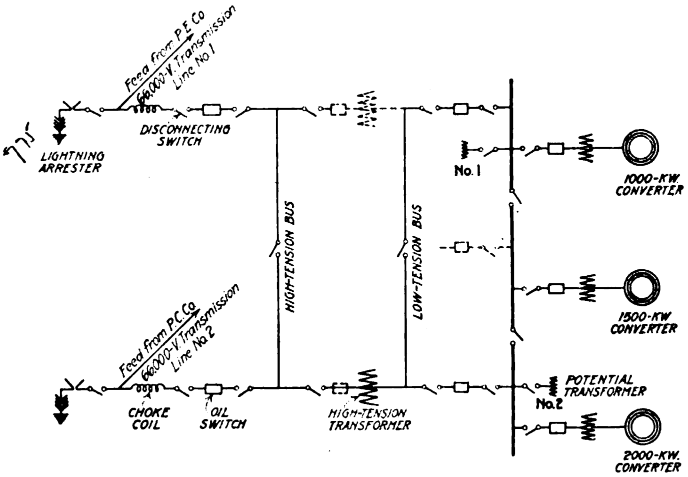

Feed from P.E.Co 66,000-V. Transmission Line No.1
DISCONNECTING SWITCH
LIGHTNING ARRESTER
HIGH-TENSION BUS
LOW-TENSION BUS
No.1
1000-KW. CONVERTER
1500-KW CONVERTER
Feed from P.C.Co 66,000-V. Transmission Line No.2
CHOKE COIL
OIL SWITCH
HIGH-TENSION TRANSFORMER
POTENTIAL TRANSFORMER
No.2
2000-KW. CONVERTER

FIG. 8—SIMPLIFIED MAIN-CIRCUIT CONNECTION DIAGRAM

In conformity with the company's standard construction all power lines both in and out of the substations are carried under ground. Thus the low-tension buses of the outdoor substation are connected to the primary buses of the converter substation by short lengths of 13,200-volt, three-phase, underground cable. These cables are of No. 0000, B & S., stranded copper, and are paper-insulated and lead-covered. A simplified connection diagram is given in Fig. 8, in which proposed future additions are shown in dash lines.

Within the converter substation, air-cooled transformers are used to step the 13,200-volt energy down to a voltage suitable for the converter. For this purpcse three 667-kva. transformers are connected to the 2000-kw. converter, three 500-kva. transformers to the 1500-kw. converter, and three 335-kva. transformers to the 1000-kw. converter. The direct-current connections, both positive and negative, to the outside lines, are shown in

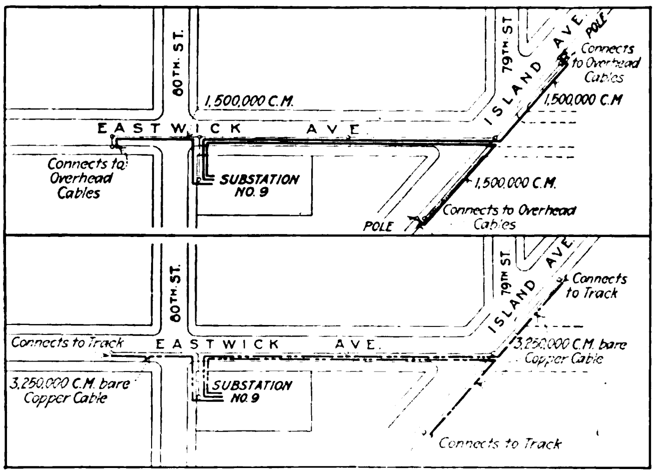

80TH. ST.
79TH ST
ISLAND AVE
POLE
Connects to Overhead Cables
1,500,000 C.M.
1,500,000 C.M
EASTWICK AVE.
Connects to Overhead Cables
SUBSTATION NO. 9
1,500,000 C.M.
Connects to Overhead Cables
POLE
80TH. ST.
79TH ST
ISLAND AVE
Connects to Track
Connects to Track
EASTWICK AVE.
3,250,000 C.M. bare Copper Cable
3,250,000 C.M. bare Copper Cable
SUBSTATION NO. 9
Connects to Track

FIG. 9 (At top)—UNDERGROUND CONNECTIONS OF POSITIVE FEEDERS. FIG. 10 (At bottom)—NEGATIVE FEEDER CONNECTIONS

Figs. 9 and 10. Of the converters the 2000-kw. machine is a new one purchased from the Westinghouse Electric & Manufacturing Company, and the others are second-hand machines brought from other substations where recently increased power demands have required the installation of larger machines.

The increased traffic has also necessitated some additions to the company's Fifty-Eight Street and Woodland Avenue substation, a 1500-kw. converter recently removed from another substation having been installed here. To gain increased primary power capacity at this substation a No. 0000, 13,200-volt paper-insulated, lead-covered underground cable has been run from the Thirty-Third and Market Street power house of the company to the substation.

STRUCTURAL DETAILS OF THE NEW SUBSTATION

A general idea of the structural details of the new substation can be gained from the accompanying illustrations. The photograph from which Fig. 11 was reproduced was taken from Eightieth Street. The opening in the lower left-hand corner is of sufficient size to permit a truck loaded with the larger portions of a converter or transformer to be backed into place within reach of the overhead crane. One of the supports of the crane track can be seen through the window openings. In Fig. 12 is shown the conduit for the low-voltage circuits just preparatory to pouring the concrete for the main floor. The crane girder with the details of its support are also well shown in this illustration. Another view of the substation structure in process of construction showing the foundation for the outdoor substation, and one of the roof trusses of the converter substation is illustrated in Fig. 13.

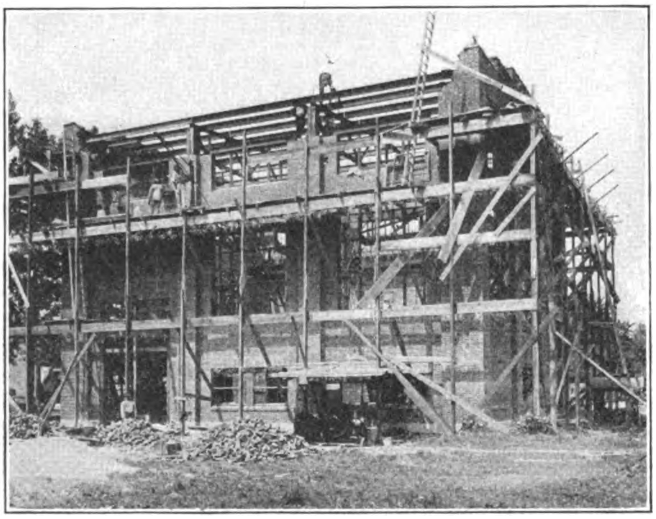


FIG. 11—SUBSTATION UNDER CONSTRUCTION, SHOWING TRUCK ENTRANCE AND CRANE SUPPORT

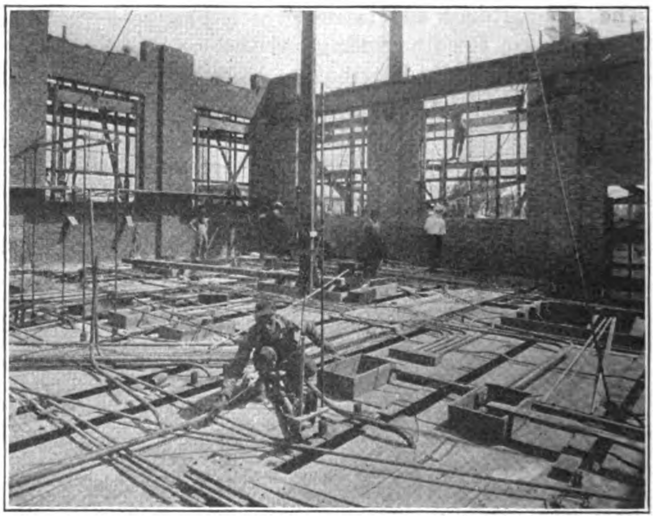


FIG. 12—CONDUITS FOR THE SUBSTATION LOW-VOLTAGE CIRCUITS

THE FEEDER SYSTEM REQUIRED REINFORCEMENT

Along with the reinforcement in substation capacity and primary power copper considerable additions to the existing feeder copper have been necessitated by the new load. With the Chester Short Line traffic thrown over onto Woodland Avenue, an increase in the feeder copper there was essential. This was secured by transforming a tie line which connected the Fifty-Eighth Street and Woodland Avenue substation with the Thirty-third Street and Market Street power house into a feeder. The increased traffic on Chester Avenue, caused by routing the Hog Island cars over this line, required an increase of feeder capacity along Chester Avenue for a distance of 7100 ft. This increase was secured by replacing a 400,000-circ. mil cable with a 1,500,000 circ. mil cable.

In the rearrangement of the distribution system on Eastwick Avenue two sections of trolley wire are being fed from the new substation. The feeder capacity on this line has been increased from 1,000,000 circ. mil to 2,000,000 circ. mil by the addition of two 500,000-circ. mil cables. These cables are all overhead, except as shown in Fig. 9 illustrating the underground connections to the substation. On the new line to Hog Island the feeder system consists of three 500,000-circ. mil cables for the first mile, two 500,000-circ. mil cables for the second mile, and from there to the end of the loop one 500,000-circ. mil cable.

Section insulators insulate this overhead work from that of the Philadelphia Railways, where the line of the latter company enters the terminal loop on Hog Island. The feeders are connected in parallel and are tied into the trolley every 700 ft. The tie-in is made by replacing the usual span-wire cable with a copper one and insulating this from the pole with wood strain insulators. Electrical connection to the trolley is made by means of feed yokes which take the place of the usual ear insulators. The feed-in cables are No. 0000 triple-braid, weatherproof standard copper and are connected to the feeder through a feeder switch. This is a quick-break switch mounted at the top of the pole and inclosed in a cast-iron box of the company's own design. The box is arranged for clamping on either iron or wood poles. On the side of the pole opposite from the switch box, a Garton-Daniels direct-current lightning arrester is placed. The switches are kept in repair by a maintenance crew, which gives them a periodic inspection, making such slight repairs as need be made in connection with each inspection.

The contact line on the new extension is of No. 0000 round copper. Span wire construction is used. The usual cap-and-cone insulator separates the span wires from the trolley, attachments to the trolley being made with 15-in. clinch ears constructed after the company's own design. The span wires are $\frac{5}{16}$-in. galvanized steel strand, so placed as to give a trolley clearance of about 18 ft. Fir crossarms carrying four pins are mounted on the feeder line poles.

Approximately 2000 ft. of the line is built on tubular steel poles with sections 5½ in., 6½ in., and 7½ in. in diameter. These are mostly old poles, which, while in good shape, have in some cases seen nearly twenty years of service. On these poles six-pin iron arms are used and a screw-cap composition cable insulator is used to insulate the cables from the pin. On the wooden arms porcelain insulators perform this service.

The poles are set about 6 ft. deep with a concrete setting for the iron and earth fill for the wood. "Never-creep" guy anchors with $\frac{5}{16}$-in. galvanized steel strand are used for guying. Porcelain strain insulators insulate the guys from the ground. The wood poles are of chestnut 30 ft. in length, and are new.

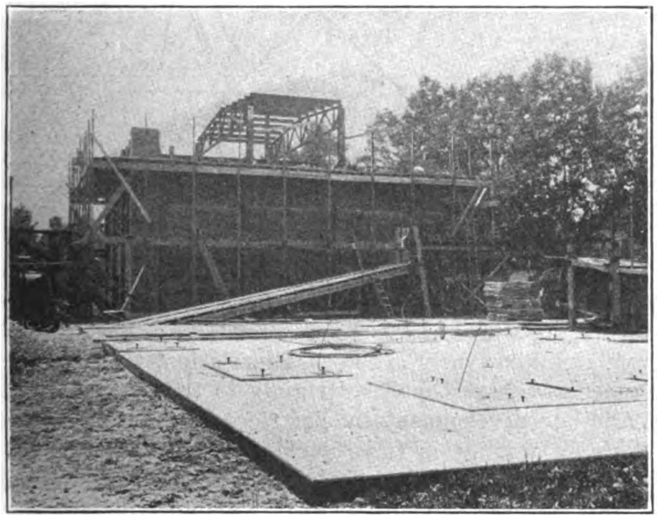


FIG. 13—FOUNDATIONS OF THE OUTDOOR SUBSTATION ANCHORAGES

Some idea of the amount of copper required for feeder purposes can be gained from the following excerpt from the bill of materials:

35,000	ft. of 500,000-circ. mil double-braid weatherproof cable.
7,100	ft. of 1,500,000-circ. mil paper-insulated lead-covered cable.
2,030	ft. of 1,000,000-circ. mil paper-insulated lead-covered cable.
14,050	ft. of three-conductor, No. 0000, 13,200-volt paper-insulated lead-covered cable.
1,300	ft. of 3,250,000-circ. mil base cable stranded 7 in. x 7 in. out of No. 2 soft-drawn copper wire.

UNDERGROUND CABLE LAYOUT

The positive cables run from the d.c. buses, as shown in Fig. 9, to manholes near the trolley feed lines. From these manholes they run in the form of rubber-insulated, lead-covered cables to switch boxes of the type already described. For these cables the boxes contain 1200-amp. quick-break front-connected switches. The splice to the paper-insulated lead cable is made by means of a rubber-taped joint. This type of splice has been the company's practice for years and very successful results have always been secured from it. In a similar manner the negative cables are connected to the track structures at the manholes. The underground conduits are vitrified clay. The manholes themselves are of brick, with concrete floors. As the ground in which these manholes is located is very low, the water problem is a more or less serious one.

With the exception of the brick and steel work, all of the construction work of the electrical department has been carried on by the regular working forces of that department. The new track work was planned and constructed under the supervision of George B. Taylor, engineer of way, who also acted as co-ordinator for the entire construction project. Under the general supervision of G. A. Harvey, electrical engineer, the overhead construction was carried out by H. S. Murphy, engineer of distribution, while the design and superintendence of the new substation construction was handled by L. T. Klauder, construction engineer for the company.

Submerged Coal Storage Pit for Interurban Railway

Natural Depression and Stream Near Right-of-Way Provide Inexpensive Coal Storage Pit of 20,000-Ton Capacity

AT PRAIRIE CREEK, several miles from Cedar Rapids, the Iowa Railway & Light Company has constructed a 20,000-ton submerged coal storage pit. The site, directly adjacent to the interurban right-of-way, was selected because it is within easy hauling distance of the main 16,000-kw. steam power station operated by the company at Cedar Rapids, and because the nature of the ground made construction of the submerged pit comparatively easy. A small, clear stream with its adjacent low flood plain is crossed by the interurban railroad on an earth fill about 15 ft. high. Between this fill and the higher ground surrounding the flood plain there is a deep depression open only at the end nearest the stream. By throwing up an obstructing earthwork across this open end, a closed and nearly watertight pit, 460 ft. x 130 ft. x 15 ft. deep, capable of holding 20,000 tons of coal, has been formed. The earth at this point is covered by a thin stratum of fine sand under which is hardpan. The stratum of sand was scraped off, baring the hardpan, and the coal is being dumped on this with no further lining to the bottom of the pit.

Three longitudinal spur tracks, with a capacity of ten cars each, have been laid the full length of the pit and are supported on sturdy concrete trestles set in the hardpan. Drop-bottom cars can be emptied by dumping, and for other types an electrically-operated locomotive crane has been provided. It is the plan to keep the accumulated coal in this pit in storage against possible serious emergencies. When it is to be used it will be loaded in hopper-bottom cars by means of the locomotive crane and dumped into the hopper at the plant.

Water for submerging the coal is pumped into the pit from the near-by stream. The pumping outfit consists of a 500-volt direct-current motor, located in a small concrete and tile house and belted to a vertical shaft connected to a centrifugal pump in the basement of the house. This places the pump at the level of the stream. A small earth and rock dam thrown across the stream provides enough water to insure an adequate supply at all seasons. The water is delivered to the coal pit through two 4-in. iron pipes. The total cost of constructing the pit was approximately $25,000.

Preparations for Future Electrification in Europe

Experimental Work Is Now Going On with a View to Quick Recuperation After the War

COMMENTING upon the article by Prof. Hugo Studer, of Zurich, in the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 7, a correspondent of this paper points out a number of interesting facts regarding preparations being made abroad for electrification when peace returns. As Switzerland has ample water power but is dependent for its coal supply on other countries and cannot get enough coal to operate its railways, this country has decided to electrify all railways. However, despite the urgent need for electrification now the difficulties of obtaining raw material for the manufacture of equipment will delay electrification for the present. In the meantime preliminary experimental work is going on.

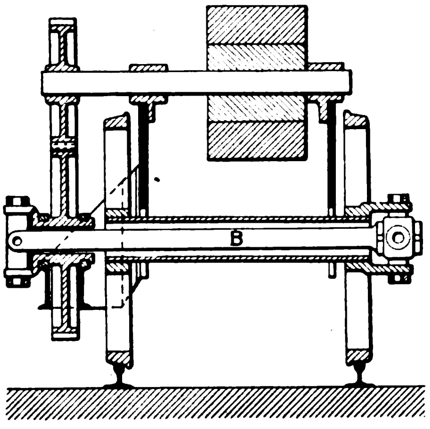
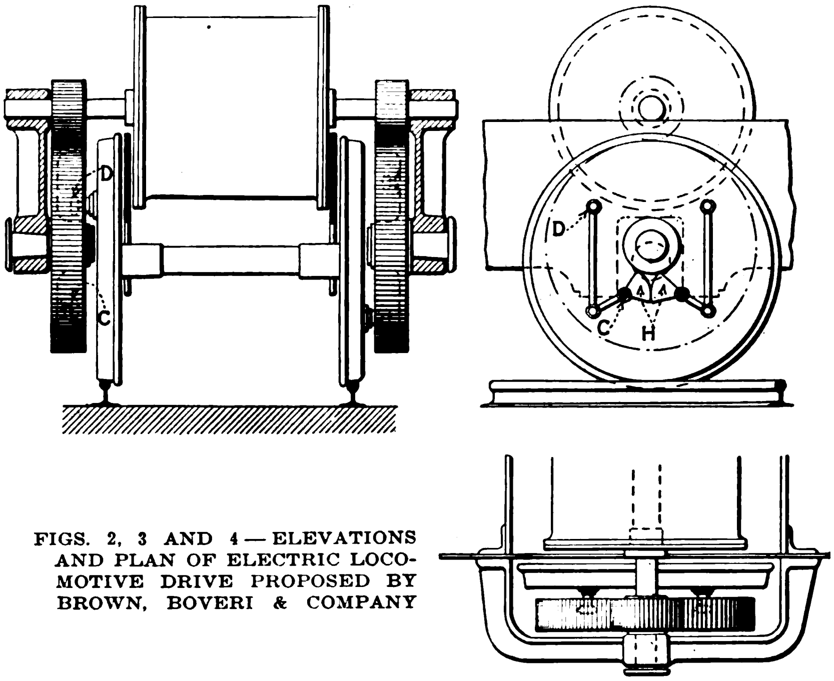


FIG. 1—TSCHANZ SYSTEM OF ELECTRIC LOCOMOTIVE DRIVE

Among the new types of locomotive being developed, two which are rather unusual in European practice are especially worthy of mention. They differ from most European locomotives in that they do not have side-rod drive. One of these, Fig. 1, is the design of O. Tschanz, and it employs a drive somewhat similar to the quill drive used in the United States. Instead, however, of being transmitted through springs the driving effort is transmitted by means of a spindle, *B*, in the figure, through a hollow axle. Gears are located outside the locomotive frame, thus giving ample space for the motor.



FIGS. 2, 3 AND 4—ELEVATIONS AND PLAN OF ELECTRIC LOCOMOTIVE DRIVE PROPOSED BY BROWN, BOVERI & COMPANY

Another drive, shown in Figs 2 to 4, has been proposed by Brown, Boveri & Company, of Baden. The advantage of this somewhat complicated scheme is that the center of the gear can be placed somewhat higher than the center of the axle, thus giving the designer more freedom in laying out the gears. As in the design previously mentioned the axle is relieved of all the weight of the gear and of all parts of the motor. In other words the gears and motors are spring supported. The driving force is transmitted through a system of connecting rods pivoted to the gear wheel at *D*, and to the driving wheel at *C*. To prevent the system of rods from changing their symmetrical relation, two toothed segments, *H*, are connected rigidly to the lower rod *C*.

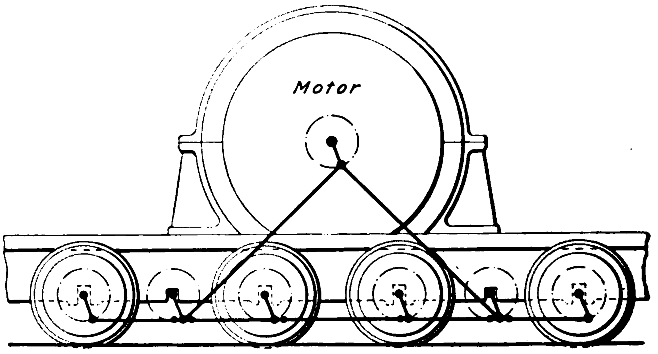


FIG. 5—NEW ELECTRIC LOCOMOTIVE DRIVE FOR PRUSSIAN STATE RAILWAYS

Another development in electric traction in Europe which is worthy of mention is the new double-rod system of drive. This is being applied in Germany on a locomotive with a single motor, the largest ever yet installed on an electric engine. According to a description in a recent issue of the *Schweizerische Bauzeitung* the locomotive is being built for the Prussian State Railways, for the Lauban-Königszelt mountain line. The general features of the design are shown in Fig. 5. This locomotive is for passenger service and is of the 4-8-2 (unsymmetrical) type. The electrical equipment is being manufactured by the Bergman Company. It is for 16⅔-cycle single-phase current, the voltage being transformed down from that of the line to 350 at the motor terminals. The motor is rated at 3000 hp., is wound for twenty-six poles and at the rated power, makes 240 r.p.m. The weight of the motor is 22 metric tons, of which about 13 tons is the weight of the rotor alone. The armature diameter is 6 ft. 10½ in. and the commutator diameter 5 ft. 4 in. The weight of the entire locomotive is 108 tons, divided 55 tons for electrical parts, 45 tons for mechanical parts and 8 tons heating apparatus. The adhesive weight is 66 tons. It is claimed that the riding qualities of this locomotive are good up to 56 m.p.h. The normal tractive effort is 14 tons and at starting is 20 tons.

What the War Board Is Doing for the Industry

Report Presented at New York Conference of the American Electric Railway Association Last Week Inspired Confidence and Appreciation—Mr. Gadsden's Informal Remarks Contained Further Information of Great Interest

SPACE and time limitations last week precluded the giving of more than a brief summary of the address with which P. H. Gadsden, then resident member at Washington and now chairman of the Electric Railway War Board, presented the first annual report of the board. Some of the good things which he said are given in more detail below.

WASHINGTON CORDIAL TO THE WAR BOARD

Through the war board the association has begun to receive national recognition. The board's usefulness at Washington and its opportunities for usefulness to the industry are growing. There is now no difficulty on the part of any member of the board, or in fact of any one connected with the association, securing an audience in any government department by simply stating that he represents this war board. The problems which the board has endeavored to work out relate to finance and to service, the main hope during the past eight months having been to secure federal intervention on behalf of the electric railways. Important in this connection were the letters between the President and the Secretary of the Treasury. (See Bulletin No. 11.) This correspondence was very helpful to the gas and electric interests but has rendered the electric railways very little service. Reports indicate many increases in gas and electricity rates but few increases to electric railways.

Relief to the electric railway industry has largely been confined to those states in which there are public service commissions, and to those states where the commissions had power to act, rather than to those in which appeal had to be made to the municipalities.

SOME STEPS IN THE DIRECTION OF NATIONAL RECOGNITION

In the board's effort to secure more direct federal aid for the electric railways the indorsement of the National War Labor Board was first secured. This was followed by an appeal to the President direct, on the part of the chairman and the directors of the War Finance Corporation. This set forth the critical condition of the electric railways, explaining that application were daily being made to the corporation for assistance which could not be considered because the net returns of these properties were decreasing and the equity disappearing. The Finance Corporation urged the appointment of a federal board to regulate rates, and in extreme cases to take over the properties and operate them.

Later the board appeared before a meeting of public utility commissioners and furnished them with data showing the desperate condition of the industry. As a result they wrote to the President, urging him to appoint a board to advise them on this matter. While the commissioners were not disposed to abrogate their own powers the opinion was expressed by them that through a board of recommendation and request relief would be granted in 90 per cent of the cases. What they wanted was the opportunity to say that their actions were taken at the request of the national government. In this movement for more direct federal aid the board has had the support of the heads of governmental departments, and of organized labor. Mr. Mahon has co-operated with the board and has put the situation up to Mr. Gompers and Mr. Morrison from the labor standpoint. He has had several conferences with Secretary of Labor Wilson on the subject. There has probably been placed before the President during this war no question which has been presented with such unanimity as that of the electric railways' condition. There is ground for hope that something will be done although there are influences at work in Washington opposing such action. Some men oppose it because they believe that it would militate against their broader plans for government and municipal ownership of public utilities. They would prefer to let the industry "go by the board" in order to facilitate the working out of their plans. However, it is the hope of the board that, due to the desperate situation, relief will eventually be granted.

War Board at Washington

The Electric Railway War Board, due to its representative and authoritative character, has been able to establish cordial war-time relations with the governmental departments at Washington, and is hopeful of securing federal relief for the electric railways. On behalf of the board, P. H. Gadsden recommended the appointment of some kind of a representative body to act for the industry in peace-time also.

THE INDUSTRY'S CONDITION IS BEING APPRECIATED

The electric railways of the country as a whole are bankrupt to-day, as is shown by their reports. Credit has gone. As there comes a time in the history of an individual or an industry when it is wise to make a virtue of poverty, so now the thing to be done is frankly and openly to let the public know just what the condition is. Sooner or later then some permanent solution of the problem will be found. The tabulations which have been sent out from the war board office in Washington have had an evident and powerful effect upon the public mind. Each railway could make similar statements in its own community. A community is apt to think that a particular road is prosperous because its cars are filled. Monthly statements might well be made to show the public how increasingly desperate the situation is becoming.

One of the most important conferences arranged by the war board was with the Capital Issues Committee at which a number of railway men from different sections of the country were present. The vital necessity of curtailing unnecessary expenditures was urged, with particular reference to the paving burden which even in peace times is so heavy for the railways to bear. The result of this and succeeding conferences has been the practical cessation of unnecessary expenditures demanded by the public. The board is working in close co-operation with the Capital Issues Committee. On more than one occasion when complaints have been made that a municipality was requiring work of this kind to be done the committee has interfered, showing a determination to see that these expenditures shall stop.

JITNEYS ARE ON THE WANE

The war board has given considerable attention to the jitney situation with a view to putting it clearly before the government officers. One question has been as to the application of the "work or fight" order as it relates to jitney operations, the contention being that jitney operation is not an essential industry. Further the legitimacy of gasoline consumption by the jitneys has been brought into question. A third angle of approach has been that of the conservation of man power. Data collected by the war board show, however, that there is a very great decrease in the number of jitneys in the country and in time the problem of jitney competition may solve itself.

Among other efforts on the part of the war board to secure relief for the industry has been the endeavor to induce Congress to segregate utilities, and particularly electric railways, into a special class for the purpose of taxation. The matter has been put before the Senate finance committee and there is hope that the political branch of the government may appreciate the desperate need of the railways and come to their assistance. This was part of a propaganda to show the American people that the electric railways can no longer be considered purely as a local utility. They constitute a national industry and their straits impose a national problem.

WHAT THE WAR LABOR BOARD'S AWARDS MEAN TO THE INDUSTRY

In the matter of the awards of the War Labor Board the war board realized as soon as these were made that the burdens added to the industry by these decisions meant its destruction. It realized further that in a short period the same basis of compensation must be applied to every electric railway in the country, making an aggregate increase of more than $100,000,000. What this means is evident from the fact that the 1916 records of the Internal Revenue Department showed that the net income of 1200 companies reporting was $70,000,000 after paying fixed charges. Since then operating expenses have increased and, without any increase growing out of the War Labor Board rulings the net income is probably now not more than one-half of what it was in 1916, say not more than $25,000,000 to $30,000,000. In addition it should be remembered that in 1916 four hundred companies had an actual deficit. When the labor increases are added to previous expenses it is doubtful if the net earnings of electric railways will amount to 50 per cent of the interest on their bonds.

The War Labor Board proceeded on the theory that any increase in wage scale could be compensated for by a correlative increase in rate, and that it could thus be passed on, as in the case of any other industry, to the public or the consumer. At that time the War Labor Board had reason to believe that the President might take favorable action upon its recommendation making it possible thus to pass on the wage increase by increasing the fare. But there was an economic factor here that was not adequately taken into account, namely, that an increase of fare would not, of necessity, provide the desired increase in revenue. Some features of the decision, also, were open to review, notably in regard to the wages of "miscellaneous help." Inconsistencies developed; for example, on one property machinists were allowed from $50 to $100 more per month than men of the same grade working for the steam roads. Cases like this permit the reopening of questions before the War Labor Board. Recent decisions indicate that the War Labor Board is beginning to consider revision of some of the essential details of labor contracts.

SOME SIGNS OF COMING DAWN

In the Kansas City case the company had a stipulation with its men that any increase in the wage scale must have some direct financial relation with the company's financial condition. When this case came before the War Labor Board the board was forced to the conclusion that it must be bound by the stipulation, that the jurisdiction of the board is thus limited. This is a distinct advantage over previous rulings. The most encouraging feature of the decision is in the recognition by the War Labor Board of the fact that certain classes of property could not be required to pay the wage scales that had previously been prescribed. For example, in the Memphis case the scale fixed was 36, 38 and 40 cents, or 2 cents lower than any scale previously announced.

The War Labor Board was organized originally to represent the great industries of the country, which were asked to nominate men for membership. No consideration was given to electric railways as no one thought of them in connection with the problems which might come before it. It developed, however, that the major portion of the time of the board has been required for electric railway cases which have formed a large percentage of the cases coming before it. Mr. Taft and Mr. Walsh have given practically their entire time to these cases. An opportunity has now presented itself by which the electric railway industry will probably have more direct representation in the War Labor Board.

Whatever measure of success the war board has had in Washington has been due to the fact that for the first time there has been assembled in Washington a body of men with authority to speak for the industry as a whole. Many of the difficulties in which the electric railways now find themselves are attributable to lack of sufficient team work. Each road has been handling its own problems regardless of the interests or rights of its neighbors. The result has been confusion of counsel and lack of unity of purpose. One lesson that the war has brought home is the vital necessity of keeping together in the future. All over the country people are beginning to speculate as to what will happen when peace comes—and peace is imminent now. There will be a tendency to drift back into the old channels. This tendency must be resisted with the utmost determination, for if after the restoration of peace the electric railways drift back into pre-war conditions they will deserve what will come upon them.

What the war board has been able to do at Washington can be credited to the fact that when a Cabinet member or any officer of the administration was consulted he realized that the war board represented a great national industry with $5,000,000,000 behind it. The board has been able in some degree to lift the industry out of its parochial habits, to instill into the industry the habit of thinking collectively, in terms of the industry. This work should be continued. There should be brought about a situation in which it will be realized that anything that affects a local property is really a matter of national concern. There should be some unity of purpose, some general plan that can be applied throughout the country. Heretofore individual interests under the pressure of special financial conditions have attempted unaided by the general industry to work out their peculiar problems in their private and individual ways. Pressed by exigencies of the local situation they have made concessions which have established troublesome precedents. To put the industry on a sound, wholesome and prosperous basis methods of doing business must be radically changed. In peace times to some body of men must be delegated the power to act for the industry as has been done in war time. Some machinery of representation must be set up.

Portland Has Fourteen Shipyards

PORTLAND'S possession of the Willamette River and the nearness of the Columbia River (Vancouver) has made a wonderful center of both steel and wood shipbuilding. The steel yards number five, and the wood plants nine. Most of these are within easy reach of existing Portland lines.

The Portland electric railways are both standard and narrow gage, the latter in the majority. As far as possible the yards are served by special routings, so that riders can be distributed near to their homes or to downtown transfer points—all of course, for one fare, except the 15-cent Vancouver line. The variety of yards, their scattered location, the differences in shifts and the frequent overtime give the effect of staggered hours so that excessive peaks are avoided. The Northwest yard has the largest peak, one of twenty-three cars.

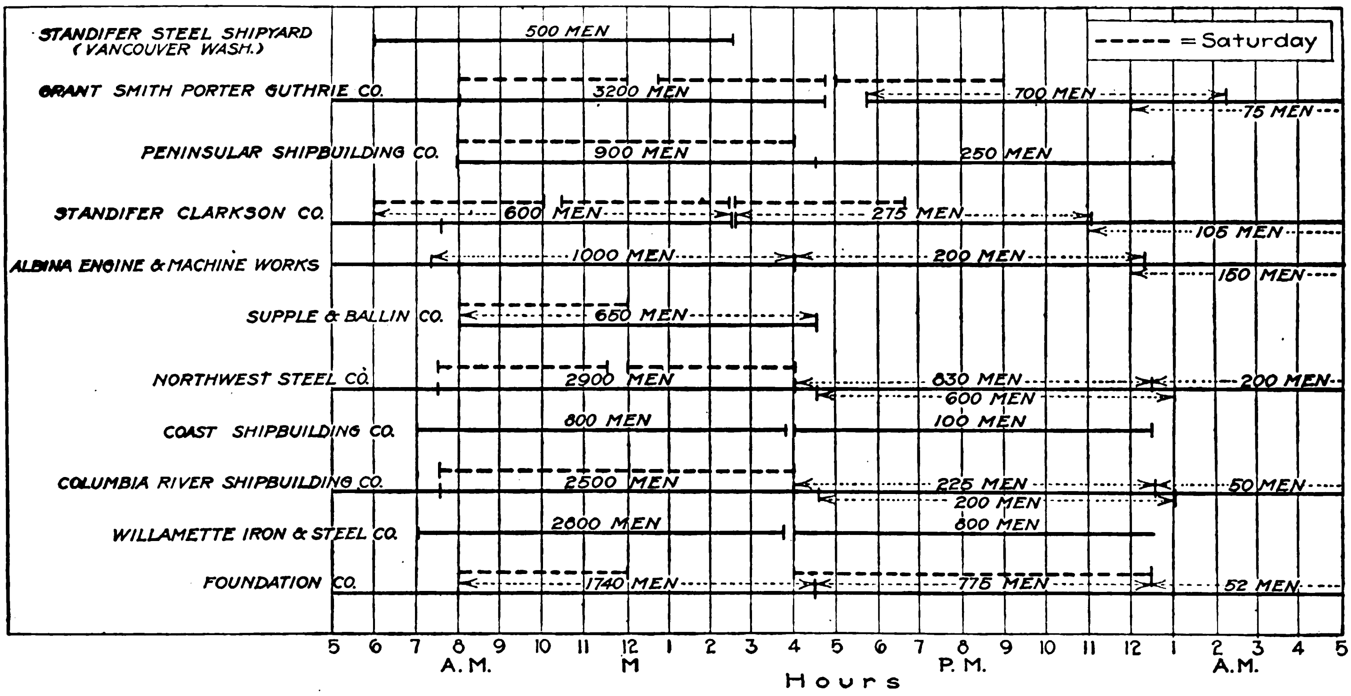


CHART SHOWING RELATIVE PROPORTION OF MEN AND WORKING HOURS IN THE SHIPYARDS OF PORTLAND, ORE.

The accompanying diagram gives a good idea of the relative proportions of men and working hours in the shipyards. The number of men is, of course, constantly growing.

In one case, favorable loading conditions make it possible for the same cars to pick up the Willamette, Columbia and Northwest men in order and then to return for employees of the Foundation Company. In general, any service shortage at Portland is due more to lack of men than to lack of cars.

The possibilities in the line of accident reduction were demonstrated in St. Louis, Mo., during "Safety Week," Sept. 15 to 21. According to the statement of Dr. R. S. Vitt, coroner, only one accidental death occurred, that of an intoxicated man who fell from a wagon. This compares favorably with ten deaths during the preceding week and twenty-four in the corresponding week in 1917. The total number of accidental deaths for 1917 was 510.

Vancouver Freight Earnings $1,000 a Week

British Columbia Railway Has Built Up an Interurban and Transfer Freight Business on Steam Railroad Basis—Freight Revenues Exceed the Earnings from Passenger Traffic

IT IS a noteworthy circumstance that electric railways which have made a success of freight business are always found to be living in amity with their steam neighbors. This is illustrated again in the case of the British Columbia Electric Railway.

The first interurban line between Vancouver and New Westminster was simply a single-track line. Next, in 1904, the company added, by lease, the Lulu Island line of the Canadian Pacific Railway which was then electrified. Then, as shown in the accompanying map, a line was built from Eburne on the Lulu Island line to New Westminster, thus giving a second connection between Vancouver and New Westminster. In 1910 came the 63.8-mile extension from New Westminster up the Fraser Valley to Chilliwack. In 1911 came the last new route in the form of the Vancouver, Fraser Valley & Southern Railway. This last construction, therefore, gave three routes between Vancouver and New Westminster, the central double-track route of which carries the bulk of the passenger traffic while most of the freight on the Chilliwack line goes via Eburne.

Oats and hay are the principal products of the Lulu Island section, while the fertile Fraser Valley also ships fruit, vegetables and milk. Lumber and shingles are big items at Eburne and New Westminster. Recent additional sources of freight are vegetable evaporating factories.

The Fraser Valley contains the tracks of the Great Northern, Canadian Northern Pacific, Canadian Pacific and Canadian Northern railroads, all of which serve Vancouver, yet the British Columbia Electric Railway offers the shipper the most advantageous route for local freight, even as far as Chilliwack. It also acts as the delivery line of the Chicago, Milwaukee & St. Paul Railway for all of its westbound traffic into Vancouver.

At one time the electric railway received only the local rate of 2½ cents per 100 pounds to the nearest junction point on the steam line. Thus an Eburne shipper was at a disadvantage as against the New Westminster shipper who enjoyed a terminal rate out of that city over the Canadian Pacific. Now the electric railway gets the coast rate from any point on its lines to all points in the United States and Canada, and it also gets the longest haul possible over its own tracks on any traffic which it originates. The arbitrary division on the pro rata basis is somewhat less than the local rate but there is more business of that character.

For the last five years the railway has been operating on steam railroad tariffs. In the spring of 1918 the Canadian Railway Board granted a 10 per cent increase to steam railroads. As the plea of the steam roads was based upon the high price of coal, this electric railway, fed by water power, had to prove its case on other grounds. It received the increase within a month after formal application. It has had no trouble in getting all local business except that the less-than-carload business between Vancouver and New Westminster has gone to motor trucks since the road between those cities was paved. However, this represents little loss to the company as the rates were too low, nor are the motor trucks finding it a profitable business.

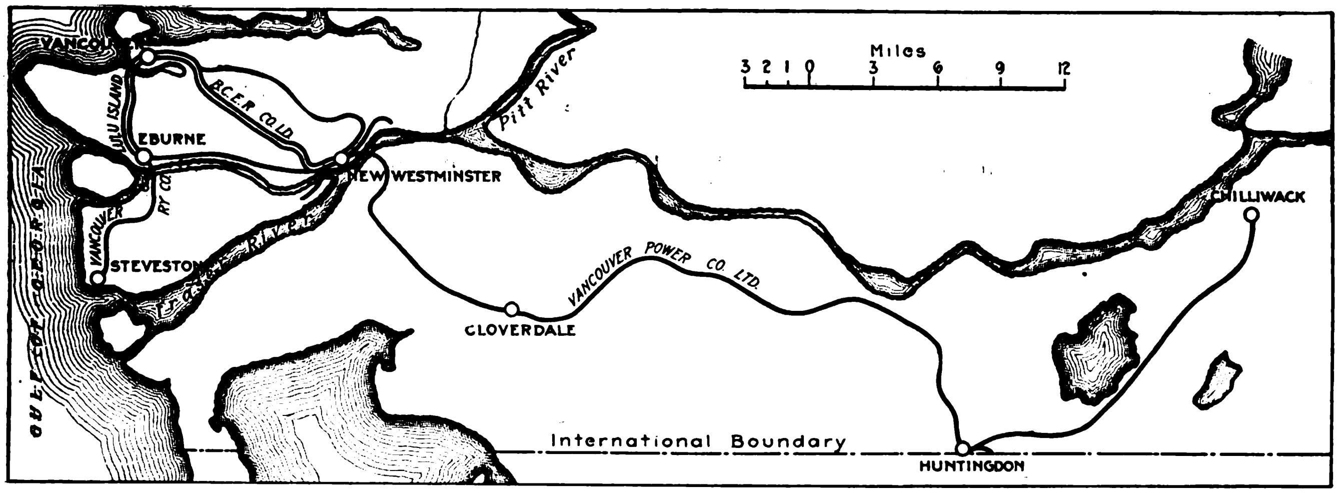
As to terminal switching: several years ago the Canadian Railway Board issued an order whereby any

TABLE I—NUMBER OF CARS INTERCHANGED WITH CONNECTING LINES, APRIL, 1918

Railway	Cars	Revenue
Canadian Pacific	637	15,045.43
Canadian Northern	113	3,510.14
Great Northern	77	1,503.04
Northern Pacific	35	1,021.82
Bellingham & Northern	18	496.36
	880	$21,576.79

Westminster report not included for period ending 21st and 30th.

FREIGHT INTERCHANGE, CANADIAN PACIFIC RAILWAY AND BRITISH COLUMBIA ELECTRIC RAILWAY, AT NEW WESTMINISTER, B. C.



MAP OF BRITISH COLUMBIA ELECTRIC RAILWAY, EXCLUSIVE OF VANCOUVER ISLAND

line with terminal facilities must grant switching facilities to other lines under a tariff not exceeding $8 per car with a minimum of $3. Under a recent order this has been changed to 1 cent per 100 lb. with a minimum of $3 and no maximum. This order applies to any line subject to the Board under Dominion charter, having nothing to do with provincially-chartered lines. However, the steam lines raise no objection to carrying out this order anywhere on the British Columbia Electric Railway although the important Chilliwack line. for example, is not under a Dominion charter. The average earnings per car handled are $25. The number of cars interchanged per month during 1917 was 700; to date during 1918 it has been 800 or more, as shown in Table I, which gives the figures for April, 1918. About one-half the tonnage is through freight.

$1,000 A WEEK FREIGHT EARNINGS

Table II details the growth of the various branches of the freight, baggage and passenger business. From this it will be seen that in 1917 the freight and baggage department began to outstrip the passenger

TABLE II—DIVISION OF FREIGHT AND PASSENGER BUSINESS, BRITISH COLUMBIA ELECTRIC RAILWAY

	1915	1916	1917	Increase	Decrease
*Freight	$240,611.94	$266,233.90	$377,123.19	$110,889.29	....
Car rental	2,595.50	3,165.50	6,020.00	2,855.50	....
Switching	18,398.45	23,713.51	35,532.92	11,819.41	....
Baggage	2,000.10	1,176.79	1,535.45	358.66	....
Milk	48,514.69	44,659.00	40,092.75	....	$4,567.25
Total freight,	$312,120.68	$338,948.70	$460,304.31	$121,355 61	....
Passenger	$552,342.39	$434,688.12	$416,079.02	....	$18,609.10
Total earnings	864,463.07	773,636.82	876,383.33	$102,746.51	....

* Freight is divided into two classes as follows:

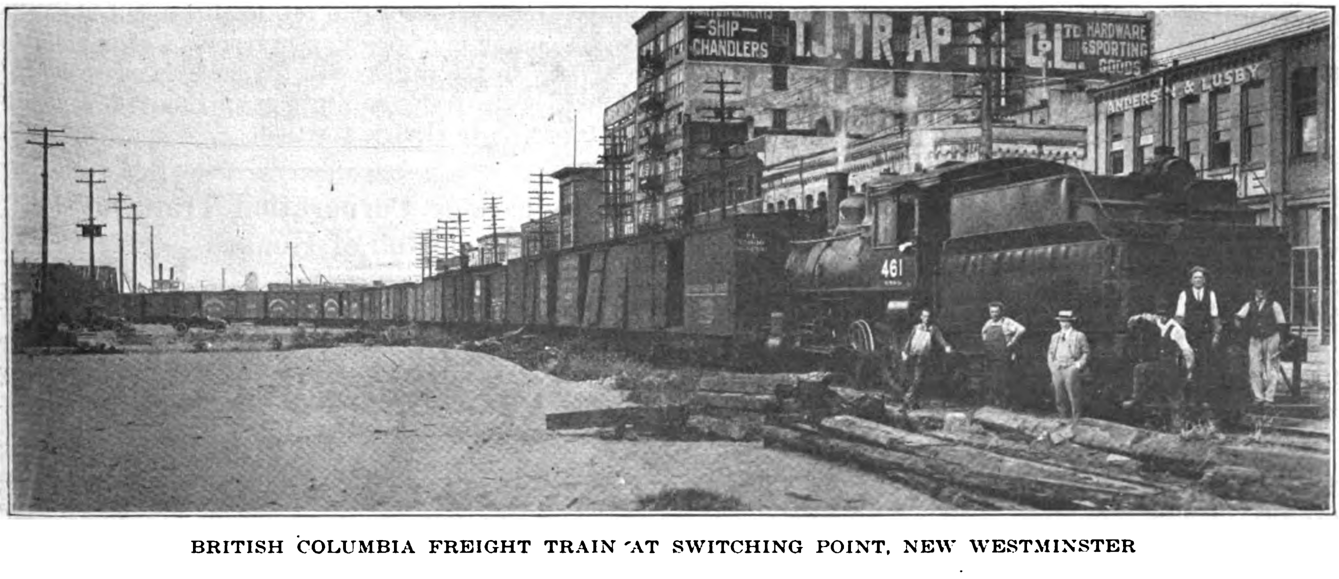
	Local	Foreign
Year ended 1916	$148,017.42	$118,216.48
Year ended 1917	183,189.56	193,933.63
Increase	$35,172.14	$75,717.15

Foreign cars handled, 1917—7871. Average earnings per car, $24.63
Foreign cars handled, 1916—5033. Average earnings per car, 23.48
Total tonnage hauled, 1916—218,063 tons
1917—324,280 tons

TABLE III—SUMMARY OF BUSINESS BY DISTRICTS

District	Source of Income	1916	1917	Increase
Vancouver—Westminster	Passenger,	$186,928	$177,077	*d* $9,851
	Freight,	39,324	38,735	*d* 589
	Total,	$226,253	$215,812	*d* $10,440
Lulu Island	Passenger,	$89,292	$86,164	*d* $3,128
	Freight,	63,254	108,870	45,616
	Total,	$152,546	$195,035	$42,489
Chilliwack (Fraser Valley)	Passenger,	$127,552	$121,983	*d* $5,569
	Freight,	227,473	302,582	75,109
	Total,	$355,025	$424,566	$69,540
Vancouver—Southern	Passenger,	$34,815	$31,611	*d* $3,204
	Freight,	5,227	4,217	*d* 1,010
	Total,	$40,043	$35,829	*d* $4,214
Net increase				$97,374

d — Decrease.



BRITISH COLUMBIA FREIGHT TRAIN AT SWITCHING POINT, NEW WESTMINSTER earnings, being $460,304 as against $416,079. The decrease shown in passenger travel was due to the Vancouver-New Westminster jitneys, whose greater speed has captured much business although their one-way fare is 25 cents against the electric rate of 25 cents one way and 35 cents round trip. The estimated total freight for 1918 is 350,000 tons equivalent to $520,000 or $1,000 a week.

The company has but one regular freight solicitor. His headquarters are at New Westminster from which place he can conveniently reach a majority of the shippers. Any solicitation necessary at Vancouver is handled by W. D. Power as part of his duties as general freight and passenger agent. Terminal practice is in all respects simliar to that of steam lines. Telephone notification is used wherever possible, particularly in the case of perishable freight. At the larger terminals, the consignee receives all papers by messenger. In accepting goods at stations which have no agents the conductor issues a pick-up waybill which is given to the agent at the following agent station or at the nearest terminal for conversion to a standard waybill.

That fast handling of freight has helped the company to build up a large business is indicated by the fact that freight accepted before 5 p.m. at Vancouver is in Chilliwack before noon of next day. Less-than-carload freight is started between these points every night so that deliveries are easily made within twenty-four hours. Two freight trains a day are operated with four crews, due to splitting of runs. These are hauled by electric locomotives but grades preclude long trains. The company's own cars do not leave its tracks except for switching. However, the company is a member of the American Railway Association and subject to all its rules except that the demurrage charges are in accordance with the rules of the Canadian Freight Association.

The company's express business, largely packages and perishable vegetable and fruit, is handled at rates less than those charged by old-line companies. A delivery service is included at Vancouver owing to the competition of the Canadian Northern Railway via Chilliwack. For this purpose the company has the use of two motor trucks, although one is usually enough. Milk is carried in three-car all-motor express trains which make the 75-mile, forty-stop run from Chilliwack to Vancouver in four and one-half hours. The load averages 600 10-gal. cans. Milk tickets are of the usual return-stub style.

ELECTRIC FREIGHT EQUIPMENT

The locomotive equipment for the freight business comprises three 60-ton Dick-Kerr, five 55-ton Baldwin-Westinghouse and three 45-ton Westinghouse machines.

Each 60-ton unit has four 175-hp. Dick-Kerr forced draft motors but with Westinghouse HB control; each 55-ton unit has four 250-hp. forced-draft motors and HB control; each 45-ton unit, used for switching, has four Westinghouse 112-B motors and K-34 control.

The Union Traction Company of Indiana, Anderson, Ind., is employing women oilers. The three at present on duty are handling the work satisfactorily during the absence of the men for military service.

Railway Electrification After the War

Several European Countries Contemplate Extensive Developments, While Results Achieved on Main-Line Electrifications in This Country Have Been Highly Successful

IN COMMENTING upon the prospects of speedy steam railroad electrification the *Electrical Review*, London, says editorially that there is every reason to believe that when peace returns such electrification will become one of the most important and pressing questions that will then arise. Among the factors which have influenced the growth of opinion in this direction may be cited the urgent necessity of economizing fuel, the scarcity of labor, the dearth of raw materals, and the need for improvement in transportation facilities.

In countries which possess but scanty fuel resources, or none at all, such as Switzerland and Italy, but which are blessed with an abundance of natural water power, the adoption of electric traction is obviously inevitable, and plans are being projected on an enormous scale to carry out schemes of a most comprehensive nature.

Proposals have been submitted by the managers of the Swiss Federal Railways to the Council of Administration which involve an expenditure estimated at from about $600,000,000 to $800,000,000 to be spread over a period of thirty years. In Italy preparations are under way for the electrification of the whole of the railways in the north, together with a supply of electricity for all industrial purposes on a gigantic scale. France, like Italy, already possesses a considerable mileage under electric traction and contemplates important developments in this respect, while Norway and Sweden have carried out noteworthy schemes and contemplate others.

In the United States we find the greatest development, for there electric traction has been put to the severest tests in main-line operation, and has been proved capable of handling the heaviest loads on stiff gradients with efficiency and reliability far in advance of steam haulage. In Austria the Ministry of Railways proposes to utilize all the water power available in the Alpine District and in Dalamatia, and to electrify as much as possible the railways south of the Danube on the single-phase system.

In Great Britain such water powers as are available are too small and too remotely situated to affect the railway problem, except in a few localities, but none the less the matter is of pressing urgency. Fortunately in no country in the world, with the possible exception of Belgium, is the traffic so dense as in England, a condition favorable to electric traction.

Manchester Corporation Tramways' Roll of Honor

Manchester Corporation Tramways has recently issued its "roll of honor" in pamphlet form, giving by name and grade the men who have enlisted from the tramways for king and country, with a supplementary list of those who have made the supreme sacrifice. Tabulated, the pamphlet shows:

Enlisted for active service from the traffic section	1820
Enlisted for active service from the other sections	1069
Total enlisted	2889
Died in active service	227
Officially reported missing	88

Results of Journal Canvass of Opinion on Mortimer Resolution

Opinions of Electric Railway Executives Throughout the Country Show Desire to View the Subject of Municipal Ownership in Broad Way, but the Belief Is General that the Time Is Not Opportune for So Radical a Step

AT THE CONFERENCE of the American Electric Railway Association held in New York on Nov. 1 a paper was read by Richard McCulloch, president United Railways of St. Louis, advocating public ownership of electric railways, and J. D. Mortimer, president North American Company, presented a resolution to the same effect. The paper and resolution were printed in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 2.

At the conference there was not time for full debate of this resolution, which was referred for action to the executive committee. To bring out the opinion of the industry generally the editors of this paper telegraphed a number of executives in the East and Middle West to permit them to put on record the present attitude of the industry on the subject of municipal ownership. No attempt was made to reach companies located west of the Rocky Mountains as the copies of the JOURNAL containing the resolution would not have reached them in time. The telegrams received and the substance of interviews with executives who could be personally reached from the New York office are given below. Other contributions to the discussion are invited.

Service-at-Cost Plan Is Best

Regarding the subject matter of the Mortimer resolution, I would say that as owner and operator of street railway properties I might, from a selfish viewpoint, favor ownership of street railways by municipalities under present conditions, but with the knowledge of the business such as I have I might not favor ownership of a street railway property by a municipality in which I lived. Through the trained expert management of private ownership of these properties the public should receive the most efficient service at the minimum cost to the individual rider. It occurs to me that a better solution of the problem is a service-at-cost plan plus a fair return on the capital invested or an arrangement between the municipality and the owner or owners of the street railway, such an arrangement to be automatic permitting and requiring rates to be increased or decreased as might become necessary to produce only the agreed return on the investment after taking care of all proper reserves.

J. F. STRICKLAND,
President Dallas (Tex.) Railway.

Regulating Bodies Must Exercise Broad Vision

The question of municipal ownership of electric railways is only one phase of the broad subject of public ownership of public utilities generally. Viewed merely from the standpoint of the electric railway owner or operator, little is to be feared from the general adoption of the principle of public ownership. Viewed, however, from the standpoint of the citizen interested in the future welfare of our country the wisdom of adopting that principle is subject to grave doubt, especially if accompanied by public operation. Public ownership is, however, inevitable unless the powers of regulatory bodies, federal and state, are exercised with such breadth of vision as to encourage the flow of private capital into electric railways. Otherwise impairment of service and curtailment of extensions will be such that the public will be compelled, for self-protection, to take the properties over. The real solution of the problem of relations between public and utilities is apparently to be found in a system which, whether the utility be publicly or privately owned, provides for private operation under public supervision, adequate returns to capital being assured by rates which can be quickly varied to meet advancing costs.

ARTHUR W. BRADY,
President Union Traction Company of Indiana.

Municipal Ownership the Ultimate Solution, but the Cities Are Not Ready for It Now

Public utilities involving sanitary principles and public health, such as those serving the water supply, sewage and drainage system, should unquestionably be municipally owned and operated. The others, including electric railways, are destined for ultimate municipal ownership, but in my judgment this time has not yet arrived. There are three states in the existence of the essential utility. The first is the creative period, when private enterprise initiates, owns and operates; the second is the transitive period when through co-operation or partnership the public joins with the private enterprise in sharing the responsibilities of the utility; the third and ultimate period is that of public ownership and operation. Before the war we began as an industry to leave the first period and are now entering rapidly into the second, but just as the first period extended over a number of years, so too will the second, although probably not for so many. American municipalities, handicapped as they are by unscientific, inefficient and otherwise more or less defective systems of government, traceable for the most part to the evils and weaknesses of short tenure of office, are far from ready to take over the added responsibilities and burdens of such highly organized and technical institutions as the electric railways. Admitting that the industry is now being sorely tried by the tremendous difficulties and problems imposed by the war, that is our share of burden, our contribution toward the success of that great cause. That this share is disproportionately excessive is unfortunate but is not justification for passing the burden to others, even though it may afford a fleeting grim satisfaction to the distressed utility official and operator. We would be remiss in our duties as citizens and as trustees for the utilities to urge municipal ownership now. The Pacific Coast cities, which are now forcing premature municipal ownership, are not safe guides, for there passion, prejudice and obstinacy, not monopolized by either side, have apparently obscured calm reason and sane judgment.

F. W. HILD,
General Manager Denver Tramway.

Favors Municipal Ownership with Allowance for Franchise Value

The Mortimer resolution is one of tremendous import to the public and the electric railway industry, and brings to a head the thoughts that have been in the minds of most executives for some time. I believe it to be our duty to protect the interests of the stockholders to the fullest extent, and from this standpoint a purchase of the properties by the municipalities at a fair price would be a practical solution. I feel that the resolution deals too lightly with franchise value, as the owners of the properties are justly entitled to full recognition of all early developmental expense and to compensation for the burdens which the stockholders carried without return during the development of the industry. Common justice would indicate as a fair measure of value the three pre-war-year earnings as a basis of worth, which is the standard adopted by the federal government in the case of the railroads. From the standpoint of the public I believe that it would be far better served by private ownership if, in granting franchises, the authorities would be sufficiently liberal to allow a fair profit which would give an incentive for efficiency.

This result, however, seems to be impossible of accomplishment and for that reason I am inclined to indorse the resolution with the reservation as to franchise value above referred to. HORACE LOWRY,
President, Twin City Rapid Transit Company, Minneapolis.

Affirmative Action on Resolution Would Be Disastrous

We feel that the introduction of the subject of municipal ownership as a factor in the solution of the grave difficulties which now confront the street railways of this country is a very serious and unfortunate mistake and may result in great harm to the industry. This company as well as numerous others have been compelled for many years to combat the principle of municipal ownership of street railways and has had valuable assistance from the American Electric Railway Association. The same principles and reasons against permanent ownership and operation of street railways by municipalities, states or federal government which have applied in the past are fully as convincing now. A comparison between the development of and service rendered by street railways and other public utilities in this country as compared with European countries where governmental ownership has prevailed is, we think, the best argument for private ownership. Affirmative action by the association at this time on the proposed resolution would in our opinion be disastrous and the serious consideration of such a resolution, we feel, has already been not only unfortunate but detrimental to the industry.

CAPITAL TRACTION COMPANY,
Washington, D. C.

Either Full Co-operation or Public Ownership Is the Answer

The intensive rural development of the electric railways throughout the East has produced a condition that cannot be corrected by municipal ownership strictly, but relief can come only through state ownership, if the lines through the country districts are to be kept in operation. The plight of the traction properties is so acute that continuation of service can be assured only through active co-operation of the communities and the traction utilities, and it is to be hoped that some workable solution can be found by a change in the bases upon which the industry has been founded. If such full co-operation is not forthcoming, and that at once, there is no solution from the standpoint of either the community or the utility—but public ownership, for in that way the varying costs of producing service can be met through direct tax assessments upon the community at large. It would seem reasonable for the inhabitants of a particular territory comprised of a number of small towns to demand that the state take over the traction lines when they are faced with the abandonment of a portion of those lines through the financial inability of the utility to continue operation. Regardless as to whether the individuals all use the service, the prosperity of the community as a whole depends upon the street car service and in so far as there are deficits accruing from the operation of the cars an equitable assessment upon all the community through the general tax would not be unreasonable.

L. S. STORRS,
President the Connecticut Company, New Haven, Conn.

Cincinnati Plan Insures Good Service and Fair Return

I am distinctly opposed to municipal ownership of electric railways. Municipal ownership does not benefit the car rider or reduce the cost of car riding, and uniformly imposes additional burdens upon the municipality. Private operation is more efficient and more economical. I am not opposed to, but indeed favor, proper municipal control. I am of the opinion that the Cincinnati plan as embodied in the ordinance recently enacted, establishing service at cost including in such cost a fair return on invested capital, with municipal control and incentive to efficient and economical operation through division of surplus earnings over amounts required, is the most satisfactory solution of the problem. This plan gives the city the right to fix the quality and quantity of service desired and provides the machinery for changes in rates of fare to accomplish this, which is just to the public, the employee and the investor. The Cincinnati ordinance provides for increases or decreases in rates of fare by half-cent steps and changes cannot be made more frequently than in three-month periods. The city requires an annual budget of expenses, has control of extensions and improvements, and approves the accounting system and issues of capital. The company is guaranteed a fixed return based on an agreed valuation and on the cost of money for future capital expenditures. This plan gives the public all of the advantages with none of the disadvantages of municipal ownership.

W. KESLEY SCHOEPF,
President Cincinnati (Ohio) Traction Company.

Solution Lies Between the Two Extremes

Somewhere between the two extremes of purely private or wholly public ownership and operation, I believe the solution lies. The discovery and exposition of this solution is the one most important, most eminent job before the American Electric Railway Association. In the quasi-partnership between the City of New York and the operating companies in the "dual system" we have an example of public partnership and private operation under public service commission regulation. The dual subway contracts provide for a full and complete supervision by the city, through the Public Service Commission, of all operations by the lessee relating to construction and equipment, and, when the city—under the pooling arrangement effective next January—becomes interested therein, in operating expenditures as well. All important contracts require actual approval by the commission, and the city, upon inspection of accounts, which the company must keep as the commission directs, may object to any expenditure which it deems unreasonable or improper. The Interborough Rapid Transit Company is not opposed to this full measure of public representation in its problems. The desire of the public for representation in the direction of a service touching the people so intimately, is both natural and proper.

When the public's representatives are faced with the problems of making both ends meet, either by increased fares or by taxation, the public will accept their acts as justified, even if they do mean higher fares, because the public will know that their representatives have acted upon their knowledge of the situation acquired through their supervision.

To justify their decisions and acts the public's representatives will be forced to educate the public to the impelling facts, and the public will then come to realize—as plainly as it now does not—that service can be only what the public-car riders or taxpayers are willing to pay for. It will also come to appreciate at its true value the situation in which the industry finds itself now. And if it decides to put up with less service to keep down the cost it will do so with full knowledge of the facts; it will not expect 10 cents worth of service for a nickel. But public ownership and public operating would, in case of unsatisfactory service, result in merely a change of political control.

THEODORE P. SHONTS,
President Interborough Rapid Transit Company.

No Good Reason for Capitulation to the Political Prejudices of the Hour

The unprecedented conditions confronting our industry have not altered the principle of sound business nor the obligation of the companies to the public in the way of service nor to the investor in the way of return, and in view of the fact that municipal ownership has invariably proven a failure we can see no good reason for a capitulation on the part of our industry to the political prejudices of the hour. On the contrary, this is the time when we should stand to and carry on, relying for final victory on the sincerity of our purpose to serve the public and discharge our obligation to the investors in the industry.

THOMAS S. WHEELWRIGHT,
President Virginia Railway & Power Company, Richmond, Va.

Automatic Rate Adjustment a Desideratum

I am not in favor of municipal ownership, but I do favor, first, the making of an arrangement with the municipalities so that the investors will get a reasonable return upon their investment; second, the establishing of a minimum and maximum surplus with provision so that when the maximum surplus is reached the rate will automatically decrease and when the minimum surplus is reached the rate will automatically increase, or, third, the arranging of a rate by which a surplus will be created sufficient to amortize the invested capital through a sinking fund over the period of the mortgages. In either case, the city is to have representation sufficient to protect the interests of the people.

E. G. CONNETTE,
President United Gas & Engineering Corporation, New York City

Present Conditions Make Public Ownership Inevitable

In Maine we have tried out increased rates for trolley service and drastic curtailment of service, but results are unsatisfactory and fail to meet the constantly increasing costs of operation. The situation generally indicates clearly that the public must own and operate trolley roads if the service which it demands is to continue.

A. H. FORD,
General Manager, Cumberland County Power & Light Company, Portland, Me.

Situation Demands Careful Analysis by State Authorities

Municipal ownership of street railways may be the proper step to save the service to the public, but past results from operation of this character throughout this country have a strong tendency to make the thinking people approach such a subject with great caution. Municipal ownership, however, only covers large city operations and does not seem to reach suburban companies such as ours, operating thirty-two separate and distinct corporate cities, towns and boroughs. It suggests to us that application be made to the governors and legislatures of the states for a careful investigation and recommendation for state control with responsibility

T. A. WRIGHT,
Vice-President Wilkes-Barre (Pa.) Railway.

Canadian Coin Problem of the International Railway

The International Railway, Buffalo, N. Y., which operates partly in the United States and partly in Canada, is charging a discount on Canadian currency tendered to it in the United States. The reasons are these: Canadian visitors to Niagara Falls use Canadian currency, which in the early stages of the war was accepted at par by United States merchants and banks. Lately, however, the banks have refused to take deposits of Canadian money without charging a discount ranging nearly as high as 3 per cent. To overcome this difficulty, the company has been depositing its Canadian money with its banks in Canada, but the American banks are now charging exchange on funds withdraw from the Canadian banks. The company has therefore instructed its agents to accept Canadian currency only at a discount.

"Fighting" Snow

A Square Deal for the Regular Car Equipment Involves the Provision of Adequate Special Apparatus and Intelligent Use of Both

BY J. M. PNEUMAN*
Railway Engineer, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

THE term "fighting snow" is one most commonly used by electric railway operators in describing difficulties encountered in maintaining their car service during winter months. It was, therefore, used very frequently during the past three winters, as the snowfall was unusually heavy and the average temperature away below normal last winter. The fact that so much trouble was experienced on most roads with their motors and car equipments shows that there is something radically wrong in the methods usually followed to keep tracks clear of snow, if any method at all is used. While the object of this article is not to provide a "cure-all" for snow conditions, an attempt will be made to show good practice in anticipating conditions which might be imposed by snow and to summarize the known methods of actually "fighting snow."

Many motors fail under bad track conditions due to snow, because the value of good snow-fighting equipment is not appreciated. Severe snowstorms are placed in the same category as washouts on the line, wrecks, fires, etc., in other words, conditions which are to be met in the best possible manner when they occur are ignored. This is obviously wrong for snow is as sure as winter, although the depth of snowfall varies.

It is human nature to see what any piece of machinery will do in a pinch. The man with an automobile will brag about what "she" did on certain steep hills in high gear; the motorboat operator will tell how "she did so-and-so in a bad storm and never shipped a drop"; the street or interurban car crew will boast that "she ran so many miles bucking 3 ft. of snow on the level, went through several drifts half as high as the car and only got in about ten minutes late," etc. This kind of running makes very interesting conversation, but from a dollar-and-cents viewpoint it does not arouse the same degree of elation.

In purchasing motors for certain cars and service it would, of course, not be feasible to get motors greatly over size in order to have sufficient capacity to take care of themselves when "bucking snow," unless they are intended primarily for the purpose of keeping tracks free of snow. It is, however, good practice to anticipate these conditions to a certain extent in purchasing motors for freight and passenger cars. The ideal condition is to have revenue cars properly motored with suitable snow-fighting equipments at hand to keep tracks clear of snow when storm conditions arise. Some of the different types of snow-fighting apparatus and their application to certain conditions are outlined in the following paragraphs.

On some roads stiff brushes of bamboo splint have been installed ahead of the front car wheels. These have given fair satisfaction on city tracks in keeping rails clear when the snowfall is light. As they merely push snow from the rail on both sides, they are not to be depended upon to maintain service during heavy snowfalls. They are used, however, with success in keeping third rails snow-free on roads using this system of current collection.

Snow scrapers, backed with heavy springs, installed on beams ahead of the front wheels, satisfactorily keep rails and flangeways clear of snow and throw out the snow to a much greater extent than snow brushes. Revenue cars equipped with scrapers, with an additional scraper to keep down snow in the center of the tracks, will do much toward keeping tracks clear if run at frequent intervals. In paved streets where brooms are used to keep the centers clear, the two scrapers ahead of the wheels are desirable to keep the snow out of the flangeways.

Snow sweepers are the main stand-by for street car systems. They are put out on all lines as soon as snow begins to fall. They should be equipped with wings in order that the snow which accumulates beside the track out of reach of the brooms may be shoved back near to the curb line. These brooms should be set just to reach the pavement and not so low that they become "pavement polishers," wearing out splints rapidly while failing to remove the snow properly.

As a rule plows have their application on suburban, interurban and standard steam roads, although it is necessary to use them on some city properties. On roads operating with long headways, plows should be run ahead of regular cars during storms as much as possible. Plows are efficient to the point where snow becomes banked to such a height beside the roadway that they are unable to throw the snow from the track to the top of this bank. Plows properly motored can get through large drifts if there is any open space beyond the drift, into which the snow can be pushed. The plow should be applied to the car in such a manner that it may be raised and lowered when going over guard rails and special work. This is usually accomplished by means of levers operated by a ordinary brake cylinder and compressed air.

Rotary plows have their application to about the same class of roads as the snowplow, and their use is to clear tracks when snow banks have become so high that plows are not able to throw out the snow. They are more efficient at any time during a storm than a snowplow, as the snow is thrown farther back from the track. The rotary scoops are raised and lowered in the same manner as are nose plows when passing over special work.

The writer applies the term "flanger" to apparatus, mounted between car trucks, consisting of steel plate set at an angle and used to clean out track centers to the top of the rail or lower, and to some distance outside of rails. These flangers are used to a great extent on steam roads and may be operated by any road using open rail. They are raised and lowered by air over special work. Painted signboards are usually placed beside tracks to indicate guard rails and special work as a guide to the flanger operator.

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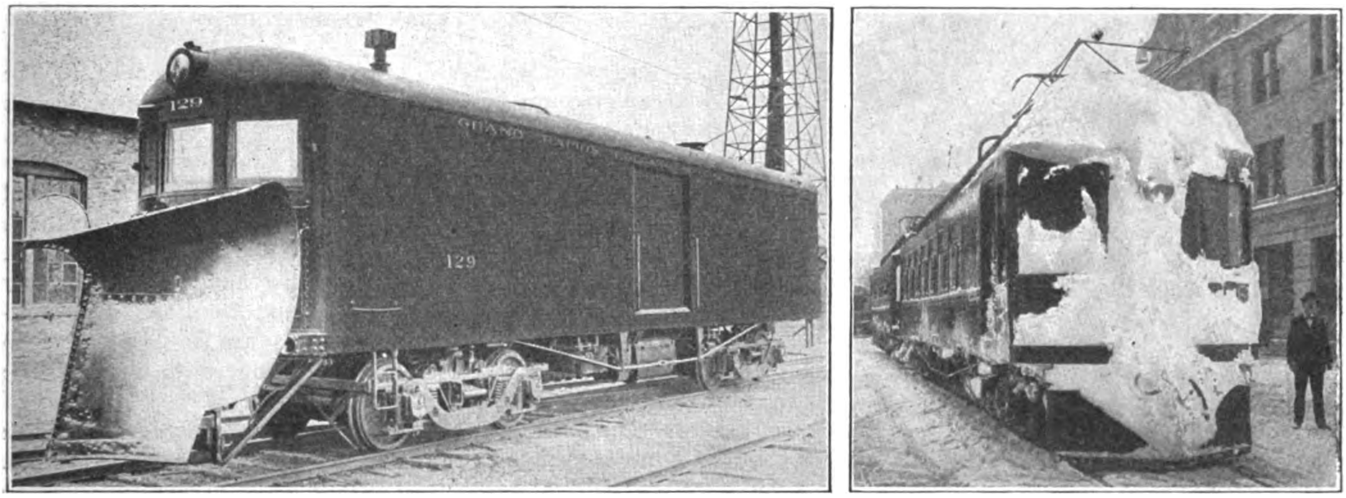
*Mr. Pneuman has had a wide operating railway experience in which he has come into intimate contact with snow-fighting problems. He was for four years foreman of electric locomotive and car maintenance for the New Haven Railroad, at Stamford, Conn., and later was master mechanic of the Annapolis (Md.) "Short Line," and electrical engineer of the Buffalo, Lockport & Rochester Railway.—EDITOR.

ALL EQUIPMENT MUST BE USED EFFECTIVELY

Railway operators, as a rule, do not desire to purchase any car equipment which can be used to advantage only a few months of the year. This is probably the reason why so few snow equipments are kept on hand for emergencies. But snow-fighting cars are now built which should rule out this objection. Snow sweepers and nose plows are so constructed that the brooms and plows can be removed when they are not needed and the cars can be used for freight or work-train service until they are again required for snow work. On rotary plows and snow sweepers, where this practice would not be feasible, the cars can be placed on blocks when not needed, and the trucks and motors can be used as "spares" during the overhauling period in the summer to prevent keeping revenue cars out of service for long periods.



EXPRESS CAR FITTED WITH SNOWPLOW, GRAND RAPIDS, HOLLAND & CHICAGO RAILWAY—SPOKANE & INLAND EMPIRE TRAIN WITH SHEATHED PILOT ACTING AS SNOWPLOW

For city properties, snow sweepers and scrapers are usually sufficient to take care of snow, but in some localities snowplows and even rotary plows are needed also. On the average interurban property the most efficient car for all-round snow fighting, and one which could be used for other purposes during the non-winter months, would seem to be one equipped with a nose plow at each end of the car, a flanger between the trucks, wings at the sides, air compressor and electrical apparatus inside the car. It should be so arranged that plows and flanger could be readily removed when not needed, then an air compressor and the electrical apparatus could be placed under the car and it would be available for freight and work-train service. Roads having very heavy snowfalls every winter, or bad drift conditions to meet, should also have rotary plows at hand. Bad drifts on the right-of-way could be eliminated to a great extent if snow fences were used at points especially favorable to the formation of drifts.

HIGH TRACK CENTERS ARE HARD ON EQUIPMENT

Most railway operators agree that the greater part of serious trouble in connection with snow is the occurrence of high track centers on which the motors drag. As a result cars are derailed, motors are "roasted," the wheels are permitted to spin and service is tied up. Next in line are delays and equipment burnouts due to bucking deep snow and snowdrifts. With proper use of the equipments mentioned in this article, service can be maintained satisfactorily but, as there is no such thing as a standard snowstorm, equipments must be used as conditions require. A heavy fall of snow with no wind can usually be combated by frequent service over the lines with snow equipments, but a light snow with strong wind will sometimes drift so rapidly that a few minutes after the snow equipments have gone through, the tracks will be completely filled in again. In the latter case it is certainly good practice to have the snow equipment car run directly ahead of passenger cars even if this involves a reduction in the number of passenger cars run. Nothing is gained by bucking through snow with a passenger car not equipped for this work unless it is the satisfaction of "getting her through." If this policy is followed a few cars may get through and a sort of service may be maintained during the storm, but so many equipments will fail in getting these few cars through that service will be impaired for days or weeks while the equipment is being put back into shops. The loss of this car service added to the motor repair bill will total a sum unpleasant to contemplate.

There are occasional cases in which carloads of passengers might be stalled out in the country on interurban roads. Where suffering might result from exposure and under such conditions it is certainly necessary to buck through and get in if at all possible. If good judgment is used and equipments are allowed to "rest" and cool down after strenuous efforts made to get through they may not be affected to any great extent.

However, under any conditions, it is folly to burn out all of the motors when it can be plainly seen that car has not the power to get through.

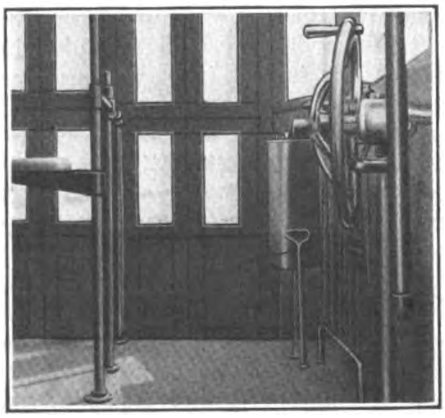
Snow equipment cars and trucks should be strongly built and equipped with the best motors obtainable, large enough to have sufficient reserve to take care of the heavy duty required of them. It is common but faulty practice with some operators to use on their snow-fighting cars obsolete and run-down motor equipments which cannot be depended on in passenger service. Usually these fail just when they are needed most. The purpose of snow equipments is defeated by this practice.

Large numbers of motors fail when operating through snow, due to snow which gets into the motors and melts, causing flashovers and insulation break-downs. Most failures of this kind could be avoided if tracks were kept free of snow, but in addition during snow periods motors should be given extra attention, drain holes should be kept open and interiors should be cleaned of snow at frequent intervals.

Service is all the electric railway has for sale. Clear tracks and cars in good condition are necessary to furnish good service. It is sound business policy to insure against loss. Why not insure service by providing necessary snow-fighting equipment?

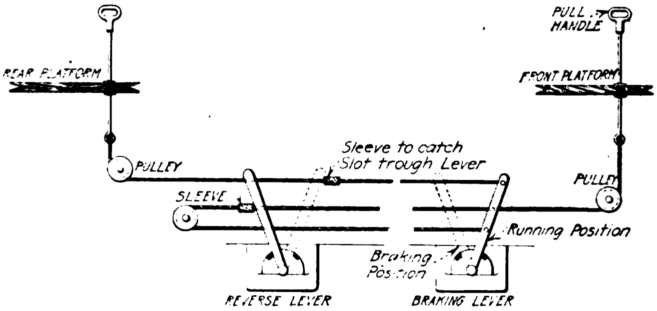
Hand-Operated Switch Provides Connections for Emergency Braking

Motors Are Connected So As To Produce Retarding Effect By Means of a Safety Switch Which Can Be Operated At All Times



LEVER ON PLATFORM FOR OPERATING EMERGENCY BRAKING SWITCH

THREE of the two-motor passenger cars of the Seattle Municipal Railway, which operate over the steep grades of the Lake Burien Line, have been equipped with an emergency braking device adapted by the master mechanic to suit local conditions. The device is designed to afford protection when the power fails or the trolley is off the wire, and it provides an emergency brake independent of air pressure or any brake rigging. The apparatus as installed consists of a drum-type switch which throws the two motors of the car in parallel, at the same time interchanging the motor fields. With these connections made when the car is coasting one motor picks up as a generator and tends to drive the other as a motor in the reverse direction, thus causing a retarding effect in both sets of drivers. The braking switch is installed underneath the car and is operated by means of cables attached to handles which project above the car floor at either end of the car. Accompanying illustrations show the location of one of these handles on the car platform and the cable connection for operation. In addition to applying the brake the pulling up of this handle also throws the reverser which ordinarily is only operated when power is on the car by throwing the reverse lever on the master controller. To accomplish this operation automatically the attachment as illustrated has been added to the type "HL" control equipment supplied by the manufacturer. Two sleeves are attached to the cables connecting the operating handles. These sleeves engage the reverse and hold levers. This insures the reverse lever being thrown to the proper position at the same time as the emergency switch is operated, and without danger of incorrect operation. When the switches underneath the car have once been thrown, it is necessary to reset them by hand before the car can be started after having made the stop. The operating handles on the platforms are so located as to make it inconvenient for passengers to operate the switches through curiosity.



CONNECTIONS TO LEVERS OPERATING REVERSE AND BRAKING SWITCHES

The electrical connections also provide for backward braking should the car start to run backward down a hill with the power off. Should the brakes fail in such a case the conductor pulls the emergency lever on the rear platform and the necessary connections are thus established through the emergency braking device. While the car is running forward emergency braking is obtained by the motorman pulling the emergency lever on the front platform of the car.

With this arrangement it is unnecessary for the safety switch operator to reason out which way the reverse lever must be thrown before operating the braking switch, as the single operation throws the reverser and the braking switch at the same time. This braking device has a total weight of only 125 lb. and was installed without necessitating any change in the controller connections. The equipment has now been in service more than two years and is considered a desirable factor to the safe operation of the equipment over the heavy grades on this line.

The device was installed under the direction of the department of public utilities of the City of Seattle.

The National Safety Council, 208 South La Salle Street, Chicago, Ill., has offered prizes of $25, $15 and $10 respectively for the best suggestions for a Christmas safety bulletin, bringing out the spirit of Christmas and of safety. The contest closes on Nov. 23, necessitating prompt action on the part of contestants.

50-Ton Electric Locomotives for Canada

Details of the Special Features of the Twelve Electric Locomotives Being Built for the Hydro-Electric Power Commission of Ontario

TWELVE 50-ton electric locomotives are being built by the National Steel Car Company, Ltd., Hamilton, Canada, for the Hydro-Electric Power Commission of Ontario. They will be used for hauling trains on the construction railway which is being built in connection with the power development at Chippewa Creek near Niagara Falls. Operation will be at 600 volts, direct current.

One of the completed locomotives is shown in the accompanying photograph. They are designed for double-end operation, with general dimensions as follows:

Length over all	35 ft.
Truck centers	19 ft.
Length of main cab	10 ft.
Length of auxiliary cab	9 ft. 6 in.
Width over side sills	9 ft.
Height from rail to top of floor	4 ft. 6⅜ in.
Height from rail to top of cab roof	12 ft.

DETAILS OF CONSTRUCTION

The underframe is made up of I-beams and channels. The center, side and intermediate sills are 12-in. I-beams running continuous from end sill to end sill to which they are secured by connection angles. The end sills are 12-in. channels extending straight for 15 in. on each side of the center line and dropping back 13 in. to the corner of the underframe. Cross-ties, of which there are five, consist of 8-in. I-beams connected to the longitudinal sills by angle connections. The bolster is composed of 14-in. x 1-in. plates riveted to the top and bottom of the longitudinal sills. The flooring, except in the cab, consists of cast-iron blocks 2¾ in. thick with checkered surface.

The draft gear is of the Miner twin spring type with M.C.B., class "G" spring and keyed-yoke connection to the M.C.B. coupler.

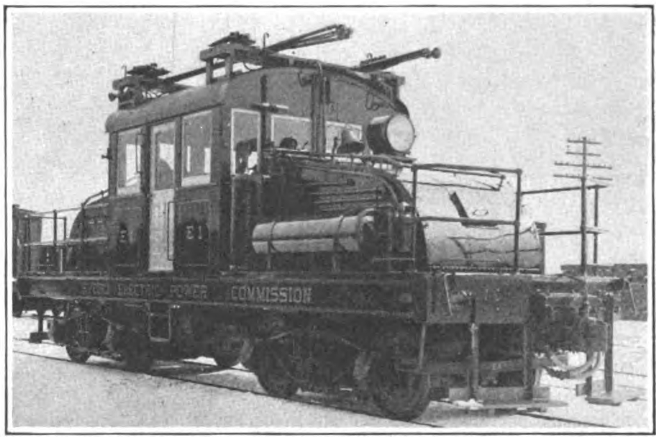
The cab is of all-steel construction, except the roof, which is made of poplar tongued and grooved and covered with 8-oz. cotton duck. The side and end posts are 3-in. channels while the corner posts are 3½ in. x 3½ in. x ⅜ in. angles. The outside sheathing is No. 16 gage sheet steel, and is lined inside with wood lining. Each side of the cab is provided with two drop-sash windows and one swing door. Each end is provided with two stationary windows, one drop sash window and one swing door. The doors are in diagonal corners as are also the drop-sash windows. All control levers and handles are duplicated in diagonal corners for reversible operation.

The hood at each end of the cab is of all-steel construction and is composed of angles, channels and No. 16 gage sheet steel. Inside the hood are the air compressor, large sand box, air-operated sanding device, and electrical equipment and a removable steel door is provided for easy access. The hood is narrow enough to allow a walkway around the outside of the platform. A pipe railing is provided at the outside edge with a hand railing around the top of the hood.

Trucks are of the arch bar design, with inside-hung brakes, 5½-in. x 10 in. journals and 36-in. diameter wheels. Each truck bolster is composed of two 10-in., 40-lb. rolled I-beams supported by helical springs. Each truck is provided with two inside hung 125-hp. motors suspended from brackets secured to channel transoms.

SPECIAL AIR EQUIPMENT TO OPERATE DUMP CARS

The locomotives are being equipped with Westinghouse air brakes, with 14-in. x 12-in. type "S" cylinders, the main reservoirs, parasite reservoir and radiating pipes being located on the top of the floor at the side of the hood. Two D-4-P, 50-ft. Westinghouse motor-driven compressors will furnish sufficient capacity to supply air to the dumping mechanism on twelve 20-yd. dump cars, and the parasite governors are provided and so arranged that when operated in trains all governors will cut in at the lowest setting pressure in the series, and will prevent the dumping apparatus from depleting the pressure available for braking below a safe predetermined minimum. The hand-brake equipment is operated from inside the cab by a vertical hand wheel connected by bevel gears to a shaft running through the cab floor.



ONE OF TWELVE 50-TON ELECTRIC LOCOMOTIVES FOR CANADIAN COMMISSION

The locomotives will be equipped with multiple-unit control, six having General Electric control and six Westinghouse control. Each locomotive will develop at starting a tractive effort of approximately 30,000 lb. on dry rails.

Development of the Turbine Since 1899

In a recent review of steam turbine progress the Westinghouse Electric & Manufacturing Company gives data regarding the average kilowatt capacity of turbines, and the capacity of the largest turbine shipped each year. Under the first head, beginning with 1899, when the average capacity was 500 kw., the figure rose to about 1800 kw. the next year, fell to below 500 kw. the following year and has since been consistently tending upward, reaching a maximum of 25,000 kw. in 1914. It fell to 12,000 kw. in 1916 and rose again to about 30,000 kw. in 1917.

Japanese manufacturers of electrical apparatus are planning to show their independence of Germany as a scurce of electric locomotives. Four locomotives are to be built for the Usui electrification as a start.

Saving $3,000 Per Year in Coal Handling

St. Joseph Company Installs Coal-Handling Equipment and Increases Storage Capacity from 250 to 10,000 Tons

As a part of the program of remodeling the power plant of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., a complete coal-handling equipment was placed in operation last fall. Prior to that time all coal was handled by hand from the cars direct to the plant from a spur track of but two cars capacity to a storage bin having a capacity of only a few hours supply.

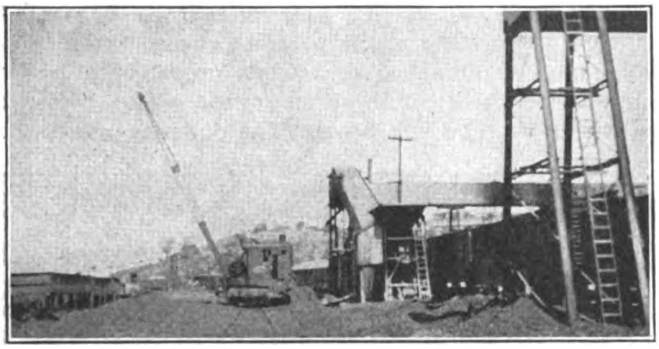


FIG. 1—CRANE AT WORK TRANSFERRING COAL FROM CARS TO CRUSHER.

At present the coal is delivered by the Chicago, Burlington & Quincy Railroad to a spur track of ten cars capacity. This track lies immediately adjacent to a large storage space, through the center of which operates a 20-ton locomotive crane built by Orton & Steinbrenner, Chicago. The crane unloads the coal from the cars direct to a 30-ton Williams swing-hammer coal crusher, as shown in Fig. 1. From the crusher the coal is delivered to a 16-in. inclined-belt conveyor, which in turn deposits it upon a 16-in. horizontal-belt conveyor of 118-ft. span across the Burlington tracks. The conveyor, designed to handle 40 tons per hour, delivers the coal to a bunker of fifteen hours supply capacity within the power house. Chain buckets elevate the coal to a longitudinal hopper from which it is fed to the chain grates by means of a screw conveyor.

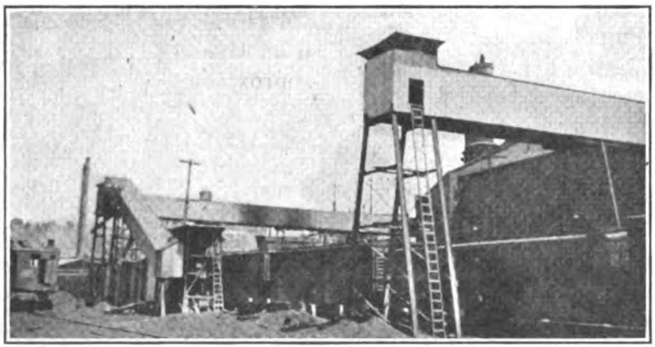


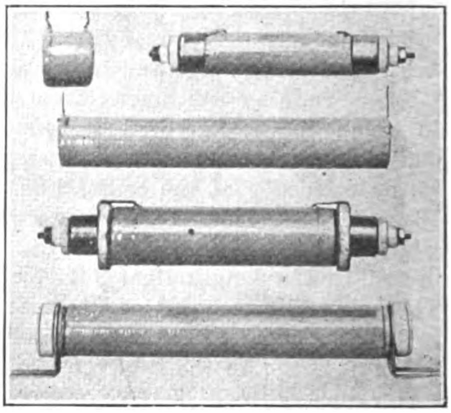
FIG. 2—COAL CONVEYOR EQUIPMENT WHICH WILL HANDLE 80 TONS OF COAL PER HOUR.

When more coal is at hand than is needed for immediate use in the plant it is unloaded by the crane to the storage space, which has a capacity of 10,000 tons. No expensive elevated structure or walls have been built, the coal being piled on ground leased from the Burlington Railroad. Additional space is available to increase the storage capacity to 40,000 tons.

The total cost of this coal-storage and handling plant, including crane and all equipment, was approximately $40,000, and it is estimated that a saving of $3,000 per year is obtained as compared with the old method of handling fuel. Storage of coal to the full capacity last winter permitted the plant to run without interruption during a period when less fortunate neighbors were without fuel. A second horizontal conveyor of equal capacity is already in place, as indicated in Fig. 2, and in operation.

Enameled Resistor Units for Current Regulation

Several types of enameled resistor units have been developed by the General Electric Company of Schenectady, N. Y. Some of the applications to which these units have been put are railway and fire alarm signals, fractional horsepower motors, and electric locomotive headlights. They are also used extensively in series with relay, contactor and circuit-breaker coils and can be used in places where there is much dampness and moisture. These units withstand unusually high temperatures as well as sudden changes in temperature. The resistance wire or conductor is wound either upon a steel body coated with a special refractory enamel or upon a high heat-resisting silicate compound developed to withstand sudden extreme temperature changes without cracking or weakening. The steel body is preferred for extreme lengths where strength for a long span is required and is especially serviceable where the unit might be subjected to severe vibration or shock. The refractory silicate body is used for most of the ordinary types of resistance. The compound employed is certain to be superior to porcelain or other ceramic products, which are easily cracked or weakened mechanically by repeated and extreme temperature fluctuations.



TYPES OF ENAMELED REGISTOR UNITS

After being wound upon the proper body the conductor is embedded in a blue vitreous enamel and is fused, until it has a uniform glossy structure, at a temperature of about 1000 deg. C. This enamel is moisture and heat resisting and forms a mechanically strong casing for the conductor. Enamels of the type used are extremely durable and maintain their dielectric strength and mechanical properties indefinitely.

Several different methods of attachment to the circuit have been developed as shown in the accompanying illustration. A variety of units of various sizes and ohmic capacities have been standardized and units of a special nature are obtainable.

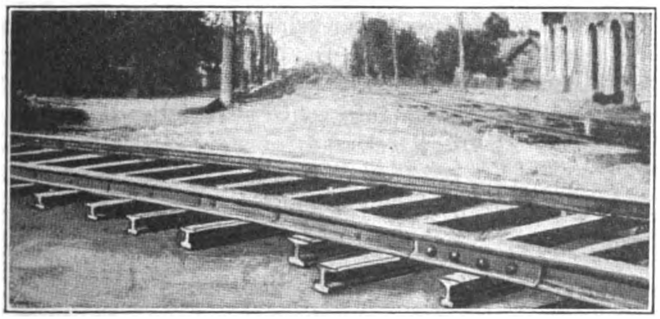
Old Rails for Ties

This Construction Permitted the Use of a Lighter Running Rail and Afforded a Successful Means of Anchoring in Concrete

IN A RECENT issue of the *Concrete Highway Magazine* a description is given of an installation of track with which old rails were used instead of ties. The Helena Light & Railway Company made use of this construction, due to inability to procure a rail 6 in. high. The use of a 4¼-in. rail which the company was able to obtain would not permit more than 2¾ in. of concrete over the ties under the flangeway, and it was not considered that this thickness of concrete was sufficient. The company had on hand a considerable quantity of worn-out 45-lb. T-rails and these were cut in lengths of 6 ft. and 7 ft., and electrically welded to the track rails.

At turnouts the ties were cut long enough so that at the heel of the switch and at the frog they could be welded to all four rails. Back of the frog for 5 ft. or 6 ft. the ties were extended to reach one rail of the other track, a very rigid construction being secured in this manner.

It was found that the track built as above described could not be lined nor could superelevation be given after the ties were welded. The specifications for concrete pavements required a thickness of 6 in. at gutter and 8 in. at the center of the street. The depth of the track as built was 8¼ in. A depth of 5¾ in. of concrete was obtained under the steel ties, which was considered sufficient.



VIEW OF TRACK IN HELENA, MONT., WITH RAILS USED AS TIES

The results of this construction were so successful that when Helena Avenue was paved, a year later, the same type of construction was adopted with but two exceptions. The first of these was the omission of reinforcements which were previously specified and, second, the introduction of a longitudinal joint 3 in. beyond the end of the ties, the idea being to make the track construction independent of the street pavement. Instead of building the track section ahead of the sides which were to be paved, thus obtaining a straight joint, the pavement was laid full width and, when the concrete was struck off with a template, the joint filler was allowed to fall out of line.

Joints should be staggered, as the ties act as cross bands and staggering tends to prevent cracks in the pavement.

The heaviest cars operated over this line weigh 18 tons.

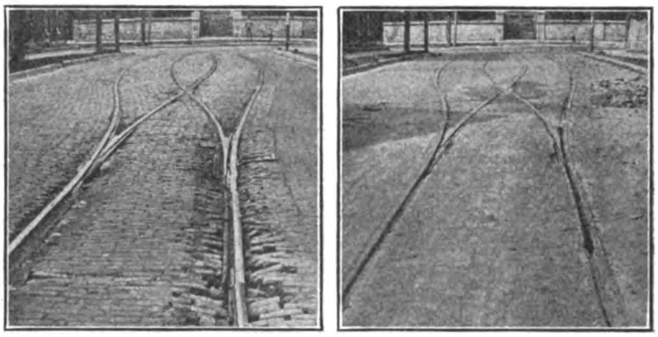
This method of construction was carried out at the following costs:

Salvage of 7 ft. of 45-lb. rail at 1 cent per lb	$1.05
Labor, cutting	0.05
Labor, welding	0.29
Total cost per tie	$1.39

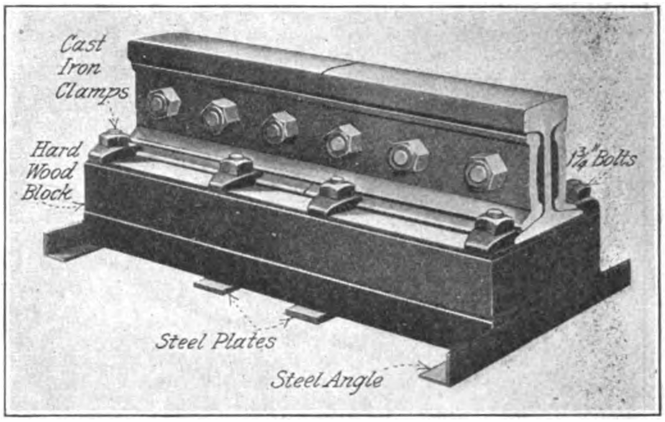
An Effective Rail-Joint Booster

A DEVICE used to rehabilitate track in which low joints have developed and known as the "Dayton Rail-Joint Booster," was recently placed on the market by the Dayton (Ohio) Mechanical Tie Company.

The joint booster is an adaptation of the Dayton mechanical tie described in the ELECTRIC RAILWAY JOURNAL of Sept. 1, 1917 and Jan. 19, 1918. It consists of a white oak block, 24 in. long, 10 in. wide and 5 in. high. This block is imbedded in angles and supported by a ½-in. bed of asphalt, which serves as a shock absorbing cushion in the same way that it does in the mechanical tie. Covering the entire top of this block is a ¼-in. steel plate, on which the rail rests. Eight bolts with rail-clip heads pass through the plate and block and are anchored at the bottom in angles and metal straps, which in turn extend beyond the block and provide a means for anchoring the joint booster into the concrete superstructure. With the joint booster, low joints are repaired and the rail ends brought to surface quickly, with comparatively small cost, and without in any way interrupting car operation.



SECTION OF TRACK BEFORE AND AFTER HAVING RAIL-JOINT BOOSTER INSTALLED



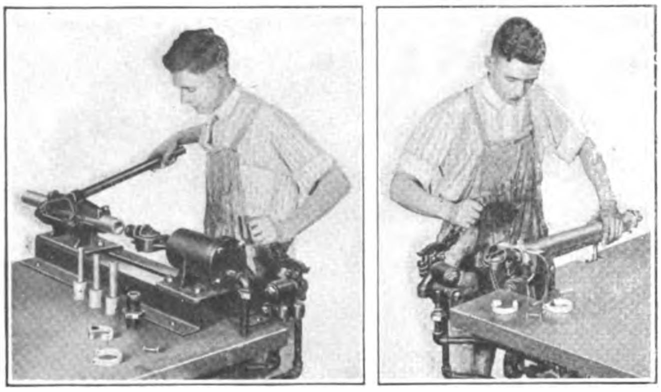
THE "RAIL-JOINT BOOSTER"

The pavement and superstructure immediately surrounding the low joint which is to be repaired, and to a depth of 13 in. or 14 in. below the rail base, is removed, the old joint tie is cut in two, and the part supporting the rail at the joint is taken out and replaced by the joint booster. The booster is clamped in place on the rail base and welded its full length to the rail, assuring an efficient current return. The rail is jacked up until the base is at its original level and the trench beneath the booster is then filled with moist concrete. After this concrete has been thoroughly tamped and retamped under the booster, the trench is left open for a few hours to enable the passing cars further to pack it. The old angle bars are welded to the rail and the bolts are spot welded. If the low joint is so bad that in bringing it to surface the contiguous ties are affected, the necessary shim blocks are inserted under the rail at these points. After the trench is refilled and the pavement repaired, the cupped ends of the rails are built up and ground to surface by means of any of the well-known processes now in general use.

The joint booster now is used extensively in rehabilitating track in the paved streets of Dayton, Ohio. Besides the utility of the process of doing the rebuilding without "killing" the track undergoing repair, the low cost of the material used, the small labor cost for doing the work and the utilization of the old rail are highly desirable under present labor and material shortages.

Air-Brake Hose Mounting and Clamping Machines

SOME time ago the Westinghouse Air Brake Company designed and developed two types of air-operated machines for mounting and clamping the fittings into air-brake hose. These machines were originally developed in the company's Wilmerding factory. While the company has not heretofore attempted to manufacture these devices for outside use they have felt that many roads could make efficient use of such machines and have recently arranged so that they can now be procured on order either as complete outfits or in parts which cannot be readily obtained or manufactured from existing railway material. Most repair shops could build their own machines by buying a few of the specially designed parts. These can be either obtained from the Westinghouse Air Brake Company or they may be made to blueprints which the Air Brake Company will be pleased to furnish on request.



AIR-OPERATED MACHINES FOR FORCING COUPLING HEADS AND NIPPLES INTO AIR HOSE AND CLAMPING ENDS

These devices consist essentially of two different machines, the first is used for mounting the coupling and nipple in the hose itself. This consists of a frame on which is mounted a hand-operated clamp and a compressed air-cylinder as shown in the accompanying illustration. The hand-operated clamp is designed to grip the hose throughout the greater part of its length and hold it rigidly while the coupling or nipple is being inserted. The compressed air cylinder is provided with a piston and rod for driving the fitting into the hose. The piston rod of the cylinder is adapted to the special head used for mounting both the coupling and the nipple. These heads are removable so that both nipple and coupling can be mounted on a single machine, although not at the same time. An operating valve for controlling the admission and exhaust of the air from the cylinder and accessories completes the machine.

The second machine is for fastening the clamps around the ends of the hose after the couplings or nipples have been inserted. This machine consists of two hardened steel jaws one of which is movable and is operated by a compressed air cylinder, piston and rod. A tension spring is attached to the lower end of the movable jaw so that the jaws will open automatically when the air pressure is released. An adjustable support is provided for the various sizes of hose used. This can be raised or lowered to suit larger and smaller hose sizes. After the coupling and nipple have been applied by the machine previously described the hose is laid on the support and the clamp placed in position by hand. By moving the operating valve handle to application position air is admitted to the compressed air cylinder which forces out the piston and rod and causes the jaws to close. These jaws grip the clamp just back of the shoulder and close in so as to hold the clamp tight while the bolt is applied and the nut run up on the bolt until it comes firmly into contact with the lug on the clamp. Pressure is released by moving the operating valve to release position. The air pressure used in both the mounting and clamping machines is 70 to 80 lb.

Safety-First Switching Cabinet

A STEEL switching cabinet arranged so as to prevent admittance to the live-current-carrying parts, except when power is off, has been placed on the market by the General Electric Company.

The main switching apparatus consists of a disconnecting switch operated by means of a special handle or wrench from the front of the panel. This is so interlocked that the rear door cannot be opened while the switch is closed, nor can the switch be closed while the door is open. This makes it impossible for anyone to gain admittance to the compartment while the current-carrying parts are alive. The cabinet consists primarily of instrument transformers, oil circuit breakers and disconnecting switches, inclosed in a sheet-steel compartment with instruments, operating levers, etc., mounted on the front. It is furnished in capacities up to 300 amp. at 15,000 volts, and 800 amp. at 600 volts.

SAFETY-FIRST SWITCHING CABINET

LETTERS TO THE EDITORS

New Zone Collection System Proposed

40 WALL STREET, NEW YORK, Nov. 4, 1918.

To the Editors:

The current difficulties of the electric traction companies, due to great increases of wages, have made it absolutely essential that revenues shall be increased. The increase in revenues from increases in rate of fare in no case corresponds to expectations. Apparently, the zoning system offers the greatest possibilities of increased revenue, but the difficulties are serious, particularly the difficulty of devising a simple method of collecting fares—one which shall at the same time make theft difficult.

For a particular situation, I have suggested the following solution: Divide the city into two zones, an inner and an outer, the boundaries being fixed by the best available data to produce the requisite revenues. Charge a 5-cent fare within each of the zones, and two 5-cent fares from one zone into the other. All passengers entering in the first zone, whether outbound or inbound, shall pay on entering: passengers leaving in the first zone do not pay. All passengers leaving in the second zone pay 5 cents: passengers entering the second zone do not pay.

A moment's consideration will show that for either outbound or inbound trip, a passenger crossing the boundary line pays 10 cents, and one riding within a single zone only 5 cents. The fare box could be divided into two parts, one for entering passengers, the other for leaving passengers; hence, data are automatically collected, showing the division of riders and providing the information necessary to change the zone boundaries so as to produce adequate revenues.

This system would seem to apply fairly well to cities in which the lines all radiate from a focus. The application is not so simple in cities of other conformations, but variations of this plan will readily suggest themselves, as, for instance, dividing a particular route into two parts, and collecting as above from entering or leaving passengers.

This maintains the traditional 5-cent fare and offers easy means of collection. In some cases it may work well, but it is not offered as a panacea.

CARY T. HUTCHINSON,
Consulting Engineer.

The Curse of Expediency

THE SOUTHWESTERN ELECTRICAL & GAS ASSOCIATION
DALLAS, TEX., Nov. 2, 1918.

To the Editors:

During the last month I have been analyzing the latest list of electric railway fare increases, and I have about come to the conclusion that the troubles of the industry in this regard are due to the lack of co-operation among owners and operators, and to that constant curse of the last twenty years—"expediency"!

The greatest mistake seems to have been the attempt to obtain an increase of net revenue by a 6-cent fare. In the first place, the apparent increase asked—20 per cent—is not commensurable with what electric railways have been announcing as their loss. Various statements of increased operating expenses, which have been published within the last year or so, run anywhere from 75 per cent to 120 per cent for the total of increases. If the railways had, on the basis of their given figures of increased operating expenses, asked something like a proportionate increase in fare, the matter would have been in a shape which the public could understand and appreciate. But with a 6-cent fare the stated increase of operating expenses and the asked increase of fare were so ridiculously out of proportion that the public was likely to suspect one or the other of the ratios was incorrect.

If a straight single fare for any distance was to be continued, the demand should have been for 7 cents with a possible sale of fifteen tickets for $1. This would have been more equitably proportional to the stated increase in operating expenses, and the public could then have believed that with this 40 per cent to 50 per cent actual increase of fare the companies could still exist and make a small amount of profit.

The most equitable system, of course, would be a zone system or a zone system with a charge for transfers. The effect of the zone system as regards both fare collection and the influence upon city growth has been greatly exaggerated and has been a bugbear without cause. By an easily obtained traffic survey a single arbitrary zone line—or even a second zone line—could be arranged without injustice or inequity to the traveling public. Such a system would equalize to a great extent the riding cost to the general public, add greatly to income and allow the retention of the 6-cent fare for the short rider. If the electric railway system or the layout of the city was such as to cause great use of transfers without a corresponding increase of gross earnings, a small charge of 1 cent for all transfers or for certain transfers would add to the gross earnings without mulcting any portion of the public for service not rendered to that portion.

Unquestionably, the straight fare for unlimited riding is absolutely dishonest, and the fact that the companies have for so long a time agreed to it does not alter the case. Furthermore, the plea that the straight nickel fare has tended to build up city suburbs has about lost its urgency in America. There is no large city in America that has not slums which no single fare for any distance will eliminate. Those who have benefited most from the straight nickel fare have been suburban real-estate promoters and those groundhogs who hold vacant lots or lots with "taxpayers."

The straight 6-cent or even the straight 7-cent fare does not diminish either of these evils, although the straight 7-cent fare does better substantiate the general cry of from 75 per cent to 100 per cent increase of operating expenses. But a straight 6-cent fare—even a straight 5-cent fare—for the short rider, with a zone or two at a 1-cent rate, and a "cut rate" for quantity sale of tickets or tokens, would be the first step toward equity to the traveling public. It would convince them that our cry of "increased operating expenses and diminished or vanished net profits" is not a cry of "wolf!"

The straight fare of "a nickel-plus-a-penny" or even "plus-two-pennies" is certainly a tactical mistake, and, like all such mistakes, its effects are not confined to the particular property concerned. No utility ever made a commercial or tactical mistake which at some time and in some way did not react on itself and on other and perhaps far distant utilities. The utility which, in these crucial times, makes an uncommercial and inequitable arrangement in regard to compensation for its product or its services not only creates an evil precedent for itself but opens up evil consequences.

Many of these fare changes have been glossed over by both utilities and controlling bodies as being effective "only until peace times." Such an excuse is no excuse at all; either the matter is presently equitable or it is not. "Peace conditions" cannot be, for many years, identical with the general conditions before the war. The time of readjustment after peace will be an exceedingly long one. Therefore, to settle so important a matter as the adequate return on public utility investment by a temporary and inequitable expedient for an uncertain period in the future is not "good business" for either party.

"Local conditions" cut a large figure in the costs of operation, and certain properties can make a profit on a fare at which other properties would starve. This, however, is no excuse for making the basis of fare one that is not commercially just and equitable to all parties concerned. Nor is it any reason for that excuse of the weak-kneed "expediency." It seems a pity, when the present rare opportunity is offered, that the basis of fare has not been made more of a matter of co-operative standardization by the electric railways themselves and that a standard has not been set on an equitable basis.

H. S. COOPER, Secretary.

He Prefers the Car with End Doors

NEW YORK, Oct. 29, 1918.

To the Editors:

I have read with a great deal of interest your description of "The First Universal Car" and your editorial on the War Board's action in securing a design of an all-round standardized car for general city service. I note, however, that the recommendation of the board was for the center-door type, whereas the majority of operators in medium-sized cities (which include the vast majority of all the properties in this country) prefer the end-door type, except where train operation is necessary, where the side-door car has certain advantages. But as train operation is limited to a comparatively few cities in this country and these few are mostly cities of the largest size, would it not seem logical, if a "Universal" car is to be secured, to adopt the general design which has proved most satisfactory in the greatest number of cities?

The end-door car, as described in your paper for single-car operation, would weigh less than 30,000 lb. when equipped with 25-hp. motors, which should be amply large for such a weight. This is 1000 lb. less than the center-door car, and it would have more adequate openings for the entrance and egress of passengers and be satisfactory in every other respect.

It occurs to me that the center-door car should only be considered where train operation is a necessity and should be made the exception rather than the standard for this reason.

TRANSPORTATION ENGINEER.

AMERICAN ASSOCIATION NEWS

Association Explains M. O. Resolution

PRESIDENT PARDEE of the American Electric Railway Association has issued a statement to the member companies explaining that many of the daily newspapers, in their report of the Nov. 1 conference said that the resolution favoring municipal ownership and offered by Mr. Mortimer was adopted. The statement says that this is not the case but that the resolution, on Mr. Mortimer's motion, was referred to the executive committee of the association and so far no action has been taken on it. Mr. Pardee's letter also refers to the resolution introduced at the conference by Mr. Gadsden and incloses a copy of it.

Mr. Gadsden Chairman of War Board

THOMAS N. McCARTER has resigned as chairman and also as a member of the American Electric Railway War Board. To the first position President Pardee of the American Electric Railway Association has appointed P. H. Gadsden, who has been resident director of the board, and to fill Mr. McCarter's place as a member he has appointed Henry G. Bradlee of Boston.

Bulletin on Labor Awards

THE American Electric Railway War Board has issued Bulletin No. 38, giving a brief review of the awards of the War Labor Board in ten electric railway cases handed down on Oct. 24.

M. J. Feron President Chicago Section

AT THE MEETING of company section No. 6, held on Nov. 5, M. J. Feron was elected president; L. C. Almy, vice-president; P. V. Lyon, secretary-treasurer; G. H. Pierce, librarian, and F. H. Bockman, director for a two-year term.

The feature of the meeting was a comprehensive talk, by Charles H. Jones, assistant electrical engineer, on the history and principles of operation of the automatic substation. Mr. Jones made effective use of lantern slides in illustrating his lecture. In addition to the formal part of the program there was banjo and piano music by performers from the Western Electric Company. Patriotic music was sung also, light refreshments were served and a general sociable spirit prevailed. The attendance was about one hundred members and guests.

General Association Notes

THE vacancy in the secretary-treasurership of the American Electric Railway Claims Association has been filled for the time being by the appointment of Miss Carrie A. Schwartz, Columbus Railway, Power & Light Company, Columbus, Ohio, as temporary secretary. This vacancy was caused by the death of B. B. Davis.

Frank Davis, Public Service Railway, Newark, N. J., has been elected secretary of the American Electric Railway Accountants' Association to succeed S. C. Rogers, resigned.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Election Results

Candidates Drag the Electric Railways into Politics by Making Fare Increases an Issue

Election results of Nov. 5 are regarded as having a bearing on the electric railways in the States of New York, New Jersey, Massachusetts and Rhode Island and in the cities of New York, Chicago and Seattle, to mention only some of the cases.

In New York State it seems that Mr. Smith, democrat, has been elected Governor over Mr. Whitman, the present incumbent. Mr. Smith regards the Public Service Commissions of the Empire State as failures. He also came out for municipal ownership. Mr. Smith will have a republican Legislature back of him, however. The accident on the Brooklyn Rapid Transit System, to which reference is made elsewhere in this issue, was seized upon by the backers of Mr. Smith for political capital, and they proclaimed that all the men "who have made our Public Service Commission merely a political machine" should be turned out. In this campaign Merton E. Lewis, attorney general of the State, and a republican, was quoted to the effect that "the chief object of its (Public Service Commission) members appears to be to promote Governor Whitman's political aspirations."

Both the Public Service Railway and the Trenton & Mercer County Traction Corporation fare increases were dragged into the New Jersey campaign. The regulatory commission there was named largely by Governor Edge, a candidate for Senator. The incubus for the fare increases on the lines mentioned was put upon the War Labor Board, which raised wages and is a federal administration creation, or upon Governor Edge, depending upon whether the candidate happened to be a democrat or a republican. There was no election for Governor in New Jersey. Both Governor Edge and Mr. Baird, republicans, were elected to the United States Senate. The new State Assembly in New Jersey will consist, according to early returns, of thirty-one republicans and twenty-nine democrats, a Democratic gain of fifteen. The complexion of the Senate remains unchanged. It will consist of fifteen republicans and six democrats.

In Massachusetts an effort to create a political issue out of recent electric railway fare increases failed utterly to interest the voters, and Richard H. Long, democratic candidate for the Governorship, was defeated by Lieutenant-Governor Calvin Coolidge, the republican nominee, by more than 9000 plurality. To the representative of the ELECTRIC RAILWAY JOURNAL in Boston Governor-Elect Coolidge said on Nov. 6 that the refusal of the electorate to regard the electric railway fare situation as an issue in this campaign may be taken as an indorsement of the policy of the State to keep such questions out of politics. He said: "The time has come when the public is sensible of the fact that transportation and other services cannot be furnished indefinitely at a cost below fair wages and other expenses including a fair return upon the legitimate investment which Massachusetts has always approved when issued. The efforts of the democratic candidate to raise a dust-cloud of misunderstanding based upon an assertion that Massachusetts electric railways stand in need of an investigation of their capitalization fell flat in the face of the well-known record of the Bay State regulation of such properties. Every dollar of capital issued by our electric railways is necessarily authorized by the Public Service Commission after careful investigation, and the work of this board is too well known in this field to require any extended demonstration.

"The defeat of Senator Weeks, however, is to be regretted. Although no public utility issue was directly involved in his candidacy for re-election, his retirement withdraws from the upper house of Congress one of its most able and useful members, whose record as a business man and statesman should have returned him to Washington in this vital period in the country's history."

In Rhode Island the democrats blamed the republicans for the fare increases on the lines of the Rhode Island Company, Providence. On the other hand Governor Beeckman, republican, who has been re-elected, declared that he was in favor of public control of the electric railways. The entire republican State ticket is reported to have been elected there.

In Chicago the franchise settlement ordinance was defeated. Reference to this vote is made elsewhere in this issue.

In Seattle the question of municipal ownership came up informally. Negotiations have been going on for the purchase of the railway lines of the Puget Sound Traction, Light & Power Company by the city. Arrangements were made for an "advisory election" to ascertain the sentiment of the people toward the proposal. By a vote of 26,701 to 7714 the electors favored the purchase, and immediate steps are promised for taking over the lines from the private company.

Staggered Hours Win Favor

New York Public Service Commission, Health Department and Merchants' Association All Favor Plan

With each day showing a more striking decrease in the number of new influenza cases and in the number of deaths from influenza and pneumonia in New York City the Department of Health announced on Nov. 2 that there would be no necessity for enforcing the emergency opening and closing order after Nov. 5. The department accordingly announced that so far as it was concerned manufacturing establishments, stores, offices, theaters, etc., could resume the hours which they observed before the Board of Health order went into effect. In this connection, Dr. Copeland, head of the department, made a statement in part as follows:

HEALTH DEPARTMENT HEAD SPEAKS

"I cannot let this opportunity pass without saying once again how earnestly I hope that a permanent arrangement along these lines (staggered hours) will be effected. Letters and personal messages received at this office since the emergency plan went into effect have convinced me that employers and employees, merchants, manufacturers, tradesmen, theatrical managers and the leading representatives of almost every class of trade and industry will co-operate gladly in any movement designed to arrange such a system. Officers of transportation companies have assured me that they believe such an arrangement would prove to be the solution of the peak problem.

"It seems to me that the theatrical managers of the city might well work out some co-operative system that could be put into effect, without waiting for other lines of business. Their hearty co-operation in support of the present plan has resulted in a notable decrease in the crowding of after-theater cars. Their evening schedules could be worked out without regard to any other lines of business, for their hours are such that there would be no conflict. This is one group which might get speedy results through independent action.

SYSTEM MUST GO FOR PRESENT

"So many factors enter into the problem of adjusting the business hours for the whole city that of necessity it will be some time before such a final plan is ready for adoption. I should like to retain the benefits of our temporary plan until that time comes, as I am certain it will come, but I cannot justify myself in asking longer that the citizens of this city submit themselves to the inconveniences and in many cases hardships which the enforcement of this order has entailed."

Charles B. Hubbell, chairman of the Public Service Commission, had announced previous to Dr. Copeland's statement that he intended to call a conference of theatrical managers, department store proprietors, manufacturers and heads of other industries, for the purpose of bringing about united action on the latter's suggestion that the present schedule of hours for opening and closing be continued.

According to C. A. Standfast, supervising inspector of the Public Service Commission, observations made since the Health Department order took effect showed a decrease of 5500 passengers on the West Side subway during the morning rush hours and of 2000 passengers during the evening rush hours; and on the East Side subway a decrease of 3000 passengers during the morning rush hours, and a decrease of 3000 passengers during the evening rush hours. The basis for the comparison was September traffic, no allowances being made for the seasonal increase in October or the decrease due to influenza.

An officer of the Merchants' Association of New York said:

"As a general thing, I think it would be wise to work out some plan for graduating the schedule, because it certainly has reduced congestion on the subway. But I do not think it has had any noticeable effect on business. Retail business has been very light for the last three weeks anyway, due to the epidemic. People in the suburbs are not shopping or going to the theater."

Terrible Accident on Brooklyn Rapid Transit Brighton Beach Line

More Than Ninety Persons Dead—Train Left Track at Curve—Inquiry to Determine Responsibility

The most disastrous accident in the history of electric railroading in New York State, and probably in the United States, occurred on the Brooklyn Rapid Transit Lines about 6.40 p.m. on Nov. 1 when a five-car outbound Brighton Beach train jumped the track. The point at which this occurred was in a short tunnel near Malbone Street, Brooklyn, where the tracks leave the elevated structure on Flatbush Avenue and before they emerge to the surface for the rest of the run to Coney Island. There is a sharp curve descending to the entrance of this tunnel, and the train left the track presumably because of excessive speed when descending the grade on this curve. The signs which warned the motorman of the train to proceed at a slow speed were disregarded.

The train was crowded with rush-hour passengers returning from New York. When the first car of the train jumped the rails about 30 ft. north of the entrance to the tunnel, it was followed by the second and third cars, and it was among the passengers of these that the greatest number of the casualties occurred. According to figures on Nov. 6, ninety-three persons were killed and some sixty persons were still in the hospital with serious injuries.

On Nov. 4 Mayor Hylan began a magisterial inquiry in Brooklyn to determine the responsibility for the disaster. The Mayor himself conducted the inquiry. Witnesses testified that the motorman of the wrecked train, Luciano, also known as A. E. Lewis, was not a regular motorman but a crew dispatcher whose duty it was to assign conductors and guards to their trains. He had operated trains on other divisions of the company's system but not on the Brighton Beach line. He volunteered for this service, when he learned that the line was short of motormen, and was accepted by the foreman in charge. The inquiry so far has disclosed no defects in the air-brake equipment of the train or in the track construction, but the train was behind its schedule.

The Mayor has urged the district attorney to prosecute vigorously the officials who were responsible "for placing a man without experience in charge of a train carrying hundreds of passengers." Those arrested up to Nov. 3 were the motorman Lewis, who escaped uninjured, the conductor of the train and a guard.

ACCIDENT FOLLOWS STRIKE

The accident occurred on the evening of the same day on which a strike among the motormen and motor switchmen of the rapid transit lines in Brooklyn was called by the Brotherhood of Locomotive Engineers. An inquiry into the labor situation among these men had been made by the War Labor Board, whose decision was published in full in last week's issue of this paper. Briefly, it declared that employees had the privilege of joining a union and should not be discharged for doing so, but that the company need not deal in labor matters with anyone except its own employees. It also recommended the reinstatement of twenty-nine men who, it believed, had been discharged because of their union affiliations or activities.

As stated last week in this paper, the company sent a copy of this decision to the departmental trustees who represent the motormen and switchmen on the B. R. T. Benefit Association Board, to which questions of discipline under the constitution are referred where such a hearing is requested by a discharged employee, and asked that the departmental trustees investigate carefully the facts as to the separation from employment of the men named. It added that if the trustees found that any injustice had been done, the employee would be reinstated and allowed back pay from the time of his dismissal. This letter, which was dated Oct. 29, was sent also to all motormen and motor switchmen on the system with a copy of the decision.

The strike called by the brotherhood began early Friday morning, the reason given being that the twenty-nine men mentioned were not immediately reinstated, but accounts differ as to the number of men who went out. After the accident, the company and its striking employees agreed that the whole matter would be submitted to the Public Service Commission for settlement, the twenty-nine men were reinstated and all the men went back to work.

On Nov. 4 Public Service Commissioner Whitney criticised the Mayor for opposing or failing to approve in the past of plans which would have allowed steel cars to be substituted for wood, and for publicly abusing the company yet, while he was a judge, recommending applicants for employment. The commissioner also said that the accident was the climax to labor difficulties in which neither side acted in accordance with either the letter or the spirit of the understanding between President Wilson and the great labor leaders of the country that there would not be strikes.

Des Moines Men Must Arbitrate

The decision of the War Labor Board on Oct, 23, referred to briefly in the ELECTRIC RAILWAY JOURNAL of Nov. 2, page 806, probably prevented a strike of the employees of the Des Moines (Iowa) City Railway called for Oct. 25. All the men had planned to go out except those in the shop and those on the Fort Des Moines line. Not until late on Oct. 24 was word received in Des Moines from the War Labor Board that the employees must submit to arbitration in accordance with the terms of the contract between the company and the union.

Emil G. Schmidt, president of the railway, refused to become a party to the hearing before the War Labor Board on the grounds that the contract between the company and its employees which has more than a year yet to run provided that disputes should be settled by local arbitration. He offered to submit the question to the newly-created Iowa Conciliation Board, but the men declined to agree to this. Mr. Schmidt announced upon receipt of the word from Washington that he was ready to name the company's arbiter at once.

The fate of the demand of the employees of the Des Moines City Railway for a material wage increase is now in the hands of the arbiters. The company chose B. S. Walker, a Des Moines real estate dealer and capitalist, as its arbiter, while the men chose C. C. Putnam, a lawyer. These two men agreed upon A. B. Funk, Iowa Industrial Commissioner, as the third member of the board.

Portland Wages Fixed

Oregon City Has Highest Wages So Far Awarded by National Board—Wages Date From July 1

The War Labor Board in a decision affecting the employees of the Portland Railway, Light & Power Company, Portland, Ore., has fixed the new scale of wages for motormen and conductors at 46 cents an hour for the first three months; 48 cents for the next nine months, and 50 cents thereafter. Other employees are to have their wages raised in the same proportion, but with the proviso that there shall be a minimum of 44 cents an hour. The decision provides, as in other cases, that the examiner shall apply the award, that the increase shall take effect as of July 1, and that the company shall have until Feb. 1 to make back payments.

48 Cents Highest Hitherto

In surface line cases heretofore decided the highest award was in several cities where 43, 46 and 48 cents an hour for each of the classes respectively were awarded. The reason for establishing a higher scale in Portland was not given specifically, but it is known that the board conducted a special inquiry upon the cost of living in Portland and concerning the scale of wages in other industries as compared with wages in other cities.

The decision also adopts and quotes the comments made in the Cleveland case to the effect that the increase in wages may necessitate an increase in fares, and that this phase of the situation is commended to the attention of public utility commissions and to Congress for such legislation as may be needed to relieve the public utility concerns from financial embarrassment.

It is estimated that the increase granted to platform men and those in the wage scale submitted for the railway department in Portland will add between $25,000 and $30,000 a month to railway wages alone.

The demand of the platform men was for an increase from 38 cents an hour to 53 cents an hour for men who had been in the employ of the company for less than one year; from 40 cents to 55 cents an hour for those in service for more than two years, and from 45 to 60 cents an hour for men employed more than two years.

Wages Date from July 1

Franklin T. Griffith, president of the company, said that the wage increase granted will date from July 1 last, the date of the wage agreement which was signed by representatives of the union and the officials of the company, subject to decision upon the question of wages by the War Labor Board.

April 1, 1917, the minimum wage paid platform men was 26 cents an hour and the maximum 31 cents. June 1, 1917, this was increased to 29 cents and 34 cents, respectively. On October 1, 1917, the agreement as to wages and working conditions became effective which expired June 30, with a scale of 38, 40 and 45 cents an hour, according to length of service.

Under the decision of the War Labor Board the increase granted is 53 1-3 per cent of the increase asked by the union for the platform men employed under the minimum or intermediate schedule, and 33 1-3 per cent increase for those in maximum grade. However, the board materially shortens the period within the minimum wage by reducing the period of service during which it shall apply from one year to three months, and the period for attaining the highest wage from two years to nine months. Thus, all men who have been in service for more than one year will get the maximum wage.

It was reported from Portland on Oct. 26 that until further information is received from the War Labor Board as to application of the increases authorized for other employees, it is impossible to determine just what the increase may be for other branches, including the maintenance department and electrical workers. The scale embodies a long list of men in a diversity of work of expert character and wages ranging from 45 cents to $1 an hour.

Respite for Cleveland Women Employees

Secretary of Labor Wilson has extended from Nov. 1 to Dec. 1 the time for removing women conductors from the cars of the Cleveland (Ohio) Railway. In a letter to A. L. Faulkner, federal labor mediator for the Cleveland district, Mr. Wilson said the new order was issued with a view to making a blanket ruling covering the necessity for employing women in all industries as a war measure.

In the meantime Attorney Florence Allen, representing the women conductors' association, has filed with William H. Taft, joint chairman of the National War Labor Board, formal complaint, asking that the Cleveland Railway and the Amalgamated Association show cause why the women should be removed from the cars.

John J. Stanley, president of the railway, is pleased with the step taken and additional women are now being employed in anticipation of a favorable decision within a short time. Mr. Stanley said that women must be employed if the road was to give the necessary service.

A conference of representatives of the different factions interested in the question of employing women conductors on the cars at Cleveland was scheduled to take place in Washington with the National War Labor Board on Nov. 8. Miss Rose Moriority and Attorney Florence Allen were selected by the women to look after the women's interests, while John J. Stanley, president, and H. E. Crawford, attorney, were to appear for the company.

Apparently the women felt that this conference was preliminary to the dismissal of the order issued by the Federal Labor Commissioner barring them from the cars as conductors.

Chicago Franchise Defeated

Politicians and Short-Sighted Theorists and Labor Element Turn Down Service-at-Cost Plan

Chicago's much discussed service-at-cost plan was rejected by the voters on Nov. 5 at a public referendum. Politicians desirous of keeping the traction question alive for the next mayoralty campaign and the union labor element fearing an increase in fare are credited with having swung the vote against the ordinance, which proposed turning over the surface and elevated properties to public trustees for operation at cost.

With no alternative proposition in view, the chances are that the companies will continue operation under their present franchises—the surface lines for nine years more and the elevated for about twenty years—and the people must be content with limited facilities. The biggest loss to the community will be the failure to get subways and extensions of elevated lines. The plans contemplated the expenditure of about $300,000,000 for transportation improvement, one third of this to be used in the first six years.

Election day marked the close of as bitter a controversy as has been waged in Chicago in many years. The shutting off of public gatherings because of the influenza epidemic forced the advocates and the opponents of the measure to carry on their campaign largely by printed matter and through the use of bill boards. The franchise boosters had the advantage of support from practically all the local newspapers. Allied on the side of the ordinance were the most representative civic organizations and conservative business men and women. The opposition was composed largely of politicians, municipal ownership theorists and a considerable element of organized labor.

While the principal claim of the opposition was that the new ordinance would mean increased fares, it also insisted that the initial purchase price as fixed by the ordinance was excessive; that the proposed rate of return was too high; that municipal ownership would be retarded if not made impossible, and that no settlement should be made while so many voters are fighting for their country. On behalf of the franchise it was stated that a fair purchase price and a fair rate of return had been fixed after long discussion; that municipal ownership was provided for in the measure, and that the plan to put a great amount of money into transportation betterments would be of benefit to the city and to the returning soldiers and sailors.

The fare situation will now engage the attention of the transportation companies. The elevated roads have already submitted their petition for a 7-cent fare to the Public Utilities Commission, and a decision is expected any day. The Chicago & West Towns Railway on the day following election received notice that a 7-cent fare had been approved for that system. Three other cities in Illinois had previously been allowed to charge 7 cents, and ten cities a 6-cent rate. The outlook is said to be bright for getting relief from the commission, and a petition from the Chicago Surface Lines may be filed at any time.

Research Council Wants Information on Laboratories

The Engineering Foundation and the National Research Council are co-operating in compiling information about the research laboratories of the country and in promoting industrial research. To do this they request all electric railway and other laboratories which have not yet done so to send to the New York office a brief statement covering equipment, kind of research work, number and classification of men employed; name of person in charge, and research time—all, half, one-third, or other approximation.

Would Restrain Amalgamated

Action was brought by the Indianapolis Traction & Terminal Company in the United States District Court in Indianapolis, Ind., on Nov. 2, to enjoin officers of Local No. 645 and organizers of the Amalgamated Association from inducing or persuading employees of the Indianapolis Traction & Terminal Company to strike. A ballot was being taken by the union officials on Nov. 2, following the meeting that was held at 1 a.m.

Judge Anderson ordered the United States Marshal to serve subpoenas on the various union officials and the members of the Board of Safety of the city of Indianapolis and superintendent of the Police Department, who are made co-defendants. The hearing was set for Nov. 4.

At this hearing the case was continued until Nov. 8, when the issuing of a restraining order will be considered by the court. An attempt had been made to compel the Indianapolis Traction & Terminal Company to make a contract with the Amalgamated Association. This the company declined to do, as it already had a working contract with its trainmen.

The wages of the men were increased by the company on Oct. 13, following an order of the Public Service Commission establishing a 5-cent fare in the city of Indianapolis, which also called for a 50 per cent increase in the wage budget that would have to be allowed by the company.

The employees were represented by an attorney during the hearing of the fare case, and took part in the hearing, and had expressed no dissatisfaction to the Public Service Commission over the increased wages granted them. They have since contended that the increase was insufficient, and endeavored to compel the company to grant them further substantial increases, and in addition make a contract with the Amalgamated Association.

News Notes

Savannah Men Strike.—The trainmen in the employ of the Savannah (Ga.) Electric Company went on strike on Nov. 1. Both wages and recognition of the union are said to be the issues involved.

New Fender Presented.—A new style of fender was presented before the Public Service Commission of Massachusetts, on Oct. 29, by R. B. Stearns, vice-president of the Bay State Street Railway. C. D. Emmons, vice-president of the Boston & Worcester Street Railway, thought the new type of fender was preferable to the old one. There was no opposition to the fender, and the hearing was closed.

New Fuel Administrator for Virginia.—R. H. Angell, Roanoke, has been appointed by United States Fuel Administrator H. A. Garfield to be Federal Fuel Administrator for Virginia, in the place of H. F. Byrd, who has entered the military service. Mr. Angell is a well-known banker and business man of Roanoke. At the time of his present appointment he was local fuel administrator at Roanoke.

New Co-operative Plan in Effect.—The general committee of the new co-operative association of the Philadelphia (Pa.) Rapid Transit Company as a result of its first meeting on Oct. 21 has submitted to all members a statement showing that of the 7809 employees eligible for membership the applications of 6789, or more than 86 per cent, were on file. The co-operative plan of August, 1918, which has been described previously in the ELECTRIC RAILWAY JOURNAL, has therefore been declared operative and in full effect.

Coal Reserve for New York Companies.—The Interborough Rapid Transit Company, New York, N. Y., acting in co-operation with the New York State Fuel Administration, has arranged for the storing of 100,000 tons of bituminous steam coal to anticipate any possible delay in securing fuel through weather conditions. This supply of 100,000 tons represents approximately sixty days consumption by the company. Similar provisions have been made by the Brooklyn Rapid Transit and other public service companies.

Staggered Hours for Cleveland.—In order to enable the Cleveland (Ohio) Railway to aid in stamping out influenza the Health Department there is regulating the hours of closing commercial houses, office buildings and some classes of factories. All office buildings are required to close at 4.30 p. m.; cloak and suit factories and wholesale houses, 4.45; one-line houses, such as men's and women's exclusive clothing stores, book stores and shoe stores, 5; department stores, 5.30; groceries and hardware stores, 6, and restaurants and saloons, 8 o'clock.

St. Louis Settlement Ordinance Killed.—Mayor Kiel of St. Louis, Mo., has signed the ordinance revoking the franchise settlement ordinance of the United Railways. This action followed the recent rejection of the settlement measure by the railway. The repeal of the ordinance was advised by City Counselor Daues. The matter of a new franchise for the company has been before the city administration of St. Louis for two years. The reasons for the rejection of the franchise settlement measure by the company were reviewed at length in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 711.

Milwaukee Electrification Progress.—H. F. Byram, federal director of the Chicago, Milwaukee & St. Paul Railway, recently announced after an inspection of the line that the first electric train over the road will arrive in Seattle on July 1 of next year, unless unforeseen delays occur. The electrification begins at Othello, in eastern Washington, and ends at Tacoma, covering a distance of 220 miles. With the 440-mile electric system through the Rocky Mountains, the Chicago Milwaukee & St. Paul Railroad will have 660 miles of electric railroad.

Must Grant Common User Rights.—A telegram received in Seattle, Wash., from the United States Shipping Board, Emergency Fleet Corporation, states that common user rights on the Seattle municipal elevated line must be granted as a condition of the government's loan of $339,000 for the completion of the elevated and the purchase of new cars. About two months ago arrangements were made for the loan to the city, and it was understood at that time that common user rights would be required. The deal for the purchase of the Puget Sound Traction, Light & Power Company's railway system was under way, however, and it was thought that this would be completed in a few weeks.

Official New Orleans Award Announced.—The press dispatches of the award of the War Labor Board to the employees of the New Orleans Railway & Light Company, New Orleans, La., quoted in the ELECTRIC RAILWAY JOURNAL for Nov. 2, page 808, are the same as the official award. The company has promised to pay the employees their back pay at the award of the War Labor Board. A conference was held on Oct. 31 between Nelson H. Brown, general manager of the railway, and the representatives of the carmen's union, at which conference no agreement was reached. At this conference President Stadler of the union informed Mr. Brown that the gas and electric employees understand the War Labor Board's decision to mean that the prevailing union scale for carpenters and mechanics should be paid the railway's employees.

Financial and Corporate

Buffalo Interest in Default

International Railway Unable to Meet Payment Due Nov. 1 on Its Refunding and Improvement Bonds

The holders of the 5 per cent refunding and improvement bonds of the International Railway, Buffalo, N. Y., have been formally notified that the company is unable to pay the interest due on Nov. 1. The inability to meet obligations is laid to labor troubles and wage increases. E. G. Connette, president of the company, has issued the following statement to the bondholders of the company.

TROUBLE STARTED LAST MAY

"In May last our employees belonging to the union gave us notice that unless their wages were increased they would suspend work on June 15. June 14 the Mayor and Council of Buffalo agreed to increase the rate of fare and we granted the increase of wages demanded by the men, which amounted to about $776,000 a year. The courts afterward decided that the resolution adopted by the Mayor and Council granting an increased rate of fare was subject to referendum under the city charter and an election was called for Aug 20.

"In the meantime the War Labor Board in Washington fixed a scale of wages which made an additional increase in the payroll of $800,000 a year, and this increase was subject to the company securing an increase in the rate of fare. On Aug. 20 the voters, by a large majority, repudiated the action of the Mayor and Council.

"The union then demanded the War Labor Board rates notwithstanding the provision in the award making it dependent upon an increased fare, and as the company had not received an increased fare and could not pay the rates established by the War Labor Board the men suspended work and the strike continued for twenty-four days, ending on Oct. 26, when the City Council passed another resolution providing for a temporary increase in the rate of fare and reference of the matter for final determination to the Public Service Commission. On the strength of this action the company granted the higher rate of wages. This resolution is also subject to a referendum by the voters, but we are hopeful that it can be avoided."

$16,735,000 OF BONDS OUTSTANDING

The bonds on which interest payment has been deferred mature on Nov. 1. 1962, On Dec. 31 last there were $16,735,000 of the bonds outstanding.

The developments referred to by Mr. Connette in connection with the affairs of the company have been reviewed at length from time to time in the ELECTRIC RAILWAY JOURNAL. The plan to organize the holders of the 4 per cent bonds of the company has also been referred to previously in this paper.

Chattanooga Can't Meet Interest

The management of the Chattanooga Railway & Light Company, Chattanooga, Tenn., has advised the holders of the Chattanooga Railways first consolidated mortgage bonds that the earnings of the railway which are covered by the mortgage securing these bonds have not been sufficient to furnish funds to pay the coupons due on Nov. 1. The letter says in part:

"Immediate reason for this difficulty is the constantly mounting costs of labor and materials with a fixed rate of income which, up to date, it has been impossible to increase. The rate of fare is fixed at 5 cents by ordinance of the city of Chattanooga, and the City Commissioners have not as yet consented to any increase. Several advances have already been made in wages, and on account of recent awards by the War Labor Board on other similar properties further advances must be made.

"These bonds are not assumed or guaranteed by the Chattanooga Railway & Light Company. The property will be operated as heretofore for the best interest of the bondholders unless and until the bondholders take such action as they may decide necessary to protect their interests."

Cleveland Results Improve

The new rate of fare in Cleveland, Ohio, is bringing results. Although the interest fund reached a very low mark some months ago, it is now within $104,298 of the maximum of $700,000. When that is reached, it will mean a drop in the rate of fare or the elimination of the 1 cent for transfers.

The operating report for September shows that $81,998 was added to the interest fund. Should the expense of operation not increase too much with the approach of cold weather, it is probable that the turning point will be reached within two months more.

Passenger revenues for September amounted to $1,129,026. There was a decrease of 7.11 per cent in the traffic and a reduction in car mileage of 2.48 per cent. Fielder Sanders, Street Railway Commissioner, stated that inability to secure men for car crews was responsible for the lower mileage record.

Undoubtedly the epidemic of influenza caused a loss of passenger revenue in October. Retail stores reported business dull during most of the month, due to the desire of the people to keep out of crowds as much as possible.

Poor Results in St. Louis

President McCulloch of the United Railways Makes It Plain Wherein the Six-Cent Fare Has Failed

Richard McCulloch, president of the United Railways, St. Louis, Mo., in a statement issued recently, said that but for the 6-cent fare the company would have failed to earn its interest charges for September by $81,753. Another section of the statement sets forth that the "net earnings of the company for the nine months of the current year to date were $1,553,911, or about 2.5 per cent on the valuation of $60,000,000." Further, the president said that for the nine months of the year to date the company failed to earn its interest charges and "accumulated a deficit of $347,876."

$908,417 DECREASE FOR NINE MONTHS

As compared with last year, President McCulloch said the decrease in the amount available for the payment of interest charges for the nine months was $908,417.

In a statistical analysis of the company's operating revenues, expenses and taxes, President McCulloch said:

"Operating revenues of the United Railways for the month of September were $1,228,261, an increase of $139,510 over September of last year, and a decrease of about $21,000 compared with August of this year. Operating expenses and taxes were $980,365, an increase of $152,877. The increase in expenses was, accordingly, about $13,300 more than the increase in revenues.

"Included in revenues is $12,500, the amount collected from the additional 1 cent being charged in the city of St. Louis. This amount is nearly equal to the total increase in revenues experienced by the company.

"If the company were not allowed the increase in revenues resulting from the 6-cent fare it would have failed to earn its interest charges during September by $81,753. Operating expenses for the month of September did not include any back wages, as did the month of August.

NUMBER OF RIDERS REDUCED

"The increase in the fare from 5 to 6 cents has reduced the number of rides on the city lines. Anticipated increases in operating expenses will make necessary the collection of more revenues from passengers. The railway has filed a petition with the Public Service Commission asking increased revenues.

"The undesirability of still further increasing the rate of fare has been pointed out and the company has recommended the restoration of the 5-cent fare and the installation of a distance tariff, so that the long-haul passengers may be permitted to pay more that the fares of the short-haul passengers may be reduced."

President McCulloch's opinion of the zone system, as expressed in a communication to the Missouri Commission, was noted in the issue of Sept. 28.

Portland Earnings Rise

1917 Earning Basis Would Be Gratifying if Costs Did Not Continue to Rise

The gross earnings of the Portland Railway, Light & Power Company, Portland, Md., for the calendar year 1917 showed an increase of $540,400 or 9.85 per cent over those of the preceding years. This gain was offset by the rise of $558,932 or 22.16 per cent in operating expenses.

The operating expenses for 1917, however, included charges of $180,706 for the depreciation reserve. There was no corresponding operating charge in 1916, all the depreciation reserve prior to 1917 having been appropriated from surplus. On the basis of 1916 accounting, the net earnings for 1917 would show a gain of $182,767 or 7.4 per cent.

The taxes showed the slight decrease of $20,593 or 0.63 per cent, and owing mostly to a reduction of $83,951 or 3.93 per cent in interest charges, the deductions fell off $26,206 or 1.20 per cent. The final result was a gain of $28,267 or 10.60 per cent in surplus.

The gross earnings of the company during the first six months of 1917 increased $181,083 and during the second six months $359,317. The latter rate of increase, it is said, was continued and improved during the early months of 1918, and if it were not for the great increases in operating costs, principally labor, the basis of gross earnings would be gratifying. It was estimated that the operating expenses during the year 1918 will advance about $1,000,000.

Additions and betterments during 1917 involved the expenditure of $306,000, after deductions for property sold and retired. Maintenance and depreciation reserves were strengthened to the extent of $160,388, the balance on Dec. 31, 1917, being $1,154,699.

INCOME STATEMENT OF PORTLAND RAILWAY, LIGHT & POWER COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	$6,023,509	100.0	$5,483,109	100.0
Operating expenses	$3,080,538	51.2	$2,521,606	46.0
Taxes	496,055	8.2	516,648	9.4
Total	$3,576,593	59.4	$3,038,254	55.4
Net earnings	$2,446,916	40.6	$2,444,855	44.6
Interest	$2,047,336	34.0	$2,131,287	38.8
Bridge rentals	104,715	1.7	46,970	0.9
Total	$2,152,051	35.7	$2,178,257	39.7
Surplus	$294,865	4.9	$266,598	4.9

Indianapolis Needs Relief

Meetings of the newly organized board of directors of the Indianapolis Traction & Terminal Company, which now includes the three directors who were nominated by the Governor of Indiana, the Mayor of Indianapolis and the Indianapolis Chamber of Commerce, were held recently and it was shown that the loss of revenue resulting from the influenza epidemic amounted to approximately $1,000 a day and that a decrease in revenue has resulted in spite of the new 5 cent fare which was awarded by the Public Service Commission. In consequence a plea for a modification of interpretation of the order of the commission was made on Nov. 1 by Robert I. Todd, president, and Ferdinand Winter, general counsel for the Indianapolis Traction & Terminal Company. It was submitted to the commission that because of the language used in the order it was impossible for the company to secure the necessary temporary financial relief to meet the payment of notes and taxes coming due on Nov. 1.

The chairman of the commission appointed Commissioners Haynes and Corr to draw up an interpretation of the order which was to be considered further. The commissioners indicated, however, that they were willing to make an interpretation to the effect that there was no intention in the original order to repudiate any of the debts of the company, the idea of the commission being that any large notes should, if possible, be renewed, so that funds secured from increased revenue might be used for current indebtedness and necessary improvements in service.

Boston Results Disappointing

In the three months the 7-cent fare has been in effect on the Boston (Mass.) Elevated Railway gross receipts have increased $602,291 over the same three months a year ago. This is a gain of only about 13 per cent, while the fare advance from 5 cents to 7 cents is equal to a 40 per cent increase.

Changes in gross receipts by months since January, 1917, follow:

	1918		1917	
	Inc.	Per Cent	Inc.	Per Cent
January	*$96,269	*5.94	$122,000	8.2
February	*69,832	*4.86	31,000	2.25
March	*40,000	*2.5	86,500	5.56
April	8,000	0.5	37,000	2.33
May	13,000	0.8	*11,500	*0.69
June	*44,000	*2.08	38,000	2.5
July	*46,000	*3.00	70,000	4.6
August	369,000	23.81	40,580	2.69
September	184,500	12.00	13,400	.88
October	48,791	2.97	23,000	1.42
November	......	.....	20,500	1.4
December	......	.....	*61,800	*3.6

*Decrease.

August was the first 7-cent fare month.

Middle West Progressing

Total Income of Holding Company Increased $131,141 and Net Showed Slight Advance

The comparative combined earnings of the various subsidiaries of the Middle West Utilities Company, Chicago, Ill., for the years ended April 30, 1917 and 1918, follows:

	1918	1917
Gross earnings	$12,157,121	$9,620,216
Operating expenses and taxes	8,562,689	6,117,460
Net earnings	$3,594,432	$3,502,756
Rentals on leased properties	222,909	205,940
Balance	$3,371,523	$3,296,816
Proportion of net earnings from construction and operating companies, not previously reported	76,574	....
Total	$3,448,097	$3,296,816
Interest to outside holders	1,715,189	1,485,756
Amortization of discount	77,167	86,557
Dividends and proportion of undistributed earnings to outside holders	389,971	294,829
Earnings accruing to holding company	$1,265,770	$1,479,674

The increase in the gross earnings of the subsidiary companies during the last fiscal year was $2,536,905. For the companies included in last year's report, the gain was $1,137,224 or 11.8 per cent.

During the last year the subsidiaries secured rate increases at the rate of $540,000 a year. As of April, the last month of the year, only $115,000 of the increases had actually been realized, inasmuch as the preponderance of rate awards was for the latter part of the year. The increases now secured and applied for total more than $1,100,000 a year.

Street and interurban railways operated by the Middle West Utilities Company now have 209 miles of track and provide 12.8 per cent of the aggregate annual gross earnings.

The total income of the holding company for 1917-1918 was $1,955,210 as compared to $1,824,069 for the year previous, and the net was $1,041,601 as compared to $1,026,585. The surplus balance on April 30, 1918, was $1,387,565.

Shall Lessee or Lessor Pay?

The leases of the subsidiary lines of the Philadelphia (Pa.) Rapid Transit Company came up for judicial interpretation on Oct. 30 before Judges McMichael, Ferguson and Davis in Common Pleas Court No. 3 at Philadelphia. They were asked to determine whether the Philadelphia Rapid Transit Company or the underlying lines shall pay the excess profits tax imposed by the government. After the matter was presented to the court, decision was reserved.

The question is one of an interpretation of the leases. It is contended by the Philadelphia Rapid Transit Company that if it ever had been contemplated that the tax now imposed would come up the leases never would have been made. On the other hand, the subsidiaries state they turned over all their franchises, rights, property, and gave the lessees the right to do business and derive whatever profits they earned, and under the lease a definite compensation was fixed, which should not be diminished by "any taxes that might be assessable under the law or that might thereafter be lawfully assessed."

Financial News Notes

Ohio Road Wants to Issue Bonds.—The Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, has asked authority from the Public Utilities Commission to issue and sell $485,000 of 6 per cent bonds to provide funds for making improvements in its properties and retiring a bond issue of $194,000 of a company which was absorbed by it.

Springfield Exchanges 5's for 7's.—The Springfield Railway & Light Company, Springfield, Mo., has exchanged three-year 7 per cent gold notes of a like face amount, dated Feb. 1, 1918, for $265,000 of 5 per cent two-year gold notes. The remaining $22,000 was taken up with cash on Nov. 1, at the office of the trustee, the Rhode Island Hospital Trust Company, Providence, R. I.

Common Stock Dividends Suspended.—E. C. Ryder, president of the Bangor Railway & Electric Company, Bangor, Me., in a letter to the holders of common stock says: "On account of the abnormal conditions existing at the present time, the directors deem it advisable for the present to suspend payment of dividends on the common stock. Stockholders may rest assured that payment of dividends on the common stock will be resumed as soon as conditions warrant."

Suit for Receivers Heard.—The suit of John W. Seaman et al, versus the United Railways, St. Louis, Mo., which seeks to have a receiver appointed for the company in the United States District Court, was argued recently before Judge Dyer on a motion to dismiss made by defendants because of alleged charges of fraud in the petition and because of the statute of limitations. The motion alleged that the charges of fraud were not upheld by facts. Charles W. Bates, Lambert E. Walther and Ephrim Caplin appeared for the petitioners, and A. D. Nortoni argued for the railway.

Standard Issues New Notes.—A syndicate headed by H. M. Byllesby & Company, New York, N. Y., and Bonbright & Company, Inc., Chicago, Ill., is bringing out a new issue of $750,000 of Standard Gas & Electric Company three-year 7 per cent collateral trust gold notes, due Sept. 1, 1921, at a price to yield 8 per cent. The notes are a direct obligation of the company secured by the pledge of securities of subsidiary companies, consisting of $750,000 bonds and notes, $750,000 preferred stocks and $500,000 common stocks, all dividend paying and having an appraised value of $1,800,000.

Quebec Net Cut in Half.—The gross earnings from operation of the Quebec Railway, Light, Heat & Power Company, Ltd., Quebec, Canada, for the year ended June 30, 1918, were $1,797,852 as compared with $1,832,031 in 1917, a decrease of $34,179. After the addition of miscellaneous income of $230,088, the revenue from all sources amounted to $2,027,941, a decrease of $34,951. The operating and maintenance expenses were $1,235,724 as compared with $1,155,969 in 1917, an increase of $79,755. The fixed charges and taxes amounted to $696,910, leaving a net surplus of $95,307. This compares with a net surplus of $200,587 for the year preceding. The total credit to surplus account on June 30, 1918, was $753,091. The maintenance expenses in the last year totaled $243,225, as compared to $226,366 for the year preceding.

Porto Rico Net Drops.—The gross earnings of the Porto Rico Railways, Ltd., San Juan, P. R., for the twelve months ended Dec. 31, 1917, amounted to $902,392, an increase of $73,336 as compared to those of the preceding year. Owing to a heavy increase in operating expenses, however, and a decline in other income, the gross income at $401,211 represented a decrease of $20,761. Higher labor and material costs, a drought necessitating an added expense of $15,000 for steam-plant operation, and unabated jitney competition all were factors leading to the decline in gross income. After provision for interest charges and preferred dividends, the surplus for 1917 amounted to $132,794. With the addition of the 1916 balance of $90,289 and the transfer of $100,000 to the depreciation reserve, the balance carried forward was $123,084. Expenditures for capital purposes, chiefly for lighting extensions to the company's lines totaled $64,004 in 1917.

Electric Railway Monthly Earnings

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$212,237	*$173,699	$38,538	$35,825	$2,713
1m., Aug., '17	217,103	*142,877	74,226	35,700	38,526
8m., Aug., '18	1,391,769	*1,195,478	196,291	286,752	†90,461
8m., Aug., '17	1,435,994	*1,027,928	408,066	286,086	121,980

BATON ROUGE (LA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$23,413	*$12,017	$11,396	$3,908	$7,488
1m., Aug., '17	18,122	*9,772	8,350	3,606	4,744
12m., Aug., '18	252,385	*130,211	122,174	45,084	77,090
12m., Aug., '17	225,492	*110,971	114,521	42,432	72,089

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$12,290	*$11,620	$670	$1,439	†$769
1m., Aug., '17	15,509	*11,605	3,904	1,253	2,651
12m., Aug., '18	111,736	*121,741	†10,005	16,256	†26,261
12m., Aug., '17	125,442	*121,453	3,989	14,073	†10,084

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$44,716	*$33,746	$10,970	$6,536	$4,434
1m., Aug., '17	39,683	*26,667	13,016	6,552	6,464
12m., Aug., '18	495,112	*356,037	139,075	78,383	60,692
12m., Aug., '17	437,604	*266,661	170,943	78,718	92,225

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$52,035	*$33,779	$18,256	$11,777	$6,479
1m., Aug., '17	56,717	*31,183	25,534	11,574	13,960
8m., Aug., '18	365,884	*245,663	120,221	92,487	27,734
8m., Aug., '17	356,811	*217,283	139,528	93,581	45,946

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$91,723	*$51,986	$39,737	$32,983	$6,754
1m., Aug., '17	92,681	*36,376	56,305	31,075	25,230
12m., Aug., '18	1,187,751	*490,547	697,204	387,280	309,924
12m., Aug., '17	1,023,721	*388,162	635,559	347,148	288,411

EL PASO (TEX.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$99,022	*$74,079	$24,943	$6,935	$18,007
1m., Aug., '17	105,941	*71,710	34,231	6,339	27,892
12m., Aug., '18	1,261,931	*839,280	422,651	79,851	342,800
12m., Aug., '17	1,265,299	*760,604	504,695	61,913	442,782

GALVESTON-HOUSTON ELECTRIC COMPANY, GALVESTON, TEX.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$254,353	*$164,566	$89,787	$39,147	$50,640
1m., Aug., '17	183,597	*116,715	66,882	37,907	28,975
12m., Aug., '18	2,532,790	*1,647,322	885,468	467,891	417,577
12m., Aug., '17	1,976,953	*1,313,944	663,009	444,620	218,389

HOUGHTON COUNTY TRACTION COMPANY, HOUGHTON, MICH.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$27,543	*$18,162	$9,381	$5,007	$4,374
1m., Aug., '17	29,133	*19,243	9,890	5,096	4,794
12m., Aug., '18	333,468	*219,849	113,619	60,410	53,209
12m., Aug., '17	339,876	*203,514	136,362	61,950	74,412

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$3,031,057	*$2,182,160	$848,897	$1,407,376	§‡†$70,763
1m., Aug., '17	2,925,035	*1,697,912	1,227,123	1,068,770	§‡449,195
2m., Aug., '18	6,259,046	*4,262,670	1,996,376	2,769,150	§‡217,268
2m., Aug., '17	5,836,337	*3,391,046	2,445,291	2,133,753	§‡900,983

JACKSONVILLE (FLA.) TRACTION COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$84,254	*$64,175	$20,079	$16,586	$3,493
1m., Aug., '17	53,176	*36,982	16,194	15,815	379
12m., Aug., '18	830,038	*589,193	240,845	194,627	46,218
12m., Aug., '17	663,524	*444,714	218,810	187,483	31,327

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$238,586	*$160,234	$78,352	$36,290	$42,062
1m., Aug., '17	180,006	*114,431	65,575	35,174	30,400
8m., Aug., '18	1,417,697	*1,011,951	405,746	289,402	116,344
8m., Aug., '17	1,165,162	*785,736	379,426	276,338	103,087

* Includes taxes. † Deficit. ‡ Includes non-operating income. § Includes accruals under rapid transit contracts with city payable from future earnings.

Traffic and Transportation

Relief for Winnipeg

Straight Five-Cent Fare Temporarily, Pending Full Investigation by the Public Utilities Commissioner

Within two weeks of presenting a petition to the City Council of Winnipeg, Man., for relief, the Winnipeg Electric Railway was permitted to increase fares on all city lines. The relief given is only temporary and is preliminary to a full investigation by the Public Utilities Commissioner, the results of which will determine whether the temporary increase will be confirmed, reduced or further enhanced.

The new scale of fares, which became effective on Nov. 1, is as follows: Cash fare, 5 cents; tickets (good at all times) five for 25 cents; workmen's tickets (good from 6 to 8 a. m., 5 to 6.30 p. m. week days and all day Sundays), six for 25 cents; tickets for children under sixteen years, seven for 25 cents.

The rates charged prior to Nov. 1 were: Six tickets for 25 cents; eight workmen's tickets for 25 cents; ten children's tickets for 25 cents.

The necessity for applying for relief had been evident for some time, and the general public had been educated to this point by means of advertising and the company's bulletin which is distributed on the cars every two weeks. The application for relief, however, was hastened by the award of a board of conciliation which investigated demands for increased wages from motormen and conductors, and allowed increases representing an addition to the company's payroll of $362,000 annually. A. W. McLimont, general manager of the company, presented the petition for relief to the City Council. The petition asked for a 6-cent fare, seven children's tickets for a quarter, all other fares to be abolished. The Council debated the application for three days and the friendly spirit which pervaded the discussion was very marked. Mr. McLimont attended all the sessions and discussed the company's difficulties very frankly.

Practically each member of the Council admitted the company had established a *prima facie* case for increased revenue, and expressed the opinion that immediate assistance must be given. Upon the advice of the city solicitor, however, a motion granting a temporary increase of fares was not put, but another motion was presented and carried, the intent of which, it was explained, would compel the company to apply immediately to the Public Utilities Commissioner for relief. A committee of five members of the Council, together with the solicitor, was appointed to appear with the company before the commissioner and support the application for an interim order as outlined herein, pending investigation of the application for permanent relief.

The Public Utilities Commissioner expressed pleasure at the fact that the city and the company had got together and had agreed as to the nature of the order, which he promulgated forthwith. Meanwhile the original petition for permanent relief is still before the commissioner, and he will open his inquiry on Nov. 11.

Sixty-One Fare Changes

American Association List Notes Increases from Approximately Sept. 15 to Oct. 15

Between the closing of the last preceding list of fare increases on Sept. 15 (ELECTRIC RAILWAY JOURNAL of Sept. 28, page 593) and about the middle of October, sixty-one additional fare revisions upward have been made throughout the United States and Canada. More than 17,500,000 people in 301 cities are paying increased fares. These data have been compiled by the information bureau of the American Electric Railway Association.

Most of the new increases, as the accompanying list shows, are from 5 to 6 cents, the companies making such a change numbering twenty. Thirteen railways have increased their unit fare from 5 to 7 cents with a 1-cent charge for transfers, and eight have raised their fares from 5 to 7 cents. Four cities having zone systems have increased their rate from 5 to 6 cents, and two cities have made zone changes. The detailed list follows:

DETAILS OF THE AWARDS COVERING THE PERIOD FROM SEPT. 15 TO OCT. 15.

Name	Population
Cities in Which a 10-Cent Fare Is Being Charged:	
Levis, Can.	22,000
Cities in Which an 8-Cent Fare Is Being Charged:	
Manchester, N. H.	78,283
Cities in Which a 15-Cent Fare Is Charged for Owl Service and a 6-Cent Fare at Other Times:	
[1]Montreal, Can.	600,000
Cities in Which a 10-Cent Fare Is Charged for Owl Service and a 7-Cent Fare at Other Times:	
[2]Edmonton, Can. (municipal lines)	70,000
Cities in Which a 7-Cent Fare Plus 1 Cent for Transfer Is Being Charged (all in New Jersey):	
[3]Newark	408,984
[3]Jersey City	306,345
[3]Paterson	138,443
[3]Camden	106,233
[3]Elizabeth	86,690
[3]Hoboken	77,214
[3]Passaic	71,714
[3]Bayonne	69,893
[3]Perth Amboy	41,815
[3]Orange	33,080
[3]Plainfield	25,805
[3]New Brunswick	25,512
[3]Hackensack	16,945
[3]Rahway	10,219
Cities in Which a 7-Cent Fare Is Being Charged:	
[4]Reading, Pa.	109,381
[4]Paducah, Ky.	28,842
[5]Hagerstown, Md.	25,679
Galesburg, Ill.	24,276
Lebanon, Pa.	20,779
Greenville, S. C.	18,181
Anderson, S. C.	12,266
[5]Frederick, Md.	11,112
Newtonville, Mass.	4,850
Cities Having a 6-Cent Central Zone With Additional Charge for Rides Outside Thereof:	
[6]Springfield, Mass.	105,942
[7]Portland, Me.	63,867
[6]Chicopee, Mass.	29,319
[6]Westfield, Mass.	18,391
Maynard, Mass.	6,890
Cities in Which a 6-Cent Fare Is Being Charged:	
Baltimore, Md.	589,631
New Orleans, La.	371,747
Worcester, Mass.	163,314
Syracuse, N. Y. (Syracuse & Suburban Ry. lines only)	155,624
Trenton, N. J.	111,593
Harrisburg, Pa.	72,015
Springfield, Ill.	61,120
La Crosse, Wis.	31,120
New Westminster, Can.	17,200
Eureka, Cal.	14,684
Santa Cruz, Cal.	14,594
Janesville, Wis.	14,339
Berlin, N. H.	13,559
Barre, Vt.	12,582
Mattoon, Ill.	12,169
Titusville, Pa.	8,713
Laurel, Miss.	8,465
Montpelier, Vt.	7,830
Hanover, Pa.	7,057
Charleston, Ill.	5,884
Taylorville, Ill.	5,446
Cities Which Have a 5-Cent Central Zone With an Additional Charge for Rides Outside Thereof:	
Los Angeles, Cal.	503,812
Cities Having a 5-Cent Fare With an Additional Charge of 1 Cent for Transfer:	
Greensboro, N. C.	15,895
Cities in Which Reduced Rate Tickets Have Been Abolished and a 5-Cent Fare Is Charged:	
Ottawa, Can.	110,000
Peoria, Ill.	71,458
Victoria, Can.	65,000
Rockford, Ill.	55,785
Springfield, O.	51,550
Springfield, Mo.	40,341
Concord, N. C.	8,715
Napa, Cal.	7,500
Salisbury, N. C.	7,153

[1] Owl fare recently increased from 10 cents.

[2] Daytime fare recently increased from 6 cents.

[3] Recently increased from 5 cents, plus 1 cent for transfer.

[4] Recently increased from 6 cents.

[5] Fare given in former list as 6 cents.

[6] Recently increased from 5 cent central zone.

[7] Fare given in former compilation as "6 cents on some lines and 5 cents on others."

Out of the sixty-seven cities having a population of more than 100,000, *forty have up to the present received fare increases in one form or another, while in twenty cities action is pending and in seven no action has been taken. The complete record for such cities follows:*

8-cent fare	1
7-cent, plus 1 cent for transfer	4
7-cent fare	4
6-cent central zone, 6-cent outer zone	1
6-cent central zone, 2-cent outer zone	4
6-cent fares	16
5-cent central zone, 2-cent outer zone	3
5-cent central zone, 3 cents a mile outside	1
5-cent, plus 1 cent for transfer	3
Reduced tickets abolished	2
Cost of service plan adopted	1
7-cent fare asked for	5
6-cent fare asked for	10
Zone system under investigation	2
General relief asked for	1
Charge for transfer in court	1
City to purchase	1
No action	7

Urges Initial Ten-Cent Fare

Receiver Donham of Bay State Street Railway Says This Rate Is Necessary and He Threatens Many Abandonments

At the opening of the Bay State Street Railway 10-cent fare case before the Public Service Commission of Massachusetts on Oct. 31, attended by counsel and representatives from every city and town in eastern Massachusetts, Counselor Pillsbury for Receiver Donham said in part:

JUNE SCHEDULE UNSATISFACTORY

"The schedule of rates put into effect on June 24, 1918, has not proved satisfactory to the public or to the employees, and has generally been criticised because it is too complicated. Such schedule provided for certain reduced rate city tickets, put into effect at the request of some representatives of the cities, in the hope that they would build up traffic enough to compensate for reduction in fare. They have not had this effect.

"The only result of these tickets, so far as we can determine, has been to permit a certain portion of the public to ride cheaper than the remainder of the public. The schedule has not produced sufficient revenue and the receiver will tell how near he is to failure to earn even operating expenses.

"It is believed the schedule under consideration eliminates operating difficulties and complexities and meets criticism of the public. It eliminates all tickets, except pupils', enlarges the existing central area in cities to a diameter of approximately 5 miles, fixes length of zones at 2 miles instead of 1, and with a rate of approximately 2½ cents a mile establishes the initial fare of 10 cents."

In requesting approval of his new 10-cent fare schedule, Receiver Donham said in part:

"This is not an ordinary case. The immediate problem is whether the Bay State Street Railway system shall continue to operate. If the day comes when as receiver I am not getting enough income to operate the property, I shall of necessity report the facts to the Federal Court, and if I mistake not the order of the court will follow as inexorably as a law of nature, and the property will cease to operate.

WAGES MUST GO UP

"Wages on the Bay State must go up in the immediate future, because our scale of wages is unfairly low compared with other industries and other street railways. This subject is before the War Labor Board. If wages are not increased, operation of the Bay State property will cease for lack of men. I have no money to pay increased wages. If wages are increased, the property will in my judgment shut down for lack of money to keep it going.

"The only remedy is more revenue, and that immediately. I desire to urge most strongly that the commissioners should not suspend operation of this schedule with the serious responsibilities involved, but should allow it to go into effect at once, and then conclude these hearings at their convenience.

"I offer as an exhibit certain facts about the financial status of the receivership and the company. Since the year ended June 30, 1914, just before the war in Europe, annual operating costs have increased $3,230,000, or 44 per cent, and annual income less than $1,000,000, or about 11 per cent. The deficit (on the basis of this commission's valuation for rate-making purposes) as compared with the full return to which owners of this property are entitled, has grown from $588,816 in the year ended June 30, 1914, to approximately $2,800,000 in the calendar year drawing to a close, and on top of this I am facing a wage increase. Wages have already increased from $4,219,000 in 1914 to a present basis of $6,175,000, or 46 per cent.

"Obviously this fare increase is not in itself in the interest of cities served by the Bay State. It is bad for business. It will lessen riding and lessen sales of goods in stores. It puts an additional burden on every group in the community. In every other line it is admitted that war costs of production must increase war prices to the consumer. Electric railways are no exception. It is within the power of this commission to shut down the Bay State Street Railway. The problem is whether it wishes to assume this responsibility by suspending this rate schedule. Is a 10-cent fare worse than no service?"

Mr. Donham stated further that the road had not taken advantage of the relief provided in the act passed by the last Legislature because, under the statute, $6,000,000 must be raised before the road could be taken out of the receiver's hands, and with present monetary conditions that condition could not be met. He added that if the road gets the increase in fares he thought the reorganization would probably take place within the next six months. Mr. Donham said further:

"Even if the commission grants the increase, I contemplate discontinuing certain lines because of their physical condition. In my opinion we shall have to have community assistance of some sort eventually."

Receiver Acts in Fare Case

United States Judge George W. Rae, upon application of William G. Phelps, receiver of the Binghamton (N. Y.) Railway, has made an order directed to the city of Binghamton, villages of Port Dickinson, Johnson City, Endicott and the village and town of Union, to show cause in the United States District Court at Auburn on Nov. 12, why an order should not be made directing the receiver of the railway to increase the rate of fare from 5 cents to 7 cents during the period of the war and for two years thereafter, subject to the approval as to the reasonableness of such rate by the Public Service Commission for the Second District of New York.

It is the claim of the receiver and his attorneys that the Binghamton Railway has a right under its special charter granted by the Legislature in 1868, to charge not to exceed 5 cents a mile for carrying passengers on the Court Street line through Main Street and Lestershire and on the Chenango Street line from Court Street to Port Dickinson; and that there is no limitation by any of its franchises or charter upon the rate of fare which it has a right to charge on the Tompkins Street line, the Leroy Street line, the Beethoven Street line, Floral Avenue in the town of Union, between Hooper, Endicott and Union and between Hooper and Johnson City, nor on Broad Avenue nor any of the lines that were built in the town of Binghamton for which authority or consents were received from the Commissioner of Highways of the town.

Ten-Cent Unit on Westboro-Hopkinton Line

The Middlesex & Boston Street Railway, Newtonville, Mass., has notified the town authorities of Westboro and Hopkinton that on Nov. 8 a 10-cent fare unit will be put into effect on the 6-mile line connecting these two points, in place of the present 8-cent unit.

At a recent conference with the town authorities, George M. Cox, vice-president and general manager of the company, stated that increasing cost of operation would make it necessary to discontinue the service if the present fare unit were not increased. There appeared to be a general recognition at the meeting that the situation was a serious one.

By the new tariff the fare from Westboro to Hopkinton and vice versa will be increased from 16 cents to 20 cents. The dividing line between the two present zones at Woodville will be retained. A 7-cent fare unit is in effect on the company's line between Hopkinton and Framingham, without transfer arrangements at the intersection point. Under the new schedule of fares there will be no change in this respect.

The company ordered about a dozen one-man cars last winter and one of these is to be placed in service on the Westboro-Hopkinton line to reduce expenses. The townspeople have agreed tentatively to make up the deficit, if any, occurring on the line after the institution of the 10-cent unit.

The new tariff has been filed with the Public Service Commission, and so far no opposition has developed. The company will institute one-man car service under a general permission of the commission received some time ago.

Tickets Abolished

All District of Columbia Companies Are Allowed to Charge a Straight Five-Cent Car Fare

After public hearings on the petitions of the Washington Railway & Electric Company and the Capital Traction Company, Washington, D. C., for an increase in the rate of fare for transportation in the District of Columbia, the Public Utilities Commission on Oct. 26 issued orders authorizing the companies to amend their tariffs by abolishing the sale of six tickets for 25 cents and to charge a uniform cash fare of 5 cents per passenger per trip. The order became effective at once.

SIX COMPANIES IN WASHINGTON

These companies furnish transportation facilities to the majority of the residents of the District of Columbia. There are, however, four other companies operating either wholly or in part in the District. In view of the general provision of law which requires the tickets issued by any one railway at six for 25 cents to be valid for transportation on the lines of any other company within the District, and in view of the commission's action abolishing the sale and use of tickets on the lines of the Capital Traction Company and the Washington Railway & Electric Company, the commission has ruled it to be necessary in justice to the companies not affected by such action that the rate of fare on all railways within the District of Columbia be uniform. It has therefore ordered that the four other companies, the East Washington Heights Traction Railroad, the Washington-Virginia Railway, the Washington & Maryland Railway and the Washington & Old Dominion Railway be authorized to abolish the sale of six tickets for 25 cents and to charge a uniform cash fare of 5 cents per passenger per trip, with the present transfer privileges. All tickets outstanding in the hands of the public at the time the order became effective are to be valid for transportation if presented before Dec. 1, or are to be redeemed at their face value by the companies issuing them.

The opinion of the commission in the cases of both the Washington Railway & Electric Company and the Capital Traction Company follows:

MUST SHARE BURDENS

"1. That war times are causing an abnormal situation, particularly in the National Capital with its present crowded condition. While it is true that operating expenses and costs of material have greatly advanced, it is likewise true that a much larger source of revenue to the railway has been provided by this abnormal increase in population. This crowded condition has occasioned many inconveniences and distractions in service which are being borne by the public while the railways are receiving the benefit of the greatly increased number of fares. Under these conditions, it is only right and proper that the utility must bear its share of the war's burdens, as represented in improved service and such other benefits to the public as the commission may determine, just as every person and institution must bear its share.

"2. That it appreciates the patient manner in which the public has accepted the railway service as now given them in the District of Columbia, which is conceded by the companies and the public, and is known to the commission to be, much below the standard which should be maintained. In view of the assertions made by the companies as shown by the record in this case that the quality of service depends in large measure upon the sufficiency of the revenue received by them, and the commission being of the opinion that the increased revenue, as sought by the companies in their petitions, is more than sufficient to meet the recent large increases in the wages of its employees made necessary by the extreme war conditions as well as the constantly increased prices of materials, the commission will expect the companies to bring the service to proper standard.

"3. That in view of the action of the commission in granting this increase in fare in advance of a finding by it of the fair value of the property of the company on which it should be allowed to earn a reasonable return and as a condition of such increase of fares, there shall be a determination at an early date by the commission of the question of transfers between the lines of the Washington Railway & Electric Company and the Capital Traction Company, at such points as may be fixed by the commission."

Mr. Beeler Reports on Dallas

John A. Beeler, New York expert employed by the city of Dallas, Tex., to suggest improvements in electric railway traffic in Dallas, filed the first of these reports on Nov. 1 with the City Commission. He recommends changes in routing and schedules, to improve the service 20 per cent.

Under the proposed routings, every line will become a cross-town line, largely eliminating the necessity of transfers, and consequently lessening congestion in the business section.

The rerouting will give patrons approximately 20 per cent more service.

On Nov. 4 Mr. Beeler planned to submit a report on vehicular traffic.

At a later date he will submit a report on proposed extensions, including the proposed Oakland Cemetery line, Oak Lawn extensions, City Hospital line and line to Rosemont in Oak Cliff.

Most prominent in his recommendations are the two new cross-town routings of Oak Cliff cars over the Ervay, Bryan and Junius Heights lines.

Every line in Dallas becomes a cross-town line, with the exception of the new Second Avenue line, which will pass through the business section and terminate at the Sanger loop.

Mr. Beeler recommends that two sections of lines be abandoned because of insufficient traffic to justify them.

Federal Court Petitioned

Kansas City Railways Says War Labor Board Decision Renders Nugatory All Local Fare Restrictions

In consequence of the recent wage award of the War Labor Board, the Kansas City (Mo.) Railways on Nov. 1 asked the federal courts to see that the necessary fare increases are put into effect. The War Labor Board's award contained the statement that the company should be permitted to charge such higher fares as would enable it to pay the increased wages, the award by stipulation having been made dependent upon the financial ability of the company to pay. Inasmuch as the Public Service Commissions of Kansas and Missouri, as well as the city officials, were certain to oppose any direct increase by the company as a result of the recommendation of the War Labor Board, the company has resorted to the federal courts.

The petition was filed in the United States District Courts in Missouri and Kansas simultaneously. It asks that the courts (1) take complete jurisdiction of the property; (2) continue the award of the War Labor Board and enforce this; (3) determine that the award is a mandate of the national government, pursuant to its war power, and that as such it is superior to any and all local or state regulations and limitations which are noted as being in conflict with the Constitution of the United States; (4) determine the rate of fare necessary to pay the wages specified and other charges necessary to the rendition of proper and uninterrupted service; (5) grant an injunction against interference with the collection of such charges; (6) retain jurisdiction and make necessary orders from time to time, and (7) grant other relief as is deemed just.

The company in this petition makes definite its present revenue needs to meet the wage finding of the board. It suggests an 8-cent fare for adults, a 4-cent fare for children, and a 1-cent charge for transfers.

The petition avers that the War Labor Board has authority to do all things needful to bring about the enforcement of its orders. The board's powers to carry its mandates into effect, "springing, as they do, from the national war power, render nugatory all state or local regulations or restrictions inconsistent therewith. Such is the effect and meaning of Section 8, Article 1, Section 2, Article 2, and Article 6 of the Constitution of the United States."

The local rate situation of the Kansas City Railways is full of complications. The Public Utilities Commission of Kansas recently held a preliminary hearing on fares, the hearing being postponed until some date after Nov. 7.

The Supreme Court of Kansas had a short time previously refused to issue an injunction against the commission restraining it from assuming jurisdiction over fares. Nobody can predict, of course, the action of the commission—which might follow the pleadings of the city officials and require maintenance of 5-cent fares, or which might increase fares to the same level as that established by the Missouri commission, 6 cents. At present, the company collects 5 cents from passengers boarding cars in Kansas and another cent when such passengers cross the State line into Kansas City, Mo.

The Missouri Public Service Commission ordered the Kansas City Railways to charge 6-cent fares. Judge Slate of the Cole County court decided that the commission had no authority to make such an order in view of the franchise provision as to 5-cent fares in Kansas City, Mo. The Supreme Court of Missouri, to which appeal was taken from Judge Slate's decision, ordered that the extra cent be impounded pending final disposal of the case. Passengers paying 6 cents receive coupons.

Transportation News Notes

Quincy Wants Seven Cents.—The Quincy (Ill.) Street Railway, a subsidiary of the Illinois Traction System, is asking for a 7-cent fare.

Detroit Fare Case Advanced.—The United States Supreme Court has advanced to Dec. 9 the hearing in the case of the Detroit (Mich.) United Railway against the City of Detroit, involving the rate of fare that may be charged.

Fare Increase in Raymond.—The Willapa Harbor Electric Company, Raymond, Wash., has announced an increase in fare between Raymond and South Bend from 10 cents to 15 cents. The increase is to become effective on Nov. 18. The line is a litle more than 5 miles long.

New Orleans Fare Case Postponed.—The injunction suit of Wilbur Black and other labor leaders against the New Orleans Railway & Light Company, New Orleans, La., to prevent the collection of 6-cent fares was continued by Judge Gage of the Civil District Court until Nov. 14, as the franchises and ordinances necessary to the determination of the case were not ready.

Railway Successful in First Stage.—The British Columbia Electric Railway, Vancouver, B. C., was successful on Oct. 30 in the first stage of its fight for increasing fares to 6 cents when Justice MacDonald gave a decision holding the company is entitled legally to collect 6 cents for each fare despite Mayor Gale's refusal to sign the by-law giving this concession to the railway.

Night Service Reduced During Influenza.—The Columbus Railway, Power & Light Company, Columbus, Ohio, has reduced its night service about 35 per cent, as a result of light travel caused by suspension of all meetings and gatherings on the order of the health department. As soon as the epidemic of influenza decreases sufficiently to lift the ban, full service will be restored.

Increase for Atlantic City Line.—The Board of Public Utility Commissioners of New Jersey has authorized Clarence L. Cole, receiver of the Atlantic City & Shore Railroad, Atlantic City, N. J., to increase from 5 cents to 6 cents the fare in the two zones between Atlantic City and Longport, and also to increase from $5.25 to $6.50 the rate for 100-trip family books between the same places.

Wants Six-Cent Zones.—The Trenton, Bristol & Philadelphia Street Railway, operating from Morrisville to Torresdale, Pa., has filed with the Public Service Commission of Pennsylvania notice of an increase in fares, effective on Dec. 1. The increase will boost the zone rate from 5 cents to 6 cents. The company will sell commutation zone tickets for $2 for a strip of thirty-five tickets, or about 5¾ cents a trip.

Partial Suspension of Traffic.—Falling off in traffic has caused the suspension by the Danbury & Bethel Street Railway, Danbury, Conn., of all service on the East Side extension in Bethel between 8.30 in the morning and 4.30 in the afternoon. Under the new schedule the East Side extension is only operated between 6.10 a. m. to 8.50 a. m. and from 4.20 p. m. to 9 p. m. The railway is in the hands of a receiver.

Six Cents for Beaumont.—The City Council of Beaumont, Tex., has authorized the Eastern Texas Electric Company to charge 6 cents for adult fares. The increase was allowed after a thorough investigation of the company's affairs by a special committee of the City Council. The company agreed to provide more equipment and raise the wages of trainmen to 38 cents an hour for the first three months' service, 40 cents an hour for the succeeding nine months and 42 cents an hour thereafter. Men who operate interurban and one-man cars are to receive a bonus from the company.

Authorized to Suspend Service Temporarily.—The Puget Sound Traction, Light & Power Company, Seattle, Wash., has been authorized by the City Council to discontinue service on one Ballard line, the company agreeing to give to the city the use of about 2000 ft. of track in Ballard on Market Street, from Fourteenth Avenue, N. W., to Twentieth Avenue, N. W., where the twenty-five new cars bought in St. Paul will be stored. The discontinuance of the service will be in effect until Jan. 1, during which time the cars can be unloaded and made ready for service, at a saving to the city of demurrage charges of approximately $10 a day.

Wants Transfers Granted.—Ward Kremer, counsel for Bradley Beach, has petitioned the Board of Public Utility Commissioners to grant transfers for the residents of that borough in the event that the Atlantic Coast Electric Railway, Asbury Park, N. J., is granted permission to raise fares to 7 cents. The request was made at a meeting of the commission at Newark. In asking for transfers, Mr. Kremer referred to the order already made by the commission directing the company to issue transfers to its Bradley Beach patrons from the Belmar to the belt line and vice versa, and to the fact that the order has been stayed by the company's appeal, still pending in the courts.

Allentown-Philadelphia Fare Boost.—The Lehigh Valley Transit Company, Allentown, Pa., and the Philadelphia & Western Railway, Upper Darby, Pa., have filed with the Public Service Commission of Pennsylvania a new joint passenger tariff on one-way and special car fares, applying between stations on the Lehigh Valley Traction Company's line and the Sixty-ninth Street, Philadelphia, terminal of the Philadelphia & Western Railway. The new tariff is to become effective on Nov. 1, and makes an increase of 7 cents in each of the one-way ticket fares between the above-mentioned stations, and similarly makes corresponding increases in the special car rates.

Hearing on Trenton-Princeton Fares.—The Board of Public Utility Commissioners of New Jersey on Nov. 4 heard the application of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., for authority to increase its passenger rate from 6 cents to 7 cents in each of the four zones between Trenton and Princeton. The application was based upon a statement by the company that the 6-cent fare allowed several months ago is not adequate and that the revenue produced by it left an operating deficit of $1,000 for April, May and June of this year. The company has pending before the commission an application for increased rates for its freight service between Trenton and Princeton. A hearing will be given later on this application.

New Rhode Island Fares Opposed.—The Supreme Court of Rhode Island recently heard argument on the appeal made to it by the town of Lincoln for a stay of the order of the Public Service Commission increasing the fares of the Rhode Island Company, Providence. Clifford Whipple for the Rhode Island Company and John J. Fitzgerald for the railway employees' union argued for a special order from the court to allow the new rates to remain in effect pending the hearing of the appeals of the city of Cranston and the towns of Johnston, Warwick, Lincoln, North Providence and East Providence. At the conclusion of the arguments the court took the matter under consideration. Citation was ordered to issue to the municipalities that entered their appearance before the Public Utilities Commission returnable on Nov. 11, when the matter of fares may come before the court on its merits.

Personal Mention

New Indianapolis Directors

Brief Review of Careers of Three Men Selected to Represent Public on Indianapolis Board

The plan for representation of the public on the board of directors of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., has been carried into effect by the appointment of B. A. Worthington, Edward A. Kahn and Alfred A. Potts as directors. Mr. Worthington was the choice of the Indianapolis Chamber of Commerce. Mr. Kahn was the choice of the Mayor, and Mr. Potts the choice of the Governor. Putting these representatives on the board was the outcome of the recent hearings on fares at which Public Service Commissioner Edwards suggested that public representation be allowed on the board to create confidence in the company on the part of the public. The company quickly fell in with this suggestion.

Mr. Worthington is president of the Cincinnati, Indianapolis & Western Railroad and is looking after the corporate interests of the railroad, which is now under federal control. He became president of the company at the time the railroad was reorganized. Besides being a railroad official of considerable experience, Mr. Worthington has been connected with the organization of electric railways. He lived for fifteen years in San Francisco where he was assistant general manager of the Southern Pacific Company. He was associated with H. E. Huntington during the four years of reorganization of the Market Street Railway, now included in the system of the United Railroads of San Francisco.

Mr. Kahn is one of the prominent business men of Indianapolis and is president of the People's Outfitting Company, vice-president of the National Furniture Company, and director of the Washington Bank & Trust Company. He has never been connected in any way with any public utilities. Mr. Kahn has been at the head of many civic and charitable movements.

Mr. Potts has been identified with utility management in Indianapolis for a number of years. He was born in Richmond, Ind., on Oct. 28, 1856, and was graduated from the law department of the University of Michigan. He has practiced in Indianapolis since 1877. He is now the vice-president of the Citizens' Gas Company, Indianapolis, and was the originator of a substitute for municipal ownership adopted in 1877 by the Consumers' Gas Company which resisted all attacks for fifteen years, until natural gas was exhausted. A similar plan was applied to supply artificial gas through the Citizens' Gas Company in 1905. Under the arrangement the Citizens' company has a self-perpetuating board of directors, which practically eliminates politics and does away with manipulation. Mr. Potts was one of the organizers of the Commercial Club, now the Chamber of Commerce. He has done some writing and was the author of "A Successful Substitute for Municipal Ownership" which appeared in the *Review of Reviews* a few years ago.

ELMER E. STRONG

Elmer E. Strong, who has been superintendent of transportation of the New York State Railways, Rochester Lines, for the past five years or more, has resigned to enter the electrical supply business. He has formed a connection with Henry J. Schieffer & Company, district engineering and sales representatives in Central New York for a number of well-known manufacturers. Mr. Strong's headquarters will be at Rochester. Mr. Strong entered the electric railway business immediately after his graduation from Syracuse University with the degree of electrical engineer in June, 1908. His first employer was the Syracuse Rapid Transit Railway, with which he worked in various capacities in the mechanical department until he was appointed chief inspector in October, 1909. Early in 1912 he became superintendent of transportation of the Utica & Mohawk Valley Railway, and a few months later succeeded F. A. Scripture, who had just resigned as superintendent of transportation of the Syracuse Rapid Transit Railway. The following year he succeeded W. C. Callaghan, who had resigned as superintendent of transportation of the New York State Railways, Rochester Lines. Mr. Strong has been very successful in handling men, due to his sympathetic interest in their welfare and to his ability to command respect without undue severity. He has applied his engineering training in transportation problems and has endeavored to co-operate with the other departments in keeping the tracks open and the cars moving under all circumstances. He was active in the American Electric Railway Transportation & Traffic Association, having been for some time past the vice-chairman of the committee on fares and transfers. He has had unusual responsibilities for a man of his age and has made a host of friends in Syracuse and Rochester.

Roy R. Hadsoll, assistant superintendent of transportation of the New York State Railways, Rochester Lines, has been promoted to be superintendent, succeeding Elmer E. Strong, resigned.

E. D. Blinn, who has been assistant general superintendent of the Kankakee & Urbana Traction Company, Urbana, Ill., has been named general superintendent of the company, succeeding Thomas W. Shelton, who has resigned to enter other business.

E. A. Hays, auditor of freight and passenger receipts of the Illinois Traction System, with headquarters at Champaign, Ill., has been made auditor of passenger business alone. Mr. Hays has held the position of auditor of receipts for the past eight years.

J. M. Hamken has been appointed car accountant for the Illinois Traction System, with headquarters at Springfield, Ill. Mr. Hamken was formerly with the Chicago, Peoria & St. Louis Railroad. He succeeds J. W. Crook, who resigned to enter other business at Michigan City, Ind.

Benjamin C. Amesbury, division superintendent of the New York State Railways, Rochester Lines, and an employee of the company for twenty-eight years, has been promoted to be assistant superintendent of transportation. Mr. Amesbury began his railway career as a driver of horse cars in Rochester.

Frank Fleming, formerly assistant auditor of receipts for the Illinois Traction System, with headquarters at Champaign, Ill., has been appointed auditor of freight receipts. He has been assistant to E. A. Hays for several years, but with the division of the work into an auditorship of freight and an auditorship of passenger business, Mr. Fleming will have an independent position as auditor of freight receipts.

Thomas D. Milne resigned as trainmaster of the Northwestern Elevated Railroad, Chicago, Ill., on Oct. 15, 1918, to become connected with the Bay State Street Railway, Boston, Mass. Mr. Milne has been in the service of the Northwestern Elevated Railroad for the last eighteen years. He entered the employ of the company as a trainman, and worked as clerk, train clerk, dispatcher, chief dispatcher and trainmaster. A farewell dinner was given in Mr. Milne's honor by his old associates of the Northwestern and South Side Elevated, and a beautiful table silver set was presented to him as a token of their esteem and friendship.

New A. E. R. A. Vice-Presidents

Messrs. Todd and Kealy, Presidents of Important Properties, Are Both Engineers by Profession

At the meeting held on Oct. 31 the executive committee of the American Electric Railway Association elected to vice-presidencies R. I. Todd, president of the Indianapolis Traction & Terminal Company, and Philip J. Kealy, president of the Kansas City Railways. It is a coincidence that both of these executives entered the electric railway business through the engineering side, Mr. Todd as an electrical, and Mr. Kealy as a civil engineer. Mr. Todd's engineering studies were pursued at the Johns Hopkins University, Baltimore, Md., and Mr. Kealy's at the University of Illinois. Their routes from college halls to presidents' chairs are well worthy of examination.

Mr. Todd a Pioneer

At the age of twenty-four Mr. Todd finished college. He was just in time (1893) to be in early on the electrification of the horse railways, his first job after graduation being with the Eckington & Soldiers' Home and Belt Railways in Washington, D. C. When later these roads were consolidated as the City & Suburban Railway he was made general superintendent and electrical engineer. The Washington period covered about six years. The following seven years, ending with his call to Indianapolis, brought Mr. Todd a diversified and valuable engineering and administrative experience. First he spent a year with the Compressed Air Company, New York City, in experimental work; then for a year he was mechanical engineer of the Consolidated Traction Company; for the next year he was first general manager, then vice-president of the Cincinnati Traction Company. In 1902 he took up mechanical engineering work with the United Gas Improvement Company in Philadelphia and the following year was made general manager of the Rhode Island Company, then a "U. G. I." property.

ROBERT I. TODD

PHILIP J. KEALY

Mr. Todd's Indianapolis career began in 1906 when he was elected vice-president and general manager of the Indianapolis Traction & Terminal Company, of which he became president five years later. He also served as vice-president and general manager, and is now president of the Terre Haute, Indianapolis & Eastern Traction Company. In these positions he has had problems of a varied character; engineering, labor, public relations. In all he has shown great analytical power, which will be of value to the industry through the American Association executive committee. He is active not only in the electric railway associations, but also keeps in touch with the A. I. E. E. and the A. S. M. E. His general interest in electric railways is indicated by his election to the presidency of the T. & T. Association in 1909. Mr. Todd carries his many burdens with a smile, and the accompanying photograph, a recent one, might have been taken at any time during the past twenty years.

Mr. Kealy Rose Rapidly

Mr. Kealy is a younger man by fifteen years than Mr. Todd. His specialty has been valuation work and the preparation of reports and plans for economical operation of utilities. Immediately after graduation from the university at Urbana he joined the staff of the Board of Supervising Engineers, Chicago Traction, as field engineer. His first work was in surveying crossings in the northern and western section of the city. Between 1907 and 1914, with Bion J. Arnold, he took part in valuation work, including that on the Chicago Consolidated Traction property, and he assisted in the preparation of the Chicago Traction report. He also took a prominent part in valuations at Seattle, Buffalo, Toronto, Kansas City and elsewhere.

Mr. Kealy's activities in Kansas City, which led eventually to his present presidency, began in 1912 when he, as assistant to Mr. Arnold, took up a study of the Metropolitan Street Railway. About twenty months later he left Mr. Arnold to become engineering adviser to R. J. Durham, executive head of important utilities, including the Kansas City Railway & Light Company. With L. R. Ash, city engineer of Kansas City, he worked out what is known as the Kealy-Ash plan of settlement of the controversy between the Metropolitan and this city. When the plan was put through he was appointed the company representative on the board of control of the Kansas City Railways which succeeded the Metropolitan Street Railway. Early in 1916, when less than thirty-two years of age, he was elected to the presidency of the company, the position he now holds.

Mr. Kealy has made an enviable position for himself in civic and military affairs as well as in the utility field. He has not only labored unceasingly to promote good feeling toward the local railway, but has also been active in the Missouri National Guard, in which he served as colonel of the Third Regiment. He went with his regiment to the Mexican Border in 1916. This regiment was largely recruited by Mr. Kealy and he used striking means to arouse interest during the recruiting period. He was also at the head of the 138th Infantry at Camp Doniphan last year, but his physical condition did not permit continuance in active service.

Thomas W. Shelton, general superintendent of the Kankakee & Urbana Traction Company, Urbana, Ill., since July 1, 1913, has resigned. He has not decided upon his immediate future. Mr. Shelton has been engaged in electric railway and electric lighting work for thirty years. His first railway connection was with the old Brooklyn Street Railway, Cleveland, Ohio, where he remained ten years. Two years' service followed with the Indianapolis Street Railway, now leased to the Indianapolis Traction & Terminal Company. His next connnection was with the Northern Ohio Traction & Light Company, Akron, Ohio, with which he continued from 1900 to 1904. He aided in the construction of the line of the Fort Wayne & Springfield Traction Company between Fort Wayne and Decatur, Ind., and served the company both as mechanical and electrical engineer. In 1908 he went to the Indianapolis, Columbus & Southern Traction Company, Columbus, Ind., as master mechanic. In 1910 he entered the service of the Illinois Traction System under E. D. Bell, general superintendent of the St. Louis business of the company. He next went to the company at Urbana, Ill.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES   BUSINESS ANNOUNCEMENTS

Government's Reconstruction Agency

Passage of Overman Bill Providing for Commission Similar to War Industries Board Likely

By WINGROVE BATHON

Washington representative ELECTRIC RAILWAY JOURNAL

In connection with the possibility of a reconstruction and readjustment agency being created by act of Congress, opinion is crystallizing in Washington along the line that the members of the War Industries Board will most likely be appointed to this work, in case the Overman bill, which is an administration measure, and which provides for a commission of five members to be appointed by the President, is passed by the present Congress. There is every expectation that this bill will be passed, and the likelihood of its passage has been added to by the defeat for re-election of Senator Weeks, who proposed a reconstruction measure, which would have created a reconstruction agency composed of members of Congress.

In Washington it is now believed that if the Overman Bill is passed President Wilson is likely to name as members of the reconstruction commission Bernard M. Baruch, chairman of the War Industries Board, and some of his principal associates. It is pointed out in Washington that while Senator Weeks has been defeated his idea of a legislative reconstruction agency has not necessarily died. In other words, it is expected that during the life of the present Congress Senator Weeks' idea will be pushed. But it is also pointed out in Washington that there is every likelihood that if a congressional reconstruction agency were created, even admitting that the consent of President Wilson to do so could be obtained, the new Congress which takes office on March 4 next would probably legislate out of existence, possibly by failing to appropriate monies, the creation of the present Democratic Congress.

All of the present indications in Washington, however, tend to show that the Overman bill will be passed and that the machinery of the War Industries Board will be turned into after-the-war work behind the commission to be appointed under the Overman bill, under the probable leadership of Mr. Baruch, as chairman of the new commission.

It is pointed out in Washington that the present agencies of the War Industrices Board are in possession of complete data and information concerning the industrial, commercial, financial and transportation resources of the country. For this reason there are many who believe that the War Industries Board is the only agency equipped with machinery and supplied with the necessary information to give suitable guidance to business for after-the-war work.

Because of the prospect of peace, members of the War Industries Board—more particularly committees of that board—are announcing in Washington their intention of preparing to return home and get ready for the reconstruction period which they must face in their own business. In some respects this attitude, while natural, is greatly to be regretted, according to the best opinion obtainable in Washington, because of the growing belief that the War Industries Board which has done so much to guide business during the war is so well fitted to continue to guide business during the reconstruction period.

Curtailments in Railway Tools

Suggestion Made to War Industrial Board by Manufacturers Eliminates Many Styles and Sizes

Owing to the shortage of iron and steel, a great many varieties of manufactured lines have been curtailed and in many instances eliminated altogether. A very pronounced movement has taken place to standardize as much as possible equipment used by electric railways and this is especially noticeable in all lines of tools. The following suggestions have been made to the War Industries Board by the manufacturers and it is understood have been adopted.

Belt

Cut out 1¾, 2¼, 2¾, 3¼, 3¾, 5½ and 6½ leather belt.

Also same sizes in canvas and rubber where so made.

Belting—**Rubber and Canvas**

Cut out 4½, 7, 9, 11, 13 and 15-in. widths.

Cut out two-ply in sizes larger than 4 in.

Cut out three-ply in sizes larger than 8 in.

Cut out all fractional widths above 8 in.

Belting—**Rubber**

Cut out 1¾, 2¼, 2¾, 3¼, 3¾, 4½, 5½, 6½, 7, 9, 11 and 13 in.

Widths larger than 14 in. should be increased in multiples of 2 in., i. e., 14, 16, 18 in., etc.

Bellows—**Blacksmith**

Cut out 26, 28, 32, 34 and 38-in. sizes.

Blades—**Hack Saw**

Cut out 9 and 11-in. lengths and 7/16 and 9/16-in. widths.

Blocks*—Wood Tackle**

Cut out 3½, 9, 11 and 13 in.

Brass Sheets

Cut out 11, 13, 15 and other odd gages.

Bolts—**Lag**

Cut out 5/16, 7/16 and 9/16-in. diameters.

Bolts—**Machine, Blank and Carriage**

Cut out 7/16 and 9/16-in. diameters.

Cut out 6½ and 7½-in. lengths and odd inches in lengths above 10 in.

Bolts—**Railroad Track**

Cut out 7/16 and 9/16-in. diameters. Have manufacturers establish standard lengths.

Bolts*—Stove**

Cut out 5/32-in. diameter. Also ¼-in. lengths above 3 in.

Cans—**Bench Oil**

Cut out ⅛ and ¾-pt. sizes. Make only in ¼, ½ and 1-pt. capacities.

Casing

Make one thread standard for each size.

Manufacturers should eliminate many undesirable weights and sizes.

All pipe manufacturers should meet and immediately decide on many sizes and weights which could readily be eliminated, thereby, reducing manufacturing costs and increasing production of desirable sizes of merchant pipe, extra strong, O. D. pipe, casing, line pipe and tubing.

Chisels—**Blacksmith Hot and Cold**

Cut out ⅛-in. widths.

Chucks—**Drill**

Probably only three or four styles should be made, and they can be standardized.

Cocks—**Brass and Iron**

It is difficult to make concrete suggestions on this line. The manufacturer could do it better.

Cord—**Sash**

Cut out 7/32 and 9/32-in. diameters.

Cotters—**Spring**

Cut out 1/64-in. sizes in diameter, and ¾-in. lengths over 2 in. long.

Couplings—**Hose**

All hose threads should be standardized for the entire United States.

The use of iron-pipe threads on garden and fire-hose couplings would result in a tremendous saving in material and large cost reduction.

Crowbars

Cut out all but 10, 14 and 20-lb. bars.

Cups—**Oil and Grease**

Make only three or four styles each of brass, glass, iron or steel.

Drills—**Blacksmith**

Make ⅝-in. shanks only. Discontinue ½-in. shanks. Make one standard length only.

Drills—**Hand and Breast**

Make three or four styles only.

Drills—**Square Shank Ratchet**

Make one size shank only.

Drills—**Twist**

Make with regular flute only. Manufacturers can readily eliminate 100 or more very undesirable sizes, upon which the production is very limited, and the cost of production more than their manufacturing profit.

Drivers—**Screw**

Cut out 5, 7 and 9-in. sizes.

Files—**(Except Swiss Pattern)**

Cut out all odd lengths in flat, round and half round and square files. Also cut out

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*Have but a limited use in electric railway field.

5½, 7, 9, 11 and 13 in. taper files. Cut out all odd lengths in wood files and wood rasps.

Fittings—**Cast Iron**

Cut out 3½, 4½, 7, 9 and 11-in. sizes.

Forges—**Blacksmith and Rivet**

Should be standardized, many sizes and styles being entirely useless.

Gages—**Steam, Vacuum, Gas, Oil, Hydraulic, etc.**

Cut out 2, 4½, 5½ and 6¾-in. dials.

Gages—**Standard Water**

Make round body only, polished and rough in ½ and ¾-in. sizes only.

Hammers

Made in black finish only.

Hammers—**Sledge and Stone**

Discontinue 3½, 4½, 7 and 9-lb. sizes.

Hinges

Cut out heavy tee. Also 5 and 7-in. lengths in strap and tee.

Hoists

Cut out differential hoists in capacity larger than 1 ton. Also screw hoists in sizes larger than 2 tons.

Jacks—**Common Screw**

Cut out 12, 16 and 24-ton capacity.

Jacks—**Hydraulic and Ball Bearing**

Make 20, 40, 60, 80 and 100-ton sizes only.

Jacks—**Trip**

Make only in automatic lowering and trip jacks.

Lacing—**Rawhide Belt**

Cut out 5/16 and 7/16-in. widths.

Lockers—**Steel**

Cut out 42 in. high x 15 in. wide. Make only 36, 48 and 60-in. heights x 12 and 18-in. widths.

Metals

Cut out all but two grades of solder and three grades of babbit metal, one lead-base metal, one tin-content metal and one tin-base metal.

Nails

Discontinue manufacturing iron cut nails.

Nails—**Wire**

Cut out 7, 9 and 12 d.

Nuts

Cut out square, hot-pressed and cold-punched tapped and blank nuts—both in regular and jam.

Nuts

Hexagon hot pressed and cold punched, regular and jam, cut out 7/16, 9/16 and ⅛-in. sizes above 1 in.

Nuts

Semi-finished and case-hardned, regular and jam, cut out 7/16 and 9/16-in. sizes. Also ⅛-in. sizes above one in.

Picks—**Clay and Mattocks**

Make adze eye only. Cut out 5 to 6-lb. and 8 to 9-lb. clay.

Suggest straight weights only, i. e., 6, 7, 8 and 9 lb.

Believe straight weights only are now about to be adopted by pick manufacturers.

Pipe—**Wrought Black and Galvanized—Steel and Iron**

Cut out 3½, 4½, 7, 9 and 11-in. diameters.

Pipe—**Wrought Extra Strong**

Cut out ⅛, 3½, 4½, 5 and 7-in. diameters.

Pipe—**Wrought Double Extra Strong**

Cut out 3½, 4½, 5 and 7-in. diameters.

Pipe—**O. D.**

Cut out 15, 17, 21 and 22-in. diameters.

Cut out 13/16 and 7/16-in. thicknesses in diameters 14 to 20 inclusive.

Cut out 7/16-in. thickness in sizes 24 to 30-in. diameters.

Pipe*—Lead**

Have three weights only—light, strong and extra strong.

Pliers

Discontinue all fractional lengths.

Pots—**Solder**

Cut out 4½ and 13½ in.

Presses—**Drill**

For ordinary shop use should be made in only four sizes for hand and power. This applies to drills only for small shops.

Pulleys—**Steel**

Starting at 11-in. diameter cut out odd inch diameters.

Starting at 42-in. diameter step up 6 in. each step and cut out sizes in between.

Pulleys—**Wood**

Cut out 11, 13, 15, 17 and 19-in. diameters, and starting at 42-in. diameter step up 6 in. each step and cut out sizes in between.

Rivets

Cut out all 1/64 and 1/32-in. diameters and all 3/32 and 1/16-in. lengths.

Make only oval, flat, countersunk and cone head.

Rope*—Manila**

Cut out 9/16, 13/16, 1 1/16, 1 5/16 and 1 9/16-in. diameters.

Saws—**Hand**

Many "points" can be discontinued.

**Scales*

Should be standardized. Entirely too many sizes and styles on the market.

Screws

Drop forge and malleable thumb.

Make only one style of head with and without shoulder. Also cut out all sixteenth diameters and ¼-in. lengths above 2 in.

Nuts, drop forge and malleable thumb, make only one style head and cut out same diameters as in thumb screws.

Screws—**Hexagon Head Cap**

Cut out 9/16 and 1⅛-in. diameters and ¼-in. lengths above 2 in.

Screws—**Button Head Cap**

Cut out entirely.

Screws—**Lag**

Cut out 5/16, 7/16, 9/16 and 1⅛-in. sizes.

Discontinue cone point lag screws.

Screws—**Machine**

All styles of head, iron and brass, cut out 1/16-in. lengths. Also cut out ⅛-in. lengths over 1 in. long and ¼-in. lengths over 2 in. long.

Have one thread only for each size. Where sizes run same as cap and set screws threads should all be the same. The standardization of same threads would result in tremendous reduction in stocks to be carried. Standardization would also affect the whole line of taps and dies.

(We understand that the Bureau of Standards has this matter in hand at the present time.)

Screws—**Square Head Set**

Make only 2 points, cup and dog, and only standard head. Also make only U. S. S. thread, even if asked to make "V" thread.

Also cut out 9/16 and 1⅛-in. diameters and ¼-in. lengths above 2 in. long.

Screws—**Wood**

Cut out all odd numbers in diameter about No. 10 and two or three of the smaller and larger diameter numbers in each length.

Also cut out 2¼ and 2¾-in. lengths.

Shovels

Cut out No. 4 and No. 5 dirt, No. 4 and No. 5 coal, and Nos. 2, 3, 8 and 9 scoops.

Spikes

Eliminate 5/16 x 2, 3 and 3½ in. x 4 and 4½ in. 7/16 in. (all sizes). ½ x 5 in. 9/16 x 4½ and 6 in. ⅝ x 5½ in.

Shafting—**Cold Rolled Steel**

Make only 1 7/16, 1 15/16, 2 7/16, 2 15/16, 3 7/16 and 3 15/16 in.

Steel—**Sheet**

Cut out 27 and 30-in. gages. Also cut out many odd and undesirable widths.

Stocks and Dies—**Bolt**

Make an effort to standardize threads.

Tongs—**Blacksmith**

Standard lengths should be only 14, 18, 24, 30 and 36 in.

**Transmission*

Cut out 1 11/16, 2 3/16, 2 11/16 and 3 7/16-in. diameters in hangers. Also make the drop hanger frames vary 4-in. centers up to 24-in. lengths and 6-in. centers above. In other words, have the hangers 10, 14, 18-in. centers, etc.

Also cut out corresponding sizes in couplings and collars.

Turnbuckles and Sleeve Nuts

Cut out 7/16 and 9/16-in. diameters and ¼-in. sizes above 1 in.

Valves—**Brass and Iron Body**

Cut out 3½, 4½, 7, 9 and 11-in. sizes.

Brass valves should be made only in standard weights for 125-lb. pressure, and extra heavy for 250-lb. pressure.

Manufacturers should get together and eliminate many special sizes and styles of iron body globe, angle and also stationary and rising steam iron body gate valves.

Vises—**Machinists**

Cut out ⅛-in. widths. Also cut out vises with stationary jaw and swivel base and vises with swivel jaws and stationary base.

Wrenches—**Drop Forged**

Cut out unfinished.

Washers—**Axle**

Should be standardized.

Washers—**Lock**

Make light and heavy pattern only for each standard size of bolts.

Washers—**Wrought**

Cut out 7/16 and 9/16-in. sizes and ⅛-in. sizes above 1 in.

Wire

Cut out all odd gages on annealed fence wire, brass and copper wire, phosphor bronze, etc.

New Priorities Supplement

Rating of A-5 Given to Government Orders—Repairs Rate Higher Than New Production

There has just been issued by the War Industries Board, Priorities Division, Supplement No. 2 to Circular No. 4 which makes certain changes in sections of 5, 7, 8, 9 and 23 of Circular No. 4 and supplement No. 1 thereto. Those parts which are of most interest to the electric railway field deal with automatic ratings on government orders and for repairs.

Orders placed by authorized officers of the War or Navy Departments, Emergency Fleet Corporation, Bureau of Industrial Housing and Transportation of the Department of Labor, or by the Housing Corporation and which fall within class A are now automatically classified as A-5 provided the orders carry an indorsement personally signed by the officer.

In the matter of repairs the supplement states that it is in the public interest that existing facilities should be operated without interruption and also that existing equipment should be repaired rather than new equipment constructed, each order for the repair of, and each order for materials, equipment or supplies for necessary repairs to, a product for the manufacture or production of which an automatic rating is provided in Section 8 of the supplement and all amendments thereto, shall be entitled to an automatic priority rating one point higher than is provided for the manufacture or production of the product itself.

Ball Bearing Priorities

Manufacturers of ball bearings and roller bearings whose plans are or in the future shall be exclusively devoted to manufacturing products being or to be absorbed directly or indirectly by the government or in other uses of essential importance may receive a Class B-3 rating for steel and iron requirements. However, manufacturers of ball or roller bearings or parts thereof must pledge themselves to use only such steel suitable therefor which is now in their possession or which they have hereafter coming to their possession and to sell no ball bearings or roller bearings except for essential purposes, or under permits in writing signed by or under authority of such Priorities Division.

Recent Incorporations

Springfield & Southern Illinois Traction Company, Indianapolis, Ind.—Articles of incorporation have been filed by the Springfield & Southern Illinois Traction Company with the Secretary of State of Indiana for the construction of a line from Springfield to Hillsboro, Greenville, Pinckneyville, Carterville and terminating at Metropolis, on the Ohio River. A branch is proposed from Pinckneyville to Belleville and another from Springfield to Rock Island. A survey for the road, which will be about 400 miles long, has been completed. The offices and principal place of business of the company are to be in the American Central Life Insurance Building, Indianapolis, Ind. Incorporators: Henry R. Campbell and John J. Baldus, Indianapolis, and John A. Conkey, Richmond, Ind.

Franchises

Los Angeles, Cal.—The City Railway of Los Angeles, controlled by the Los Angeles Railway Corporation, has been granted a franchise by the City Council for the construction of an extension from a connection with the West Tenth Street line, along Victoria Avenue and the Country Club Drive to a point near Rimpau Boulevard.

Norfolk, Va.—The Virginia Railway & Power Company has been granted a franchise by the City Council of Norfolk, authorizing a contract between the city and the company looking toward the improvement of transportation facilities between the city and the various government activities in the vicinity. The ordinance authorizes the widening of track in parts of the present system and the construction of new track on certain streets.

Track and Roadway

Montgomery Light & Traction Company, Montgomery, Ala.—It is reported that plans are being made by the new owners of the Montgomery Light & Traction Company for general improvements to the railway and power and light plants. It is expected that about $250,000 will be expended for these improvements.

Connecticut Company, New Haven, Conn.—Material has been received and work will be begun soon by the Connecticut Company on the North Bridgeport extension.

Chicago (Ill.) Surface Lines.—The Chicago Surface Lines is completing three track-extension jobs, totaling 5½ single-track miles for the purpose of better service to government industries. The track is being built by the railway at the request of the government, and the construction is being temporarily financed by the government.

Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind.—The Public Service Commission of Indiana has dismissed the petition of the Marion County Commissioners to compel the Terre Haute, Indianapolis & Eastern Traction Company to relay its tracks in the National Road from Cumberland to the Marion-Hancock county line. Ele Stansburg, attorney general of Indiana, has advised the commission that the matter is not within its jurisdiction. The county commissioners wish the traction company to remove its tracks from the southern edge of the highway to the center of the road.

Inter Urban Railway, Des Moines, Iowa.—The government has authorized the Inter Urban Railway to electrify the tracks within the cantonment at Camp Dodge. Up to this time, while the Inter Urban Railway has handled all the freight and passenger business to and from the camp, the tracks within the cantonment have been used exclusively for steam cars. The cost of electrifying the tracks will be about $30,000

New Orleans, La.—It is reported that a conference will be held at Bay St. Louis, Miss., in January to arrange preliminary plans for the construction of a municipally-owned electric interurban railway between New Orleans and Mobile, in accordance with the provisions of acts passed several months ago by the Mississippi and Louisiana legislatures empowering municipalities to co-operate for the construction, ownership and operation of interurban lines. The municipalities are also authorized to establish hydroelectric plants to generate electric current and the conference may take steps to secure desirable locations for them so as to furnish power for the interurban line as well as for lighting the cities and towns along the Mississippi coast. [Jan. 5, '18.]

Boston (Mass.) Elevated Railway.—A contract has been awarded by the Boston Elevated Railway to B. E. Grant, Boston, for resurfacing, rebuilding, repairing and repaving tracks on Atlantic Avenue, between Summer and Broad Streets.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Work has been begun by the Trenton & Mercer County Traction Corporation on the installation of new conduits in Lincoln Avenue, this being one of the steps in the elimination of electrolysis damage in Trenton.

Lake Shore Electric Railway, Cleveland, Ohio.—Operation has been begun by the Lake Shore Electric Railway over its new cut-off between Huron and Rye Beach. This lessens the traveling distance between Cleveland and Toledo a half mile.

Eastern Pennsylvania Railways, Pottsville, Pa.—The Public Service Commission has granted the Eastern Pennsylvania Railways permission to issue $136,500 in bonds to extend and improve its system.

Texas Electric Railway, Dallas, Tex.—The Texas Electric Railway has bought land at McKinney and will enlarge the trackage for express traffic.

Houston (Tex.) Electric Company.—The North Main Street tunnel of the Southern Pacific Company at Houston, Tex., used jointly by that company, the Houston Electric Company and the city, was recently destroyed by fire.

Tacoma (Wash.) Municipal Railway.—Work has been begun on the double-tracking of the Tacoma Municipal Railway across the tideflats.

Power Houses, Shops and Buildings

Shore Line Electric Railway, Norwich, Conn.—The taxpayers of Groton have authorized the Board of Water & Light Commissioners to enter into a contract with the Shore Line Electric Railway for electricity to operate the municipal electric light system. Energy will be secured from the Montville power plant of the Eastern Connecticut Company. The cost of installing the new system, including transformers, wiring, insulation, etc., is estimated at $20,000.

Boston (Mass.) Elevated Railway.—A contract has been awarded by the Boston Elevated Railway to the Bernitz Method Company, Boston, Mass., for the construction of all forced-draft furnaces in the power plants of the road to increase the efficiency of fuel utilization. Thirty-eight boilers will be operated with the Bernitz system of clinker prevention.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—Plans formulated by Peter Witt for Youngstown, Ohio, call for the erection of a large waiting and comfort station and the rerouting of all lines of the Mahoning & Shenango Railway & Light Company entering the public square. The comfort and waiting station will be approximately 100 ft. long and will be erected in the center of the street. It will be constructed of brick and be modern in every respect. The comfort station will be underneath the waiting station. Work on changing the tracks and building the station will not be begun before next spring. Plans have been worked out for the erection of a temporary shelter on both sides of the square this winter, to be constructed of sheet metal.

Philadelphia (Pa.) Rapid Transit Company.—Plans have been prepared by the Philadelphia Rapid Transit Company for the installation of two new electrically operated cranes and for other alterations and improvements in its repair shop at Frankford Avenue and Bridge Street. The cost of the entire work is estimated at $45,000.

Chicago, Milwaukee & St. Paul Railway, Seattle, Wash.—The Board of King County Commissioners at Seattle, Wash., has granted to the Chicago, Milwaukee & St. Paul Railway a franchise to construct transmission lines for electrical power from Snoqualmie Falls to Cedar Falls, and from Snoqualmie Falls to Renton Junction, via Preston, Issaquah and Renton, for a period of thirty-eight years. Power lines will carry 100,000 volts, and will be used in electrification of the company's lines from the Cascade Summit to its coast terminals.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—The Jefferson Street substation of the Puget Sound Traction, Light & Power Company was recently destroyed by fire. The loss is estimated at $75,000.

Rolling Stock

The Washington-Virginia Railway, Washington, D. C., as mentioned in a recent issue of the ELECTRIC RAILWAY JOURNAL, expected delivery on Nov. 1 of twenty motor and twenty trail cars from the J. G. Brill Company. The specifications for the motor cars follow:

Number of cars ordered	20
Name of road	Washington-Virginia Railway
Date order was placed	June 21
Date of delivery	Nov. 1
Builder of car body	J. G. Brill Co.
Type of car	Interurban passenger
Seating capacity	52
Weight, total	50,000 lb.
Length over all	48 ft. 0 in.
Truck wheelbase	6 ft. 0 in.
Width over all	8 ft. 2¼ in.
Height, rail to trolley base	12 ft. 1⅛ in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse A. M. M.
Axles	A.E.R.A. E-B
Bumpers	Brill
Car signal system	Electric Service Supplies
Car trimmings	Edwards
Control	Westinghouse, H. L.
Couplers	Tomlinson
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote
Designation signs	Electric Service Supplies
Door operating mechanism	National Pneumatic
Gears and pinions	Nuttall
Hand brakes	National Staffless
Heater equipment	Peter Smith electric
Headlights	Electric Service Supplies
Journal bearings	M. C. B.
Journal boxes	M. C. B.
Lightning arresters	Westinghouse, Type K
Motor, type and number	4 West 306 CV. inside hung
Paint, varnish or enamel	Brill
Registers	Ohmer
Sanders	Ohio Brass Co.
Sash fixtures	Edwards
Seats	Winner
Seating material	Rattan
Slack adjuster	Westinghouse
Springs	Brill
Step treads	Feralun
Trolley catchers or retrievers	Ohio Brass
Trolley base	Nuttall No. 14
Trolley wheels	Nuttall
Trucks	Brill, M. C. B. 2x
Ventilators	Railway Utility
Wheels (type and size)	33 in. chilled iron

Trade Notes

Moller & Schumann Company, varnish manufacturer, has changed the name of its organization to Hilo Varnish Corporation.

Railway Improvement Company, New York, N. Y., announces that the Rhode Island Company has accepted the fifty Rico coasting recorders which have been on test on its Woonsocket line for the past year.

National Electric & Welding Company, 90 West Street, New York, has been appointed New York sales agent for the C. & C. Electric & Manufacturing Company and has also been appointed Eastern sales agent for the Wesche Electric Company of Cincinnati. The personnel formerly connected with the New York sales office of the C & C Electric & Manufacturing Company is now handling both C & C and Wesche machinery, the lines of apparatus having been extended to include alternating-current and direct-current equipment, arc welders, etc.

New Advertising Literature

Crescent Belt Fastener Company, New York, N. Y.: "Gone Again," twenty-four-page pamphlet, in a humorous vein, descriptive of belt fastening.

Ohmer Fare Register Company, Dayton, Ohio.: Four-page semi-monthly, the *Ohmer Fare Register*, Vol. I, No. 1, for circulation among its employees, many of whom are now in the service at home and abroad. This initial issue contains a portrait and message from John F. Ohmer, president of the company.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, November 16, 1918 *Number 20*

Income and Outgo Figures Are the Best Publicity

OF THE several trenchant proposals made by Chairman Gadsden of the War Board in his address of Nov. 1 at the conference of the Association, one of the most suggestive was that urging all companies to publish monthly their income and outgo statistics in order to keep the local public informed as to the actual condition of its utility. He pointed out that if the national tabulations of the War Board had had such a powerful effect on the lay public, still more could be expected from what we might term "neighborhood" data. It is significant that in harmony with Mr. Gadsden's suggestion, H. G. Bradlee, president of Stone & Webster, gave out full and frank figures on safety-car economies and traffic gains—the one bright spot in the present financial blackness. Indeed, both speakers were in accord with the spirit of our Nov. 9 editorial on "Tell Your Gains as Well as Losses." They indicated thereby a departure from the old and harmful policy of secrecy that has given the public so deep-rooted a misconception of electric railway finance. We are sure that in scores and scores of instances the people will be astounded to learn that the 5-cent or even 6-cent flat fare no longer is sufficient to pay for the service.

The Universal Car Not Necessarily Uniform in Equipment

IF WE JUDGE correctly from several inquiries that have come to us in connection with the universal type of car recommended by the A. E. R. A. War Board to the Bureau of Industrial Housing and Transportation, there is an impression in some quarters that the board not only recommended a specific type of car but also undertook to specify the use of certain equipment details to the exclusion of all others. This is not the fact. Reference to our article in the issue of Oct. 26 will disclose a complete absence of specific trade names and designations. The war board has very properly not tried to dictate or suggest any specific trade articles, but has simply set forth the nature of the service to be fulfilled.

On this occasion it is pertinent to state that the use of a universal or standard car does not necessarily imply exact duplication of all apparatus. The fundamentals of such a car are that it should be of a specific length, width and height; that it should have certain post spacings, seat centerings, aisle widths, platform lengths, door and step locations; that the motors should always be hung in exactly the same way; that the control and other platform equipment should be located uniformly on all cars; that there should be standard positions for the trolley bases, the headlight mountings and catcher and retriever sockets; that the ventilator openings should be standardized in number and spacing, etc. In the case of such a car, it is quite conceivable that the individual railways may exercise their choice of any items that will do the work within the general limitations noted. Within such limitations the race for the car equipment specialties should be a "free for all."

Rehabilitating the Physical Equipment of the Electric Railway

THERE is no question but that on its physical side the average electric railway in this country is very much run down. Even before the United States went into the war prices were so high and money, labor and materials were so scarce that comparatively little maintenance work had been done for a long time. The end of the war will put new hope into engineers and master mechanics, for they know that in due time they will be able to get the track, the line, the rolling stock and the power plant into "85 per cent new" condition, which the valuation experts would consider, we believe, as excellent maintenance.

Electric railway operation in war-time has furnished an impressive exhibition of the way in which deterioration in one part of the equipment reacts on other parts. Bad track and special work are the cause of motor and truck troubles. Defective wheels, in turn, wear out the track. Poor power supply overloads motors, and thus run-down power-plant generators, turbines, boilers, etc., not only eat into the heart of the coal pile by operating at low efficiency, but affect the useful life of the car motive apparatus. Never in the history of the industry has rehabilitation work been more sadly needed than at present, and thanks to the work of the boys at the front this work is now going to be done.

However, we do not delude ourselves into the belief or hazard the hypothesis that this is going to be done all at once. It will take years to get back to normal shape. But there is ground for hope, first because money must be spent on the physical equipment if service is to be maintained; second, because there is prospect of more nearly adequate income, and third, because men and materials are going to be available in due course. All of this means that there should be laid out now a definite and comprehensive "rejuvenation" program for each property, covering several years to come. Especially should the methods which are to be followed be selected with care and the necessary tools and other equipment provided. Old-fashioned rule-of-thumb procedure should be discarded.

As we have pointed out before, now is the golden opportunity of the American Electric Railway Engineering Association. The recent strenuous years have shown us what can be done in the way of maintenance, or alleged maintenance, even when the three M's (men, money and materials) have been lacking. What a splendid chance there is for railway engineers, by which term we include all those responsible for the physical equipment, to get their heads together, to plan to make every maintenance dollar do one hundred cents' worth of work, and to pull as a unit in the tug-of-war against the effects of wear-and-tear.

Don't Save at the Spigot and Lose at the Bung Hole

AT THE recent hearing before the Senate committee on taxation, a question asked of one of the witnesses who had testified to the poor financial condition of the electric railway companies was whether the salaries of the presidents of those companies had been cut down to help reduce operating expenses. The answer was that so far as the witness knew this had not been done, but that presidents of electric railway companies did not, as a rule, receive large salaries.

The colloquy would not be mentioned here except that the amounts paid as salaries to the chief executive officers of a railway company are often brought up in rate hearings by the counsel opposed to any increase in rates. Where this is done the inference which the questioner usually intends or seems to intend to convey is that if a company comes to the public and asks to be permitted to earn a larger net, it should first reduce the pay of its higher salaried officials to show that it is doing all that is possible for it to do to keep its operating expenses down.

Such a course in many cases would be simply suicidal. The business of conducting an electric railway enterprise, like that of conducting any other important enterprise, requires executive ability no less now than at other times; in fact, in many respects the business is more complicated now than during prosperous years. We have no doubt that the majority of electric railway executives, owing to the personal interest which they take in their companies, are making many personal sacrifices. But the higher cost of living affects them as well as other people. Active operating railway officials and heads of railway properties are usually dependent upon their salaries for the support of themselves and their families and generally are not interested financially in any large way in the properties with which they are connected. During the past few years a number of such officials have left the electric railway field to enter other lines of work and have benefited themselves financially by doing so, while others have received but have refused tempting offers from outside enterprises.

A few thousand dollars which in some cases might be saved on the salary of the president or general manager by the engagement of a man of mediocre ability in place of one of superior attainments would mean an almost negligible saving when measured in a percentage of the company's entire operating expenses. At the same time, it would be a highly expensive undertaking for the company if it should involve, as it very likely might, the commission of errors which could easily cost the company ten times the amount of salary "saved."

Cutting the Gordian Knot In the Present Rate Situation

HAS the War Labor Board power to increase electric railway rates sufficiently to permit the payment of its wage awards to the railway employees? The Kansas City Railways is justified in raising this question, in view of the complications of its rate situation. The company is confronted with a wage award conditioned upon its financial ability to pay, in accordance with the stipulation agreed to by the men when the question of wages was submitted to the War Labor Board. To meet the wage award made, an 8-cent fare would be needed, it is said, but in Missouri the 6-cent fare granted several months ago by the commission is being fought in the State courts on the ground of the inviolability of a franchise rate, and the 1-cent increase is impounded. At the same time in Kansas the commission has not even got around to a decision in the 6-cent fare case before it.

The Kansas City Railways is attempting to cut the Gordian knot of this situation by appealing to the United States District Courts in Kansas and Missouri for a settlement of the rights of all parties. It is the company's contention that the sovereign war power of the War Labor Board to fix wages carries the authority and creates the duty to do all things to enable its mandate to be carried out, and restrictions by lesser authorities should be disregarded. Hence the federal courts are asked to take all steps necessary to see that the suggested award of the War Labor Board is made effective at once.

The proposal is essentially just and should have the support of all who recognize the purpose of President Wilson in creating the War Labor Board. If state commissions or city authorities cannot or will not do their part to enable electric railways to meet wage awards made in the nation's interests, some means must be found to remove all obstructions to justice for both the employees and the companies.

The federal and state courts in Illinois, in the Illinois Traction Company and the Alton, Granite & St. Louis Traction Company cases, have already been prompt to recognize the confiscatory nature of the state 2-cent maximum fare law and either to disregard it or to order the Public Utilities Commission to do so. It is easily conceivable that in like manner the federal courts may remove all local barriers to the enforcement of the wage awards that have been granted by the War Labor Board.

But why should electric railways be obliged to go to the federal courts for rate relief on account of wage awards? In public utterances various responsible leaders in Washington have emphasized their appreciation of the value of the electric railway industry and the necessity of its preservation and development, but as yet federal regulation of such carriers has been one-sided in its application to wages only. If federal supervision of labor is to continue during the period of demobilization, as it has been intimated from Washington is the intention, why should not the federal authorities take some definite action to insure an increase in electric railway rates commensurate with the recommended wage increases? The coming of peace will not automatically solve this electric railway problem.

What Have the Railways to Expect During Reconstruction?

NOW that the war is over we must begin the work of reconstruction, and we refer here not to the reconstruction which must be undertaken abroad or in this country in other lines of work but to the adaptation of the electric railways in this country to the new conditions brought about by the surrender of Germany. It will be hard to adapt our minds, at least at first, to this change, because during the past two years and even longer we have been thinking of the world as well as our own industry in terms of war and not in terms of peace. We must go back to thinking in terms of natural and not unnatural conditions, but we hope not exactly as we did before the war. In fact, it will be impossible for the electric railways to go back to the old conditions, certainly at present, even if it would be desirable. The effects of the war on our industrial structure will continue for a long time to come.

Certainly for the present, government expenditures will have to be on a very largely increased scale as compared with the pre-war period. This will mean higher taxes, which means also higher costs of materials because the manufacturers will have to add the taxes which they pay to the selling price of their products. In the second place, at least for the present, there will be a scarcity of labor throughout the world, owing in part to the reconstruction work here and abroad which will have to be done, in part because the working force of the world has been diminished by death and decreased in efficiency through casualties, and in part because forces of occupation will have to be maintained for some time in Germany. There should be some relaxation in the labor market as a result of the decrease in the manufacture of munitions and the release of part of the men engaged in waging war, but it will probably be a long time before the effects of the war in this respect disappear.

These and other conditions produce the various problems of internal reconstruction to which the nation is about to turn its attention. Such problems are not for politicians alone to solve; the best business brains of the country should be consulted, just as has been done in many cases during the days of war. And where these reconstruction problems closely concern the electric railway industry, the opinions of its duly authorized spokesmen should be sought. Had this course been followed heretofore, the government would have been spared some of its mistakes in dealing with the electric railway situation.

As regards conditions peculiar to electric railways, the war has brought clearly to the foreground certain definite facts.

One of these is that the communities served by these roads have a large interest in the maintenance of good electric railway service as well as a responsiblity for its maintenance. This has been shown by actions of the commissions in increasing fares to compensate, or to compensate in part, for the increased expenses of operation. Another advantage gained by the war is that communities have not only recognized their responsibility for the maintenance of good service but they have learned the habit of co-operating with the railways in securing it, not only by accepting increased fares but also by co-operating in other public movements, such as by the skip stop, and to a less extent by staggered hours.

The railways themselves have learned a number of things from the fiery ordeal through which they have passed. Included in this category are the advantages of the economies already mentioned as well as those of safety cars and women conductors. Some of these economies will undoubtedly be retained. The railways have also made progress in the consideration and adoption of logical fare systems and franchise conditions, and further progress along these lines should be made as knowledge is acquired of the practical working of new service-at-cost and other novel working agreements now in use. A great step forward was made when the fallacy of an inflexible fare under all circumstances and for all lengths of rides was finally demonstrated. But independent of the plan adopted or whether there is an increase or an abatement of federal control over intra-state electric railways, we consider that they are on a more solid basis than ever before.

In the first place, it has been amply demonstrated that in case of war city and interurban transportation is a necessity and that the railways are warranted in charging a fair price for transportation. If that is so in the case of war, it applies certainly in the case of peace. With this principle established, there should be no danger that the companies cannot raise money for new and necessary construction, although the money may have to be raised in a different way and the profits may not be so large as in the past. We believe also that regulation will continue, but are firmly of the opinion that it should be and will be more flexible than it has been in many cases in the past. There is wider recognition of the necessity that the time required between the development of a symptom of trouble and relief should be less.

The greatest danger now, in our opinion, is that the lessons taught by the past few years may be forgotten. This would be a calamity for both the railways and the public. While the most serious troubles of the railways did not develop until after the war began, the causes were there and were bound to show their effect sooner or later. Neither through ultra-conservatism nor indifference on the part of either railway owners or the public should the railways be allowed to slip back to the old conditions and all the lessons learned during the war be forgotten.

Further Discussion on Public Ownership

Last week this paper printed part of the results of a canvass of electric railway officials made for the purpose of bringing out the present sentiment regarding Mr. Mortimer's New York Conference resolution favoring public ownership. The discussion is continued this week on page 891.

"Dont Worry-that Line's Braced Against any Storm"

Details of Line Construction—with Particular Reference to Guying and Anchors

By
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A Continuation of the Author's Article in the Sept. 21 Issue, page 490. The Present Article is a Practical Discussion of the Most Economical Methods of Keeping a Line "Put," and Providing Against Emergency Strains

WE HAVE SEEN that a pole must carry the dead load of half of each adjacent span, the unbalanced portion of the pull of the conductors along the line, and the cross-strains resulting all along the line from the wind, and at the angle points from the conductors; further, under special conditions it may have a vertical pull downward, or more rarely, upward. If the soil is firm the poles of the average line will carry these strains, but the possibility—and in most instances the probability—of ice storms or of heavy winds, if not both together, make wise the use for insurance if they are not actually necessary, of some form of additional support on the tangents as well as at the corners, and this is usually obtained by braces or by guys attached to some form of anchorage.

The Old Reliable "Deadman" Is Widely Used

The oldest and one of the best forms of anchor is the good old deadman, which has been in use for various purposes for a long time. In its simplest form it is buried in a T-shaped trench, the stem pointing at the pole to be guyed. The head trench, from 4 ft. to 6 ft. long, is cut vertically to a depth of from 4 ft. to 8 ft. depending on the length of the anchor rod and its angle when in place. The stem starts at the head with a depth about 1 ft. less, and slopes up on the angle of the finished guy to meet the surface. The "deadman," a log, tie, concrete or stone bar, or a platform of plank lies in the head trench with the anchor rod passed through its center and pointing in the line of the guy. Where the material is available the deadman is first covered with heavy pieces of stone and then the rest of the excavation filled and well rammed. In those cases where existing obstructions or the liability of disturbance from adjacent excavation make the T-form inadvisable the deadman is laid parallel to the pull. In this case it is particularly important that the refilling be well done; the material should be puddled in and allowed to drain out before the anchor is used.

By far the commonest form of deadman is a log which is usually from 4 ft. to 6 ft. long and from 6 in. to 1 ft. in diameter, although for railroad lines the use of a half or a whole tie is quite general. If sound when installed these, even without preservative treatment, will last indefinitely in wet ground, and elsewhere they usually will outlast the anchor rod. Treatment, however, is not expensive and is good insurance. The "real thing" in the way of a permanent deadman is a cross-bar of the proper size, of stone or of reinforced concrete. If the anchor rod is properly protected also, the construction is probably as nearly absolutely permanent as can be had, but while such treatment may be warranted for the anchors of flexible towers or for poles of the Gibbs-Hill type of electrification, the increased insurance over a wood anchor is rarely worth the higher cost in the case of ordinary lines. In very soft ground or in water, however, a concrete anchor which depends upon its own weight rather than that of the material above it may be absolutely necessary.

For moderately heavy service short lengths of creosoted plank are often used. The telephone standard is 2 ft. long, 1 ft. wide and 1 in. thick with a central hole; two lengths, held at right angles to each other by two ten-penny nails, being used together. For heavy service, when logs of proper diameter cannot be had, a narrow log is sometimes made effective by placing such planks across and in front of it.

The log, plank or other more elaborate form of deadman, is connected with the guy by means of an anchor rod, ⅝, ¾ or 1 in. in diameter and 6, 8 or 10 ft. in length, with nut and heavy washer. The latter is usually 3 in. by 3 in. and $\frac{3}{16}$ in. thick for the first two diameters of rod, and 4 in. x 4 in. and ½ in. thick for the 1-in. diameter. The upper end is an eye. All parts are galvanized or sherardized. There is on the market a rod ½ in. in diameter, but while this when intact has sufficient strength for most services, a little corrosion reduces its capacity to a dangerous point and the small saving in first cost is soon lost. In the case of a concrete or stone deadman the washer and nut should be covered with at least 1 in. of concrete, and the rod should be cased in concrete to a point at least 6 in. above the ground.

The strength that a given deadman will develop depends upon the character of the soil, the angle of pull, and the care with which it has been installed. With a directly upward pull the tendency of a buried log is to lift a chunk of earth consisting of a wedge-shaped body with half cones at the ends. The body has the same length as the log and the sides slope out at an angle, depending upon the character and condition of the soil. It is customary to assume a vertical pull, although this rarely is imposed, but so far as the writer is aware there have been no experiments to determine the effect of the inclination of the anchor rod which where practicable should be 45 deg. from the horizontal, but is more often greater.

On the supposition that the wedge slope would have ½ ft. of base for each foot of depth, that the log is 1 ft. wide, and that the earth weighs 100 lb. per cubic foot, we get, for various sizes and depths of burial of the log, the capacities set forth in Table I.

The American Telephone & Telegraph Company has standardized on five guy materials known by their nominal breaking capacities as: 4000-lb. wire, 4000-lb. strand, 6000-lb. strand, 10,000-lb. strand and 16,000-lb. strand. The anchor system of this company is based on the last three of these guy materials as in Table II. The Western Union Telegraph Company has a very similar practice, but lists more log sizes and includes for use with them anchor rods of ½ in. and ⅝ in. diameter. Comparing these figures with the data of Table I, we have the data of Table III.

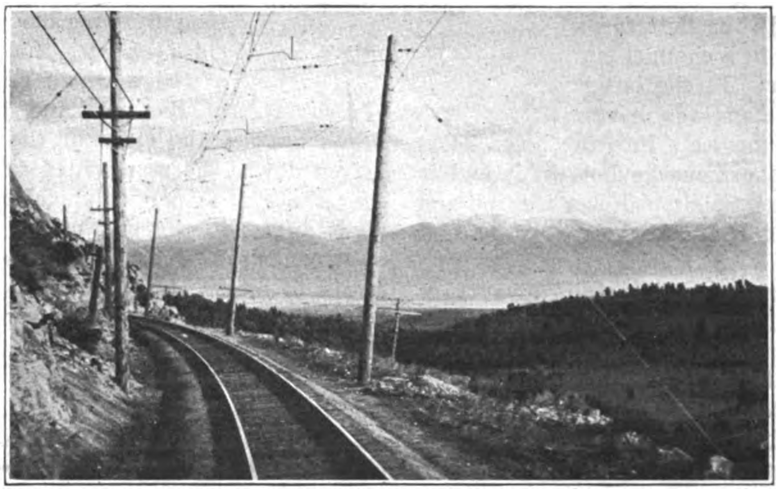


FIG. 1—EXAMPLE OF LONG-LEAD GUYING, C. M. & ST. P. ELECTRIFICATION NEAR THREE FORKS, MONT. SLOPE OF GUY, 1 TO 1

As the telephone practice has long proved its sufficiency, it is very probable that anchors in average soil will develop at least the strengths given by Table I, but in view of the importance of an anchor, and, in most cases of the small additional cost of another foot of burial it is altogether wise to be liberal in allowances.

In the case of very heavy strains care must be taken that the deadman has sufficient body to prevent breaking at the rod, and that the washer area is large enough to prevent crushing the log. In all cases it is essential that the washer be seated on hard wood so that it will not "crush in" under the first strain and put slack in the guy.

Some Ingenious Anchors Have Been Devised

The installation of a deadman involves quite a little excavation, which in turn requires labor. The disturbance resulting frequently furnishes grounds for objection to a location, particularly in those unhappy cases where the right-of-way is too narrow and the abutter is not enthusiastic over the opportunity to assist the company. To obviate these difficulties a number of patent anchors have been developed. These are of various grades of excellence, all having been devised to secure installation with a minimum of disturbance and to utilize the fact that undisturbed soil has far greater holding power than that which has been disturbed.

Of the several types the screw form, which is one of the oldest, is a section of a helix on a rod which is screwed into the ground by means of a handle detached after the anchor is in place. In ordinary soil it starts without coaxing. In hard soil it is wise to make a leading hole by driving a crowbar in the direction the rod is to go and then pulling it out. The workman should stand on the blade until it has entered the soil. In dry soil a little water poured in the leading hole is a great help. Anchors of the harpoon type have wings which lie along the shank while the device is driven down with a sledge and are then opened by a pull on the shank. Like those of the screw types these require no digging, but they are open to the criticism that unless they are fully opened they may complete the movement later and put slack in the guy.

The Bierce, Miller, "Everstick," "Hercules," "Never-Creep" and similar types require the excavation of a hole, but so small that it can readily be made by an earth auger or a special tool. The Bierce anchor is an inverted cone which, under pull, expands the broken stone immediately over it into the walls of the hole after the fashion of an expansion bolt. The Miller

TABLE I—HOLDING POWER OF LOG DEADMEN

Depth of Log Below Surface, Ft.	Length of Log in Feet — Holding Capacity in Pounds									
	1	2	3	4	5	6	7	8	9	10
5	5,600	7,400	9,100	10,900	12,600	14,400	16,100	17,900	19,600	21,400
6	9,000	11,400	13,800	16,200	18,600	21,000	23,400	25,800	28,200	30,600
7	13,400	16,500	19,700	22,800	26,000	29,100	32,300	35,400	38,600	41,700
8	19,100	23,100	27,100	31,100	35,100	39,100	43,100	47,100	51,100	55,100
9	26,200	31,100	36,100	41,000	46,000	50,900	55,900	60,800	65,800	70,700
10	34,800	40,800	46,800	52,800	58,800	64,800	70,800	76,800	82,800	88,800

TABLE II—A. T. & T. CO. GUY ANCHOR DATA

No. of Guys per Rod	No. of Rods per Anchor	Kind of Strand	Anchor Rod	Kind of Anchor	Dimension of Log	Depth of Log
1	1	6,000	⅝ in.	Plank, log, or patent	5 ft. x 10 in.	6 ft.
2	1	6,000	1 in.	Log	6 ft. x 15 in. or 7 ft. x 13 in.	8 ft.
1	2	6,000	⅝ in.	Log	6 ft. x 12 in. or 6 ft. x 10 in.	6 ft. 7 ft.
1	3	6,000	⅝ in.	Log	6 ft. x 18 in. or 8 ft. x 12 in. or 10 ft. x 12 in.	6 ft. 7 ft. 6 ft.
1	1	10,000	¾ in.	Plank or log	6 ft. x 12 in. or 6 ft. x 10 in.	6 ft. 7 ft.
2	1	10,000	1 in.	Log	6 ft. x 15 in. or 7 ft. x 13 in.	8 ft.
1	2	10,000	¾ in.	Log	6 ft. x 18 in. or 8 ft. x 12 in. or 10 ft. x 12 in.	6 ft. 7 ft. 6 ft.
1	1	16,000	1 in.	Log	6 ft. x 15 in. or 7 ft. x 13 in.	8 ft.
1	2	16,000	1 in.	Log	8 ft. x 15 in. or 9 ft. x 13 in.	8 ft.

TABLE III—COMPARISON OF A. T. & T. CO. DATA WITH THOSE OF TABLE I

A. T. & T. Co. Practice				
Log Size	Buried	To Hold	Capacity by Table I	Safety Factor
6 ft. x 12 in.	6 ft.	2 at 6000 lb. or 1 at 10,000 lb., say, 12,000 lb.	21,000 lb.	1.75
8 ft. x 12 in.	7 ft.	3 at 6000 lb. or 2 at 10,000 lb., say, 20,000 lb.	35,400 lb.	1.77
10 ft. x 12 in.	6 ft.	3 at 6000 lb. or 2 at 10,000 lb., say, 20,000 lb.	30,600 lb.	1.53

anchor consists of a metal plate, hinged at its center to the rod, which is set in a hole the upper part of which has a diameter equal to the width of the plate while the bottom is bored out by a special tool to take the plate lengthways. The latter is pushed down lying parallel to the rod and is then turned at right angles when in place. The "Everstick" anchor is of the expanding type, but the blades move at right angles to the stem, eliminating the backward pull of the harpoon type, but on the other hand requiring a hole, which the harpoon does not. The three types just described have the hole in the line of pull; the "Hercules" and "Never-Creep" anchors have the hole at right angles to the line of pull. In the first form the rod takes its position in a channel cut from the main excavation. In the latter form the rod at the proper angle is driven from the surface until it projects into the hole. Then the plate, which has an enormous keyhole in it and is held by a special carrier rod, is slipped over the rod and down till the narrow part of the keyhole locks against the head.

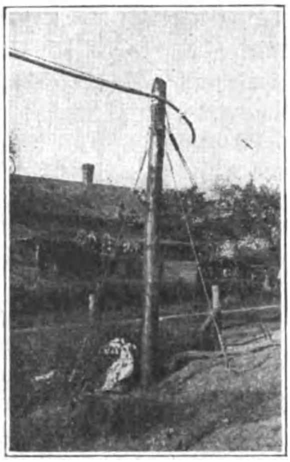
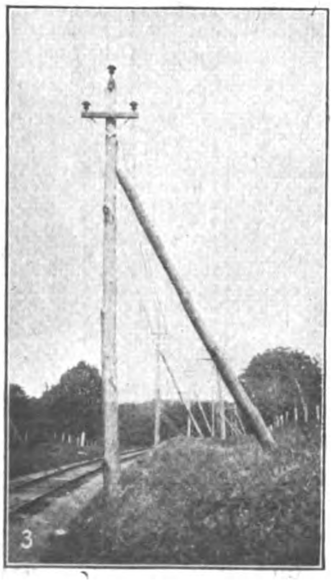
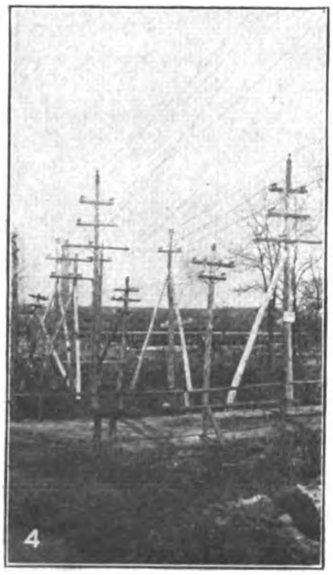


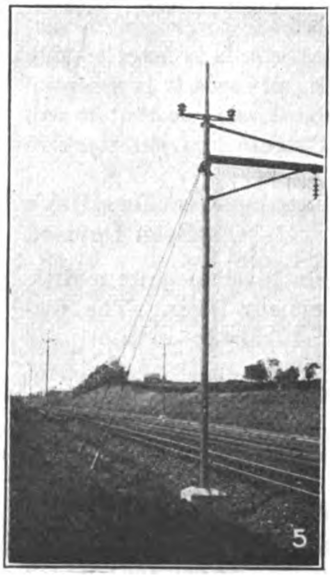
FIG. 2—SHORT-LEAD GUYS ON HEAVY WORK N. Y., N. H. & H. R.R. NEAR NEW HAVEN, CONN.
Note guy plates and guy hooks at pole

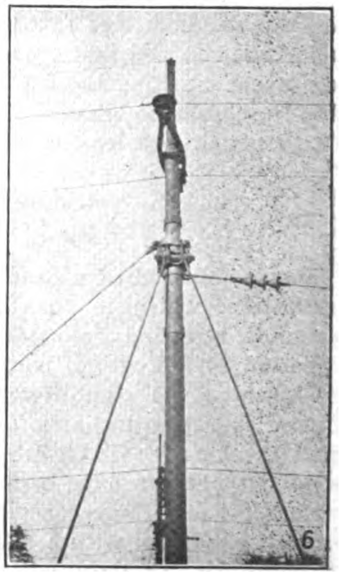
All of these patent anchors have certain advantages over the deadman, and all have their faults, some more than others. Their one absolutely necessary requirement for successful installation is a soil reasonably free from large stones. An occasional "bone" can be dodged by shifting the location, but where such shifts are frequent it pays to set deadmen. The large trench necessary gives opportunity to deal with any kind of rocks that may be encountered nearer the surface than the proper position for the log. If small, such rocks can be removed; if they are of sufficient size, however, the obvious procedure would be to use them as anchors by installing "rock bolts."

If the rock is tough, a suitable "rock bolt" would be a pair of wedge-shaped side pieces with bolt holes at the top, which are dropped into a tapered hole in the line of the pull of the guy and are held against the walls of the hole by a key fitting between them. This in turn is prevented from working out by a bolt through the tops of the wedges, to which bolt the guy is attached. The extra work of making the bottom of the hole larger than the top is more than offset by the fact that its depth is but 6 in. as against 15 in. for the other type. Although a standard article the wedge bolt is comparatively little used even in rock which, having the necessary strength to withstand its splitting tendency, is, by reason of that same fact, particularly costly to drill for the commoner type. The common type of rock bolt is a rod 1 in. in diameter, with an eye in one end. Although sometimes made with roughened sides, or with the lower end split to take a wedge which rests against the bottom of the hole and jams the parts of the shank against the sides of the hole when the bolt is driven down, the standard form, which is 18 in. long over the eye, is perfectly plain. As the bolt is set at right angles to the pull of the guy, the sulphur, lead or cement used to secure it in place really has very little strain to meet. If sulphur or lead is used, it must be melted at the hole, requiring some form of heater. Care must be taken that there is at least $\frac{1}{16}$-in. clearance between the bolt and the sides of the hole all around. The material must be poured at as high a temperature as is safe; in fact, it is a good plan to also heat the shank of the bolt but not enough to injure the protection on the portion which will be exposed. This is to prevent the filling from "freezing" before it has completely filled the space. Incidentally, it is exceedingly important that the hole be dry, for a very little moisture, to say nothing of water in any quantity, trapped under the hot material, will blow out the latter in every direction, with very good chances of putting an eye out of business. Cement grout of the consistency of thin cream, is free from these disadvantages, requires no apparatus other than



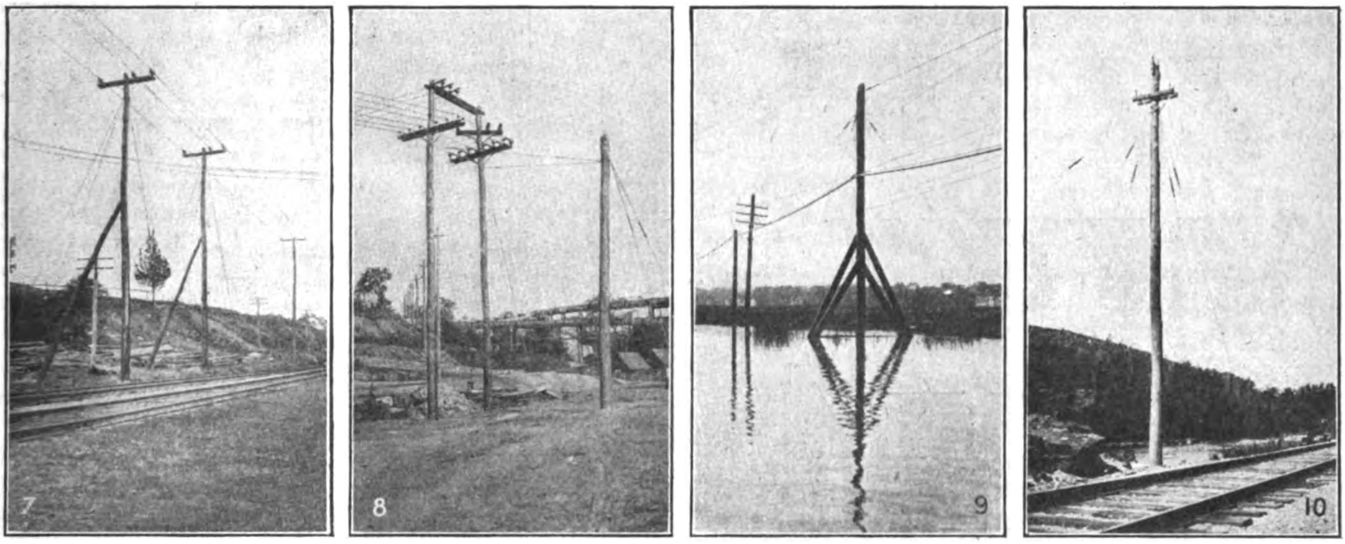






EXAMPLES OF SPECIAL SOLUTIONS OF BRACING AND GUYING PROBLEMS

Fig. 3—A push brace—good angle but poor framing. Fig. 4—A study in bracing—replaced later by tower structure. Fig. 5—Heavy rod guys with turnbuckles and special casting for attachment to pole, P. R.R., Philadelphia-Paoli electrification. Fig. 6—Special fitting for guy attachment, Philadelphia-Paoli electrification.



GUYING AND BRACING POLES TO TAKE CARE OF UNUSUAL CONDITIONS

Fig. 7—Brace and guy work to prevent crossing railroad with guys. Fig. 8—Stubs to give driveway clearance, New Milford, Conn. Fig. 9—Marsh work, braced bog shoe and guys, N. Y., N. H. & H. R.R. signal cable, New Haven. Fig. 10—Guy insulation wood strains on 11,000-volt line, involving the use of one 15-in. strain per guy.

a tin can in which to do the mixing, and holds as well as the others. Further, the hole can be practically the same diameter as the bolt.

The best method of installation is to pour enough grout (2 in. or 3 in. depth being enough in most cases) in the bottom of the hole and then slowly to force the bolt down into place. Undue haste in this process is apt to produce a fountain of grout which, while not so dangerous as melted sulphur or lead, is not calculated to please the fellow who is hit. The only disadvantage of this method is the occasional difficulty in getting water, which may have to be "packed in." It is hardly necessary to point out that the grout should be made in the open and then put into the hole, although the writer has been told of an instance where a series of rock bolts were put in their holes, dry cement was packed around them, and then a little water was poured on top in the expectation that it would set up the entire packing. As a matter of fact, although only the very top of the cement did set, the bolts held all right and the peculiarities of the method were learned of only long afterward. In this case the pull of the guys was at a little more than a right angles to the holes, so the tendency was to pull the bolt in rather than out. In any such case a sharp sand filling reasonably well tamped in would have served as well. Indeed, if the pull is against the hole, no filling at all would have served as well as the cement, and would save its cost, but it is hardly the best treatment.

The guy itself is attached to the anchor rod, whatever the type of anchor, by an eye formed around a galvanized or sherardized thimble. At one time the usual method of securing this attachment was by wrapping the end around the standing part (which as all know is the part of a rope or strand on the side of a loop opposite to the end) strand by strand, unlaying one strand down to the eye and then wrapping it tightly around the rest of the end (which is held parallel and close to the standing part) and the standing part; then unlaying another strand down to the wrapping and wrapping it on in turn, and so continuing until the last strand wraps around the stading part aloe. While this, the "close tie," is considered by many as less likely to slip than the three-bolt clamp tie, this belief is due largely to the action of clamps of poor design.

Properly made, the latter tie, which is now the standard of the telegraph and telephone companies, the N. E. L. A., and the A. E. R. A., will hold "until the cows come home." With it, even if the clamp is not properly bolted up either through carelessness or a faulty clamp, the resulting slip tends to twist the latter and kink the strand, so stopping the slip, although the appearance of the guy is spoiled. Such slips, aside from failures to bolt up properly, are usually due to weak section, allowing the sides to buckle without putting sufficient pressure on the strand, or to the use of too large or too smooth grooves in the clamp. Proper distribution of the metal will prevent the first, while the second is overcome, at least for use with ordinary strand, by making the grooves wavy or of variable width. If extra strength strand is used, however, special grooving to fit the twist is usually necessary to develop the full strength.

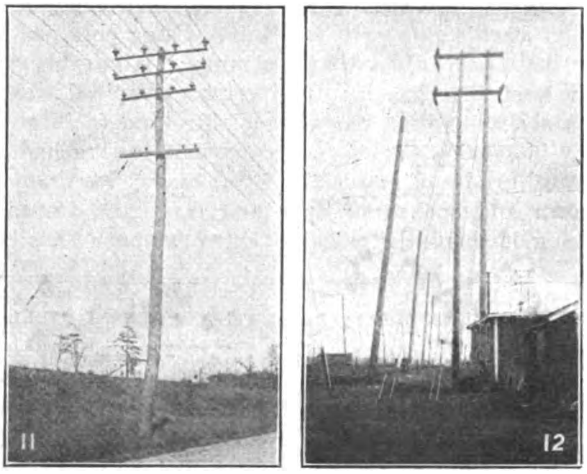


FIG. 11—GUY INSULATION, PORCELAIN STRAINS, DOUBLE. FIG. 12—GUY MARKERS ON 11,000-VOLT LINE, C., M. & ST. P. ELECTRIFICATION, THREE FORKS, MONT.

The three-bolt clamp is of low cost as compared with the material with which it is used, but it is a pretty important member of society. It has been well standardized, and the product of any of the responsible makers of line

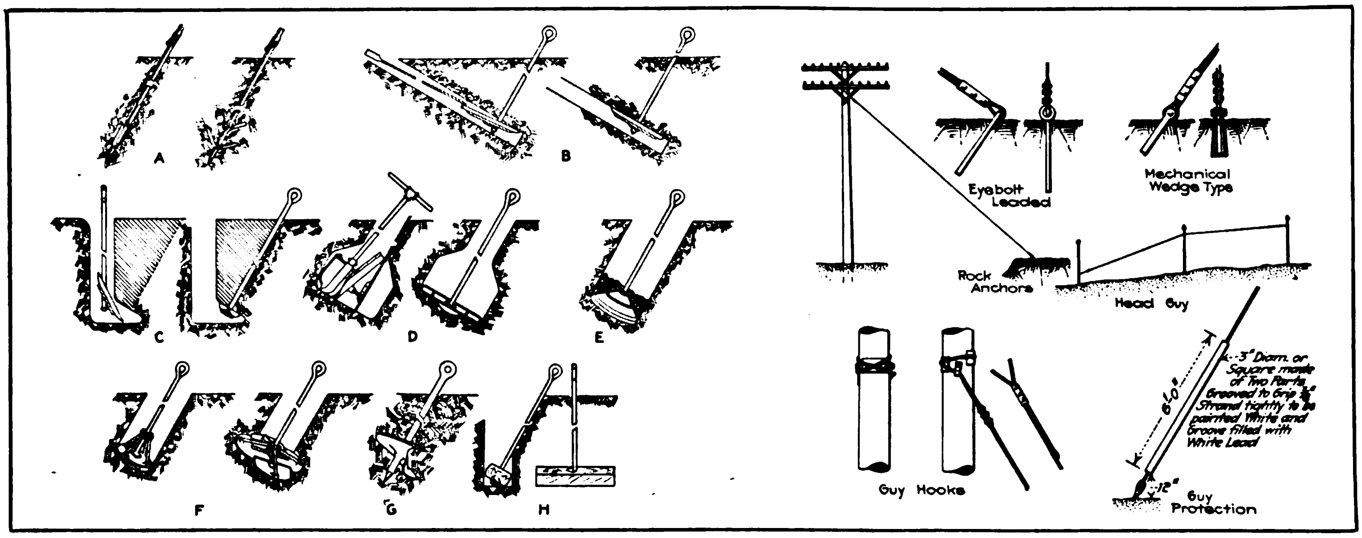

A
B
C
D
E
F
G
H
Eyebolt Leaded
Mechanical Wedge Type
Rock Anchors
Head Guy
Guy Hooks
3" Diam. or Square made of Two Parts Grooved to Grip ⅜" Strand tightly to be painted White and Groove filled with White Lead
6'-0"
12"
Guy Protection

FIG. 13—TYPE OF GUY ANCHORS

A, Harpoon anchor; *B*, "Never-Creep" anchor; *C*, "Hercules" anchor; *D*, Miller anchor; *E*, Pierce anchor; *F*, "Ever-Stick" anchor; *G*, screw anchor; *H*, deadman anchor (deadman ready for filling of hole). Drawings at right are self-explanatory.

hardware can be depended upon fully. There is, therefore, little excuse for buying any of the nameless material which unfortunately is on the market at a price just enough lower than reliable material to attract a thoughtless purchaser—and later cost his overhead men their piety. The tie itself is made by bringing the end parallel and close to the standing part, installing the clamp close up if on a thimble end, or about 15 in. away from a pole, stub or similar large attachment, and securing the end, which should extend about 1 ft. beyond the clamp, by some ten or twelve turns of No. 12 wire about 1 in. from the extreme end.

Most clamps are variations of the standard three-bolt clamp, but there are two which are quite different. The Crosby clip, two short spirally-scored drop forgings clamped together by a U-bolt, is sometimes used for light work, but it is not often employed otherwise. The equivalent in "Crosbys" to a three-bolt clamp is at the very least two, with four parts and four nuts to adjust as against two parts and three nuts for the clamp. The other type is the Matthews boltless clamp, a malleable sleeve with tapered grooves, and a similarly grooved wedge-shaped key of easy taper which is driven home after the end has been threaded through the sleeve, around its attachment, and back again. It is claimed that it is much easier to install or adjust than other clamps, and that it has at least the capacity of the corresponding size. It certainly has fewer parts, and is said to be very satisfactory in service.

For the guy itself there are several grades of material which is almost universally known and spoken of as "strand," although strictly speaking it should be called stranded wire. To the electric railway men it is known by its diameter; to the electric light men by both diameter and breaking strength; and to the telephone and telegraph people the two smaller sizes are known by their breaking strengths, while the two larger sizes are rated at their breaking strengths when one strand has been cut. While this at first thought may seem peculiar, "there's a reason." The center wire is straight; the outside wires, because of their twist, are longer, and under strain they yield, throwing the load on the center one, thus tending to break it or to stretch it beyond the elastic limit of the material. By rating the "strand" at the strength of the remaining six wires this weakness is allowed for. The usual "strand" is generally known as "standard." Its strength is sufficient for ordinary work and it is soft enough to be made up by hand even in the half-inch size. Siemens-Martin strand has about 50 per cent more capacity; "high strength" is about twice as strong, and extra high strength about three times as strong as the same sizes in "standard." While this extra strength is very desirable in many cases, the material is very springy and stiff, and it is chiefly used for messengers, ground wires, long spans and similar purposes which do not require much bending, extra strength in guys when required being obtained by using two or more "standard" strands. Whatever grade is used it should always be "extra galvanized," as due to its form it tends to hold moisture and facilitates corrosion.

Strand can be had in practically any sizes between ⅛ in. and ¾ in. diameter, but the standard sizes and their strengths are as given in Table IV. As yet the "extra strength" has been standardized by no one.

TABLE IV—DIMENSIONS AND PROPERTIES OF STRAND STEEL WIRE

Diameter	Wires No.	Wires Size B.W.G.	Standard with	Known as	Strength in Pounds: Breaking "Standard"	Strength in Pounds: Siemens-Martin	Strength in Pounds: High Strength	Strength in Pounds: ExtraHigh Strength	Weight per 1000 lb. "Standard"
¼ in.	7	14	A. E. R. A.	¼ in. (with grade)	2,300	3,060	4,000	(7,600)	125 lb.
¼ in.	7	14	N. E. L. A.	¼ in. 2,300 lb.	2,300				
5/16 in.	7	13	A. T. & T. and W. U.	4,000 lb.	4,000			(10,900)	
5/16 in.	7	12	A. E. R. A.	5/16 in. (with grade)	3,800	4,860	6,000	(12,100)	210 lb.
5/16 in.	7	12	A. T. & T. and W. U.	6,000 lb.	6,000				
⅜ in.	7	11	A. E. R. A.	⅜ in. (with grade)	5,000				
⅜ in	7	11	N. E. L. A.	⅜ in. 5,000 lb.	5,000	6,800	11,500	(17,250)	295 lb.
⅜ in	7	11	A. T. & T. and W. U.	10,000 lb.	11,500				
7/16 in.	7	9	A. E. R. A.	7/16 in. (with grade)	6,500	9,000	18,000	(22,500)	415 lb.
7/16 in.	7	+9	A. T. & T. and W. U.	16,000 lb.	18,000				

A guy takes up a pull, usually at an angle to it, in which case the pole is the strut which resists the tendency of the two forces to come into a straight line. If we consider the first force to be horizontal, and applied at the same point on the pole as that to which the guy itself is attached, the pull on the guy, the thrust on the pole, and the force guyed bear the same relation to each other as do the sides of a triangle in which the angles are the same as those made by the forces. The distance from the foot of the pole to a point *at the same level* on the guy is called the "lead" of the guy; the distance vertically from the foot of the pole to the point of attachment of the guy is called the "height." If we let L stand for the lead, H for the height, and G for the length of guy between point of attachment to pole and the level of the foot of pole, if the pole itself is vertical G is the hypotenuse of a right-angled triangle with L as the base and H as the height, so that:

$$G = \sqrt{L^2 + H^2}$$

and the ratio between G and L is:

$$\frac{\sqrt{L^2 + H^2}}{L} \text{ or } \sqrt{1 + \frac{H_2}{L^2}}$$

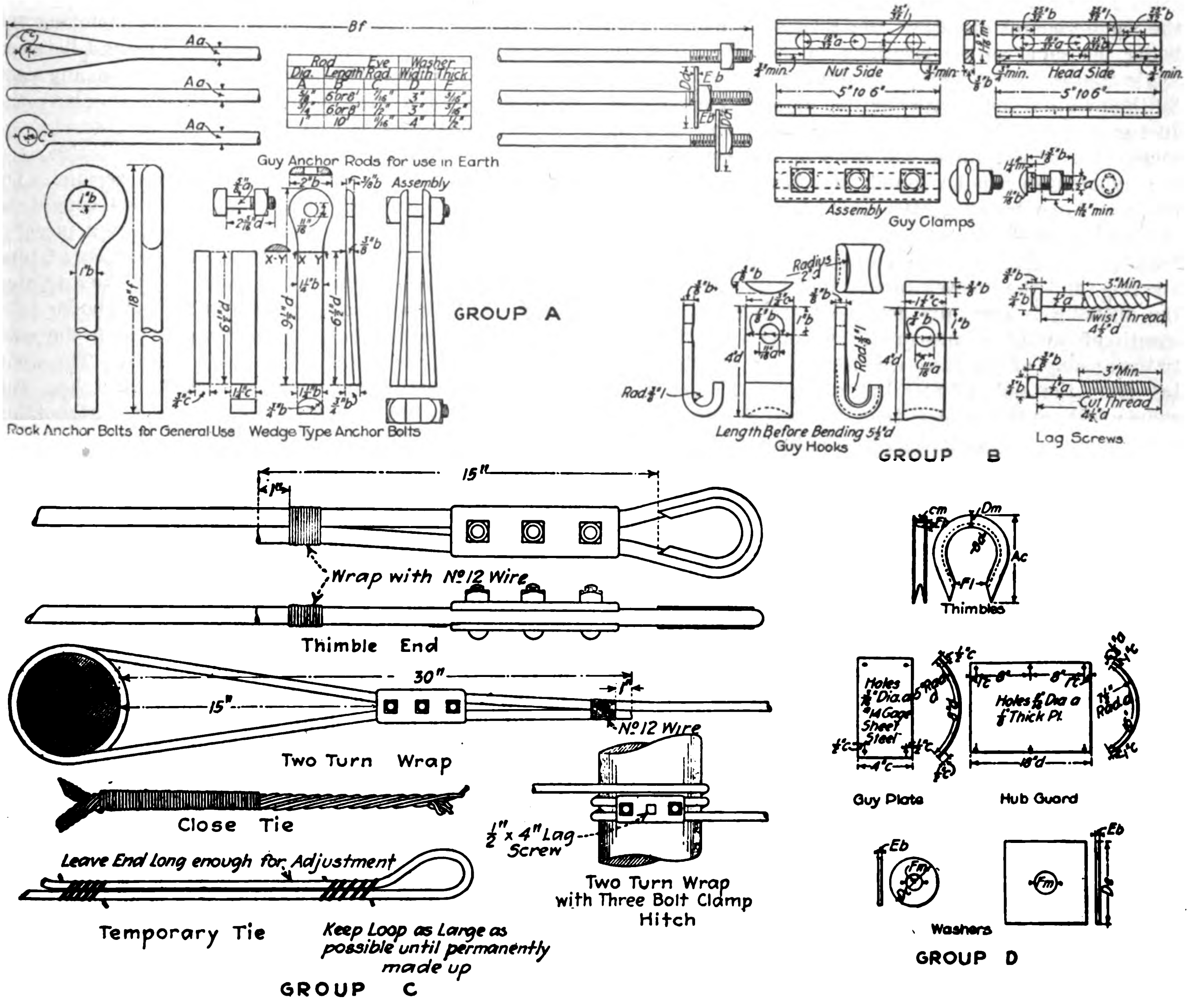
Since the forces act in lines parallel to the sides of this triangle, the pull on the guy is in the same relation to the pulling force as the relation between G and L, that is

Pull on guy = Horizontal force at attachment $\times \sqrt{1 + \frac{H^2}{L^2}}$

For a raked pole, L must be decreased or increased, according as the pole rakes toward or from the anchor, by the distance from the foot of the pole to a perpendicular dropped from the point of guy attachment. If the pole leans so that this point is not in line with the anchor and the foot of the pole the value of L is the

TABLE V—DIMENSIONS OF THIMBLES AND WASHERS

	Thimbles		Washers						
	For 1-in. Rod	Other Service	For Bolt or Rod	Outside or Side Round	Dia. D Sq.	Thickness E Round U.S.Ga.	Thickness E Sq.	Dia. Hole F Round	Dia. Hole F Sq.
Ac	3¾ in.	3 in.	⅜ in.	1 in.	....	14 in.	....	7/16 in.	....
Bd	13/16 in.	⅝ in.	½ in.	1⅜ in.	....	12 in.	....	9/16 in.	....
cm	⅝ in.	½ in.	⅝ in.	1⅝ in.	3 in.	10 in.	3/16 in.	11/16 in.	¾ in.
Dm	5/16 in.	½ in.	¾ in.	2 in.	3 in.	9 in.	3/16 in.	13/16 in.	⅞ in.
Eb	5/16 in.	7/16 in.	¾ in.	2¼ in.	....	8 in.	....	13/16 in.	....
Fl	1⅜ in.	⅝ in.	1 in.	2½ in.	4 in.	8 in.	¼ in.	1 1/16 in.	1⅛ in



Bf
Aa
Rod Dia. A
Length B
Eye Rod C
Washer Width D
Thick E
Eb
Nut Side
Head Side
5" to 6"
Guy Anchor Rods for use in Earth
Assembly
Guy Clamps
GROUP A
18" f
Rock Anchor Bolts for General Use
Wedge Type Anchor Bolts
Radius 2" d
Rod
Length Before Bending 5½" d
Guy Hooks
GROUP B
3" Min.
Twist Thread
Cut Thread
Lag Screws
15"
1"
Wrap with No. 12 Wire
Thimble End
30"
15"
No. 12 Wire
Two Turn Wrap
Close Tie
½" x 4" Lag Screw
Leave End Long enough for Adjustment
Temporary Tie
Keep Loop as Large as possible until permanently made up
Two Turn Wrap with Three Bolt Clamp Hitch
GROUP C
cm
Dm
Ac
Fl
Thimbles
Holes Dia. #14 Gage Sheet Steel
Holes Dia. Thick Pl.
4" c
18" d
Guy Plate
Hub Guard
Eb
Fm
Washers
GROUP D

FIG. 14—FURTHER DETAILS OF GUY CONSTRUCTION (FROM ENGINEERING MANUAL)

Group *A*, anchor rods and bolts. Group *B*, guy clamps, hooks and lag screws. Group *C*, details of method of making span and guy-wire attachments. Group *D*, guy plate, hub guard, thimbles and washers. (See table of dimensions above.)

distance between the perpendicular and the guy at the level of the foot of the pole.

In practice it often happens that the force to be guyed is not applied at the same point as the guy or there may be several forces at different points; further, one or more may not be horizontal. In the first case if we multiply each force by the distance from the pole foot to where it pushes (or pulls) the pole, we get its moment at the ground. Adding the moments together and dividing by the distance from the ground to the point of attachment of the guy gives the amount of force which at that point would have an equal moment; in other words the amount of the resultant of the forces. In case there are two or more guys with different points of attachment their resultant is similarly determined by taking the sum of their moments at the ground line and dividing by the distance from the ground line to the point at which it is desired to consider the resultant applied.

Splitting an Inclined Force into Vertical and Horizontal Components

If any force is not horizontal, the equivalent horizontal is readily found from the fact that any force can be separated into two or more forces operating in the same general direction, the relations to each other being the same as the relations of the sides of a triangle the angles of which are the same as those made by the original force with the two or more components. In our case the triangle is right angled. Knowing the inclination of the force, the ratio of the horizontal to the hypotenuse can be found, and by multiplying the inclined force by this ratio the horizontal component is found. All these and any similar problems are very readily worked out for an approximately accurate answer (and the answer can be had very accurately if the drawing is carefully done) by drawing a line the length of which as measured by some scale is equal to the amount of the force which is known, and by drawing from the ends of this line other lines making the same angles with the first that the lines of action of the forces they represent make with the line of action of the first. Their lengths measured on the same scale, are equal to the amounts of the forces they represent.

Clearly the more nearly a guy is in the direct line of the pull it is to resist, the more nearly will the strain upon it approach the amount of the force to be held. It is rarely practicable, except in the case of a guy parallel to the line, to make the lead greater than the height of the guy. The American Electric Railway Association specifications call for such equality if practicable, thus giving a guy stress which is 1.42 times $\sqrt{1 + H^2/L^2} = \sqrt{1 + 1/1} = \sqrt{2} = 1.42$) the horizontal pull at the point of attachment. The Western Union permits on light lines a minimum lead of one-fifth the height (5.10 ratio) with a "required" lead of one-fourth (4.12), with one-third as the minimum (3.16), and three-fourths (1.67) "required" on the heavy fifty-one to eighty-wire trunk lines.

In the case of a light line the strain on the guy is rarely heavy enough to cause it to slip, but with the heavier lines it is customary to protect the pole from any crushing tendency on the part of the guy by means of a guy plate, a sheet of No. 14 gage steel 8 in. long by 4 in. wide, which is nailed to the pole at the point of attachment of the guy. To insure that the latter stays on the plate, guy hooks are used on either side, being held in place preferably by a through bolt, although the use of lag screws for this purpose is common. The American Association calls for strain plates "behind guys the strain on which would otherwise cause material damage to wood poles" and for guy hooks where the lead is less than one-fourth the height, "or where as with guy plates the guy must be held in particular position."

Where Shall the Guy Be Attached to the Pole?

The point at which a guy is attached to the pole should be as nearly at a point which would balance the forces against it as may be practicable; conditions of clearance, however, may compel attachment almost anywhere, but the method is standard. The strand is wrapped completely around the pole twice and the end is held by a three-bolt clamp about as far from the pole as the diameter of the latter when the guy is at right angles to the pole, the end being fastened as for the usual three-bolt hitch.

Where a line is on private way a guy is often fastened at the base of an adjacent pole, thus obviating the necessity for an anchor. If there is passage between the poles, however, the attachment, which in any case is by a two-turn wrap, must be at least 8 ft. above the ground, and the resultant pull on the pole serving as anchor makes this treatment usually undesirable.

The question of passing guys is often serious. On the company's own property they may be brought to earth close to a path and made prominent by a piece of board, a wood molding wired on, or a section of pipe slipped over the strand, this marker being then painted white. The pipe, which can be a piece of old boiler tube or other scrap, is best for a new guy, as in the case of an existing one the hitch must be opened. The wood forms are usually employed in such latter cases, and the portion in contact with the guy, and that portion of the guy itself, should be heavily white leaded to prevent corrosion. Where such treatment is not sufficient the guy is often carried to the top of a stub of sufficient height, on the opposite side of the way, and then led down to an anchor further outside. The stub should be set at least five ft. in the ground, and should have a rake of about 4 in. to the foot; if the strain is heavy the guy is often attached to the top of the stub by a three-turn wrap, and two anchor guys carried from there to the ground, these last making angles of about 30 deg. with the line of the main guy. The stub is usually under heavy load, and for that reason should be a stocky stick, with top dimension not less than that of the pole it is used with.

Special Cases Have Often to Be Met

Where the clearway required is not more than 10 ft., and the guy strain is not too heavy, a strut may be set horizontally against the pole about its length below the point of attachment of the guy, and the latter led over its end and then vertically down to the anchorage. The pull on the latter is the same as for a "height" equal to the distance of the strut below the point of guy attachment, and a lead equal to the length of the strut itself. The latter acts as a column, and must have both the stiffness to prevent buckling and such protection at the end as will keep the guy from crushing into and splitting it.

It not infrequently happens that a guy cannot be placed against the pull to be resisted, but that room is available on the wrong side. In such case the situation is usually met by installing a "push brace," which is a pole which should be as heavy as the pole it is to reinforce and which is set with the same lead that would be given if it was a guy. The butt should go at least 8 ft. below the surface, and in any case below the depth to which frost is at all likely to penetrate. If the soil is very firm it may be set directly against the earth; but as a rule it is better to have it thrust against planking or a large rock to insure sufficient bearing to prevent any yield. If there is any likelihood of a pull coming on it, as is sometimes the case at an angle, where normally the stress is in one direction, but a heavy wind in the opposite direction may reverse it, a short section of pole or its equivalent should be bolted to the bottom. The upper end should be cut to fit snugly against the pole; whether the latter should also be notched is in question. The telegraph and telephone companies say "No," and it is obvious that a deep notch at this point would weaken the pole. It would seem, however, that a light notch, not heavier than a gain, would have little more weakening effect than the latter, and it certainly materially assists the through bolt, which is used so to tie brace and pole together that they will act as a single structure.

Modern Method of Car Painting

After Four Years' Experience With It, the Author Has Become an Enthusiastic Advocate of Enamel for Car Painting

BY W. W. BUNNELL
Foreman Painter, Texas Electric Railway, Dallas, Tex.

IN MY OPINION the old method of painting cars in railroad and electric railway shops has been relegated to the scrap heap for all time to come. The former slow, cumbersome methods have given place to a more rapid and simpler procedure.

When I first went into the car shops, our program was this: Apply primer, two or three coats of lead and five or six coats of "rough stuff," putty and "plaster" between coats, apply guide coat, rub to a perfect surface with rubbing stone and water. We then put a couple of coats of color in japan, did a great amount of ornamentation with gold leaf, applied a coat of rubbing varnish, and lastly gave the body a couple of coats of finishing varnish. This process was very expensive and the long-drawn-out method involved nothing less than several weeks of retirement of a car from service. But we have been making a steady advancement in car painting as well as in other lines in car work, and to-day I use an oil enamel.

The method which I use in applying an oil enamel on a new or burnt-off car is this: Apply a coat of primer; when this is sufficiently dry, follow with a knifing coat, sand to a surface and apply a coat of oil enamel. In twenty-four hours I apply another coat of oil enamel, and in forty-eight hours letter and stripe with oil enamel. This method of painting cars cuts the cost of painting 40 per cent over the old method and reduces the time the car is out of service about 75 per cent. Further, the oil enamel wears longer and looks better than varnish.

To refinish a car when the under coatings are in fair condition and the car does not have to be "burnt off," but at the same time when the surface is a little porous, I give it a coat of primer, pretty "long" on oil (raw), putty the large holes and bruised places and follow with two coats of oil enamel, as on a new car. Where the surface is very good and the car does not need a priming coat, I simply give it two coats of enamel.

The sash and doors are the first to wear on a car, especially street cars, therefore I use and can recommend the use of oil enamel, mahogany color or whatever other color is desired. The manufacturers of one of the enamels that we are using put it up clear; that is with no color ground in it. There are many cases in which I apply one coat of it in color and then one coat in the clear. This applies especially where I am laying gold or aluminum leaf, the coat of clear being put on after the leaf.

I advise using the oil enamel on the inside of cars as well as the outside, and where cars have metal roofs I certainly would use it on the roof, omitting the knifing coat. I also advocate using a pure white oil enamel on headlinings, especially on street cars, because white does not soil nearly as quickly as a dark color and flies will not alight on a white surface if there is any colored surface near for them to alight upon. After using the oil enamel one will never have any "alligatored" headlinings.

Another good feature of using the white headlining is that it increases the illumination in the car. For instance, take a car with the headlining a dark green color where twenty lamps are burned. By changing the headlining to a snow white, one can remove about half the lamps and still have the same intensity of light.

In my opinion the use of gold and aluminum leaf for lettering and striping coaches is just about played out. Since our government has taken over the railroads, I do not think it will much longer allow the use of gold for that purpose, because gold used in that way can never be reclaimed. All manufacturers of paint are now making an imitation gold in paint that looks so nearly like gold leaf that it takes an expert to tell the difference 40 ft. from the car.

In conclusion, I believe that enamel is the paint of the future for all car painting, and it may possibly be the paint for all buildings and outside exposures. I believe it would have been used long ago if it had not been for the prejudice of the painters, and their prejudice is caused largely by the fear that they would have runs and "sags." I will say, however, that after they have used it on one car they will find there is no more danger of sagging or running than there is in varnish. In appearance it very much resembles a good, heavy finishing varnish. I have used it for four years and consider it past its experimental and "fad" stage. As a painter of twenty-three years' experience, I consider it the most efficacious and most economical product in the maintenance and upkeep of cars in spite of the fact that I was at one time much prejudiced against it.

Current
Speed
Operating Engineer
GEAR Losses
ENGINEERS HANDBOOK
POWER CONSUMPTION
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WEIGHTS
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4 MOTORS
ARMATURE SPEED

"It's a Tough Proposition, but Rapid Acceleration with a Low-Speed Motor Will Solve It."

Saving Coal at the Gear and Wheel Tread

By

C. W. Squier

ELECTRICAL ENGINEER

The Writer Discusses the Losses in Gearing, Shows How Correct Gear Ratio with a Low Armature Speed will Save Power, and Compares Gearless and Geared Motors and Two and Four-Motor Equipments

THERE is no other motive power that can compare in reliability with that produced by the modern direct current railway motor. This has resulted from its method of development from a crude machine requring frequent inspection and repairs to the motors of modern types which run for weeks and months without attention. In early designs rugged construction was given more attention than electrical characteristics. The great point was to get motors big enough and strong enough to stay in service. Up to 1895 the selection of motors was more or less a matter of guesswork. During the succeeding two years tests were conducted by manufacturers to determine the service characteristics of different motors so as to be able accurately to predetermine the best motor for a specified service and to place the selection of motor equipments on a scientific basis. The results have been most satisfactory and today manufacturers are able to guarantee the performance of their motors within very close limits.

In selecting a motor nowadays the operating engineer considers economy in operation as the first essential. This requires correct speed and torque characteristics.

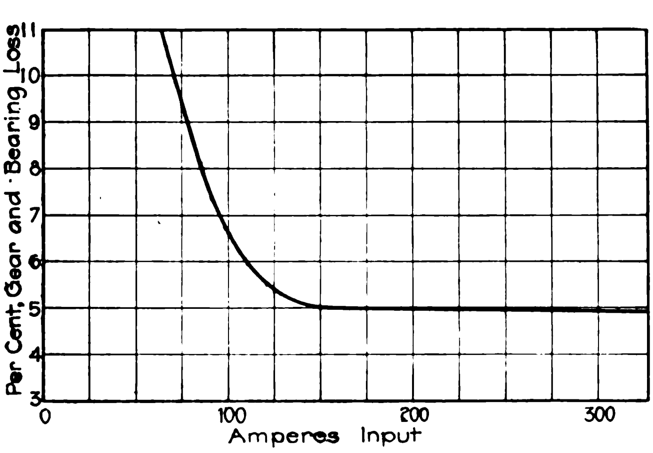


FIG. 1—LOSSES IN GEARS AND BEARINGS OF A 150-HP. MOTOR

In preceding articles I have shown that for city service the essentials for maintaining schedules most economically are rapid acceleration and braking. The accelerating period, in which energy is stored in the car, is the one in which the motors are in action and which will determine their selection. With the same gear ratio a motor with low armature speed, taking the same current, will give a higher rate of acceleration than the motor of higher r.p.m. or, stating it another way, the motor with low armature speed will produce the same acceleration with less current. To obtain this low armature speed it is necessary to increase the size and weight of the motor. In choosing a motor, then, these two factors should be balanced against each other. It will be found that with a low-speed armature and proper gear ratio it is possible to save from 15 per cent to 20 per cent in power. The saving due to reducing weight, if a higher-speed motor were used, would not be more than 5 per cent. The greatest saving then will be determined by the armature speed.

Proper gearing and armature speed should be considered together, as the resulting economies will be greatest with a correct relation between the two. In my article in the April 20 issue of the ELECTRIC RAILWAY JOURNAL the service requirements which we have been considering were discussed. The data given showed that 37 per cent of the total mileage is in business sections, necessarily congested, where the average schedule speed is but 7.3 m.p.h.; 38 per cent of the mileage is in sections where 8.7 m.p.h. is the average schedule speed obtained, and only the remaining 25 per cent is in sections where a schedule speed of more than 10 m.p.h. is possible. In the typical run studies which I have made in this series of articles it is seen that even on the longest runs of 1200 ft. the maximum speed of the cars is not reached. It would then be a serious error to provide gearing for a speed so high that there is no opportunity to reach it.

In a recent study which I made for choosing some new equipment two motors were considered, both being tapped-field motors of the same horse-power rating. The gear ratios necessary to give the same balancing speed were different, being 2.46 and 2.65 respectively. Many curves showing speed and power consumed in the various classes of service were calculated. The motor with gear ratio 2.46 showed an energy consumption of .18 watt-hours per ton-mile less than the other, but its cost and weight were somewhat greater. A discussion with the manufacturer's engineers led to the redesigning of the motor with 2.65 gear ratio so as to make it as efficient and economical as the other motor. This was done by decreasing the speed of the armature and by increasing the gear ratio to 2.77, and that this motor was finally adopted for the service.

Gear and Bearing Losses from 5 to 10 Per Cent

The gear losses between the motors and the car axle have been a continual source of discomfort to equipment engineers, and much time has been given to endeavoring to develop a gearless type of motor for railway service. Many tests have been made to determine the magnitude of these losses. The curve shown in Fig. 1 gives the gear and bearing losses for a 150-hp. motor. These vary from 9.5 per cent at 75 amp. to 5 per cent at 180 amp.

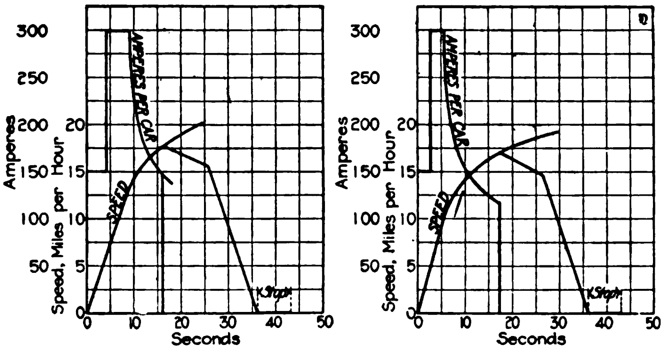


FIG. 2 FIG. 3

FIG. 2—SPEED-TIME AND CURRENT GRAPH WITH HIGH-SPEED ARMATURE. FIG. 3—SPEED-TIME AND CURRENT GRAPH WITH LOW-SPEED ARMATURE

Up to the present time gearless motors have not been applied with success to motor cars. For heavy locomotive service they have proved an unqualified success, but for lighter equipment the excessive weight of the combined truck and motor, the increased cost and the increased power input necessary has made them unattractive to a large degree. Sample motors which have been built and tested in city service have shown a power consumption 10 per cent greater than geared motors suitable for the same service. The maximum gear reductions with geared motors vary from 3.5:1 to 5:1 depending on the service and the size of motor, and armature speeds at the 500-volt rating vary from 500 to 650 r.p.m.

As a further illustration of the effect of armature speed and gear ratio on the power input let us compare the short runs shown in Figs. 2 and 3. Operation with a low-speed motor is shown in Fig. 3. The accelerating current has been kept the same in both cases and the rates of acceleration are 1.5 m.p.h. per second for the high-speed motor against 1.8 m.p.h. per second with the low-speed motor. The reduction in power input in favor of the low-speed motor is 11 per cent. This reduction is due to the falling off of the accelerating current sooner due to the higher rate of acceleration and, as these curves are plotted with the same amount of coasting, the speed at which braking is begun is lower, therefore the braking losses are less. It is also evident that the heating of the high-speed motor will be greater. These curves also serve to illustrate the effect of gear ratio, as the high-speed motor corresponds to the low-speed motor with a gear reduction of 4.43 to 1.

The figures given show the saving effected at the car and will be further increased when the complete system is considered. Many generating and distribution systems are already loaded to their full capacity and, where additional cars are necessary to take care of increased traffic, the problem is a serious one. The reduction in power necessary with low-speed motors would permit the operation of more cars without increasing the generating and substation capacity, so the question of proper gearing and armature speed is an exceedingly important one.

Two-Motor Equipments Produce Largest Economies

The determining factor in a choice between two and four-motor equipments is the adhesion between wheels and rails at which the wheels will slip. With four-motor equipments all wheels, being driving wheels, are available for adhesion, while with two-motor equipments only half are available. Many roads have severe grades, short-radius curves and bad rail conditions, and here the use of two-motor equipments is not feasible. In these days of low-floor cars, four-motor equipments have also been used as a means of keeping the floor level down. Where conditions are favorable, however, two-motor equipments possess advantages in weight, power consumption and low maintenance cost that render their use advantageous. On grades greater than 5 per cent and in climates where snow, sleet and ice are common, four-motor equipments have proved most satisfactory.

Any reduction in the weight of the equipment will manifestly produce a decrease in the cost of operation. The graphs shown in Fig. 4 indicate the relation between horse-power and weight for two and four-motor equipments. These graphs have been worked up from data furnished by several manufacturers and correspond very closely with the conclusion arrived at by the committee on equipment of the American Street & Interurban Railway Engineering Association as published in the ELECTRIC RAILWAY JOURNAL for Oct. 13, 1910.

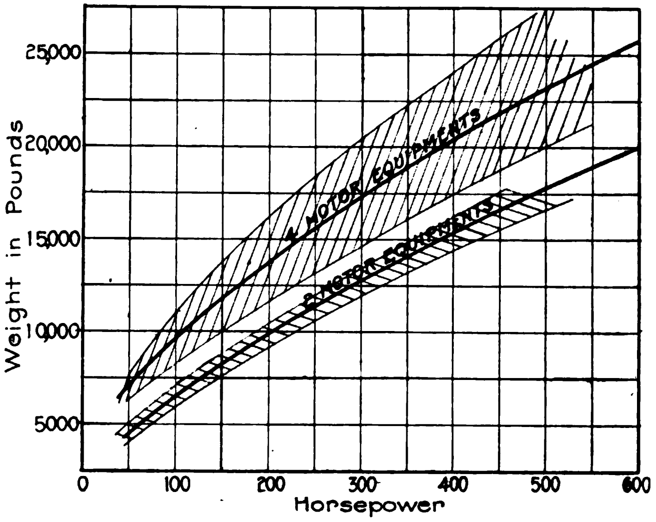
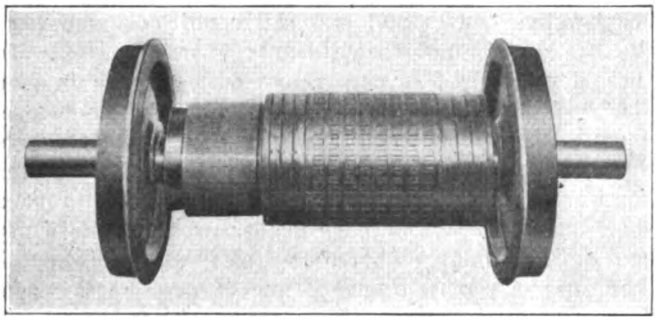


FIG. 4—COMPARISON OF WEIGHTS OF TWO AND FOUR-MOTOR CAR EQUIPMENT

From these graphs it is evident that two-motor equipments average from 7 per cent to 30 per cent less in weight per horse-power than quadruple equipments. The control apparatus is lighter and less car wiring is necessary. A further gain in weight is also made in the trucks, as the weight of two trunks should be less for two large motors than for four smaller ones. In the report of the committee on equipment just referred to, the electrical equipment is given as constituting about 28 per cent of the total weight of the car, so that a saving of 25 per cent in the weight of the electrical equipment would amount to about 7 per cent of the total car weight.

The total weight of the car which we have been considering is 39,000 lb. This is divided as follows: Car body complete but without electrical equipment, 15,000 lb.; two trucks, 8746 lb.; two motors, 5454 lb.; other equipment, 9800 lb. Maximum-traction trucks are used, in which the load is divided 68 per cent on drivers and 32 per cent on trailing wheels. We thus have 26,520 lb. with a light car available for traction. With a coefficient of adhesion of 25 per cent each motor could exert a tractive effort of 3315 lb. before the wheels would slip. In the typical run-graphs used for selecting the motor best adapted to the service, an acceleration of 1½ m.p.h. per second was assumed on level tangent track. With a light car this would require a tractive effort of 1700 lb. per motor with full field and, when changing to short field, this would jump momentarily to 2700 lb. To start a light car on a 5 per cent grade would require about 1250 lb. tractive effort per motor. After the car is started it could be accelerated on this grade at a rate of 1.5 m.p.h. per second with a tractive effort of 2700 lb. per motor on full field. All these values are within the slipping point of the wheels, so a two-motor equipment is satisfactory for operation.



GEARLESS RAILWAY MOTOR ARMATURE MOUNTED ON AXLE

In the inspection and overhauling of motors most roads consider the number of men necessary as directly proportional to the number of motors maintained. Operations such as inspection and repair to brushholders, replacement of brushes, adjustment of brush tension, cleaning and blowing out with compressed air, oiling of bearings, and inspection of motor leads and connections take as much time for small motors as for large ones. The various operations carried out in the overhauling shop also do not vary with the size of motor. The cost of the material used for repairs and replacement parts will be somewhat less for a small motor. It it thus evident that the maintenance costs for two-motor equipments will be less than for equipments with four motors. Various operating engineers have considered this to be in the neighborhood of from 25 per cent to 35 per cent less. I have found the higher value more nearly approaches the saving on systems with which I have been connected.

The necessary power input will be less for a two-motor equipment of the same capacity than for a four-motor equipment due to the decreased weight and to the higher electrical efficiency that the larger motors will have. In the service which we are considering this should amount to from $200 to $300 per year per car.

Testing Heater Motor Armatures Before Installation

By H. C. Ebeling

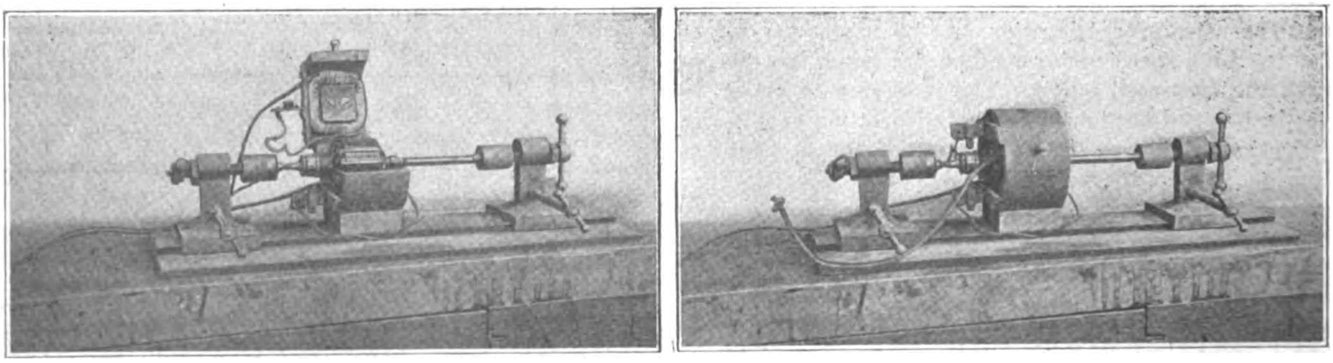
Engineer, Cleveland (Ohio) Railway.

THE simple device for testing stove motor armatures shown in the accompanying photographs is the result of our efforts to eliminate unnecessary work in replacing armatures which were really defective but which did not break down until operated under actual conditions. In testing running conditions are aproximated.

The apparatus consists of two adjustable standards mounted on the base plates and containing ball-bearing supported centers made to engage the armature-shaft.

At the position corresponding to the regular field frame of the motor a split magnet frame containing the field coils is mounted. This frame is divided on the horizontal diameter and hinged at the back, one field coil being located in each half. Brushes are mounted at the proper position, and the whole outfit is wired like a standard motor. Full-load conditions are duplicated by mounting a fan on the shaft.

The operation of testing a motor with this device consists simply in inserting the armature between the centers, swinging down the upper half of the magnet frame and applying current. Armatures in good condition will run without sparking and some are found defective which test out satisfactorily when lying still.



DEVICE FOR TESTING HEATER MOTOR ARMATURES.—AT LEFT, FIELD FRAME OPEN FOR INSERTION OF ARMATURE. AT RIGHT, FIELD FRAME CLOSED READY FOR APPLICATION OF CURRENT.

Some Mysterious Car Ailments

Little but Important Troubles That Tend to Keep Equipment Men Interested in Their Work

CONTRIBUTIONS ARE INVITED FROM THE FIELD

Motors That Flashed Over on Cold Mornings

ON A CERTAIN line of an electric railway reports of motors flashing over were continually being received. The number of cases of trouble was also found to be greater during cold weather. The shop foreman reported that the motormen on that line were a reckless lot and operated their cars at a much higher speed than on other lines and that this must cause the trouble.

The equipment engineer realized that in most cases such trouble was the result of poor commutation, and that as the current taken by the motors is less at high speed it should be easier to commutate than the current at low speed. He arranged accordingly to watch the commutation of these motors in service, and under ordinary operating conditions found it to be better than in most motors. When running at full speed over rough track with a frozen roadbed the motors would sometimes flash when a bad rail joint was encountered. It was evident that the flashing was due to the brushes being knocked off the commutator due to the rough track conditions. The brush tension was increased and a different type of brush-holder spring was tried, with the result that the flashing entirely disappeared.

600-Volt Fuses Gave Trouble on Low-Voltage Battery Circuits

"CAR DEAD, control will not notch up" is the report turned in by the motorman. "Weak batteries" replied the terminal inspector, so the car was shopped to have the batteries charged. Tests by the battery man showed the batteries to be in good condition and fully charged. The general man was then called in and this is what he found:

The battery fuses, which were 1-amp., 600-volt fuses, were blown but the telltale or indicator on the fuses remained in good condition, so to all external appearances the fuses looked "O.K." The telltale was a very fine wire of high resistance connected in parallel with the fusible element and when used on a 500 or 600-volt circuit would have burned in two as soon as the fuse blew and exploded the powder spot on the fuse. With the 14-volt battery circuit, however, its resistance was so great that sufficient current to blow the telltale could not get through and so it remained intact. This extra high resistance also cut down the current so that the control equipment would not operate properly and it behaved exactly the same as with weak batteries.

To prevent a recurrence of the trouble the telltales on all fuses in battery circuits were cut and the fuse manufacturer was asked to furnish a fuse with a telltale that would open on the low-voltage circuits. As a result he developed a new type of fuse that operated satisfactorily.

Controller Explosions Sometimes Result from Equipment Conditions Rather than from Poor Design

A FEW YEARS ago a large railway system began to experience serious trouble with platform controllers. Most of these controllers had been in service for ten years or longer, and had been giving excellent satisfaction. The trouble which developed and increased at an alarming rate consisted of controller explosions. Severe arcing took place at the contacts and short-circuits occurred between adjacent parts and to ground, which burned up parts of the controllers and caused panics among the passengers, who frequently jumped through windows and off the cars while in motion.

An extended investigation as to the causes was instituted by the engineers of the company, assisted by the engineers of the controller manufacturer. At the beginning it was assumed that the service requirements had increased to such an extent that the controllers were of insufficient capacity and that a more efficient blow-out was necessary for the heavy current-carrying contacts. The manufacturing engineers worked out new designs for improvements which could be readily applied to the existing equipment and constructed a sample controller for inspection and test.

In the meantime the railway company's engineers had been conducting a series of tests to determine what maximum values of current were being obtained in service and what the actual capacity of the controllers was. These tests showed that the controllers were capable of handling currents two or three times as great as should occur in regular operation, but that on certain cars there appeared to be an excessive leakage of current through the wiring. Tests to determine the insulation resistance of the car wiring showed that much of this was in a very bad condition, and that its replacement was desirable. The rewiring of all such cars with a high grade of weatherproof wire was started at once. At the same time the method of wiring was brought up to the latest practice. As the rewiring progressed the explosions decreased and when all cars were rewired the explosions ceased entirely.

Circuit-Breaker Action that Made Residents Think They Were at the Battle Front

SEVERAL motormen operating trains on a certain line with cars equipped with multiple-unit control and arranged for automatic acceleration reported the circuit breakers on some cars as "blowing" while passing a certain point. Inspection of the cars reported showed that on certain ones the motors had flashed over. Others showed no signs of trouble. As the cars reported gave no trouble while operating on other parts of the line, and as no apparent trouble was found with the operation of the equipment of these cars when inspected at the shops, it was evident that there must be some peculiar condition in the line at the point of trouble. Inspectors sent to determine the cause reported that the trouble was occurring near a passenger station where there was a short gap in the third-rail. There was a crossover at this point which made this gap necessary. The blowing of the circuit breakers occurred on certain cars as the train was pulling out of the station.

The control equipment of the cars was arranged for automatic acceleration by means of a series current-limit switch and the control equipment was dropped off by the action of a line relay which opened whenever the line circuit was interrupted. The problem for the "Sherlock Holmes" of the engineering department was to determine why the trouble occurred only on certain cars and what conditions of third-rail or operation led to the trouble.

CAUSE OF THE TROUBLE

The first morning that operation was watched carefully but one car blew its breaker. This occurred at the instant that contact was re-established with the third-rail while passing through the gap. This showed that the control equipment on that particular car did not drop off while passing through the gap. Tests on this car at the shop showed that the line relay was a trifle sluggish but with the usual method of testing its operation would have been considered satisfactory. Further investigation at the point of trouble disclosed the fact that on cars which tripped their breakers not only did the control fail to drop off but it actually notched up two or three steps while the circuit was broken, so that when power was restored the grid resistors were cut out of the circuit and a rush of current took place which tripped the breakers and in some cases caused the motors to flash over.

The reason for the notching up of the control equipment was that when the circuit was broken the current limit dropped and as the line relay did not open promptly the control equipment notched up rapidly with nothing to retard its operation. As the gap in the third-rail was near the station it caught the trains while accelerating and before the grid resistors were entirely cut out of the circuit.

PREVENTIVE MEASURES NECESSARY

To provide against repetition of this trouble the gap in the third-rail was lengthened somewhat so as to give a slightly longer time for the line relays to operate. A more careful inspection of line relays was also inaugurated at the inspection shop. The time interval for the dropping of the line relays was so short that a satisfactory shop method for timing this operation was not practicable. The same object was accomplished, however, by making sure that the line relays dropped at a certain minimum voltage. After this value had been decided upon by the use of a voltmeter connected across the relay a suitable resistance was made to be placed in circuit and give the required drop in voltage while testing the relay. All line relays were then adjusted so that they would drop when this resistance was cut in.

The Multiple-Unit Control That Wouldn't Behave on Cold Mornings

DURING the cold days in winter some rather unusual trouble was experienced with the control apparatus on cars which operated both inside and outside a subway. In the morning when trains went into service everything was apparently working "O.K." Yet when they reached the point where they entered the subway, certain cars of trains were reported as "going dead." Bad operation with only part of the cars working would continue until the trains reached the downtown section. From there on to the end of the trip the cars would work all right. When the cars were ordered into the shop for inspection to determine the cause of the trouble nothing could be found out of the ordinary and the cars were continually being reported by inspectors as "found O.K."

A special investigation was made on cars in service to determine, if possible, the cause of the trouble and it was found that when the outside temperature was below 18 deg. Fahr. certain large contact parts, which were made of brass, were chilled to such a low temperature that when they entered the moist air at a higher temperature in the subway these cold brass contact parts condensed the moisture in the air and caused a layer of frost to accumulate. The tension of the fingers on the contact parts was not sufficient to penetrate this insulation of ice and the low voltage of the battery (14 volts) was not sufficient to break down this insulation. An open circuit resulted in the control connections, so that the car would be "dead."

Continued operation in the subway where the temperature is warmer would heat up the large brass parts in time and melt the layer of frost to such extent that operation would again be satisfactory. When the cars made their return trip out in the open air the parts were again chilled and the same conditions resulted on the next trip.

The remedy that was found effective for overcoming this trouble was to prick punch the contact parts so as to raise sharp points on the contacts. These points were sharp enough so that any layer of frost would be punctured by the contact pressure and good contact resulted. Of course, it was necessary to make certain that sufficient contact surface was available for regular operation.

It is reported that an extensive network of electric railways is planned for the industrial district of Merseburg, Germany, where recently very important industries have been established. The length of the railway lines is to be about 42 miles and the cost of construction will be about $2,500,000.

Short, Timely Articles

FOR THE

Way, Mechanical and Electrical Departments

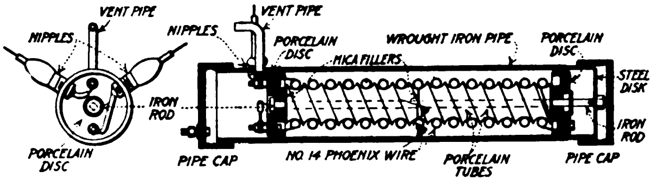
Electric Snow Melters Keep Switches Clear in Severe Weather

Trials Made on the New York Central Electrified Lines Show That Satisfactory Results Can Be Obtained

THE snowfall for the last three winters has been from 8 in. to 15 in. above the average. This taken together with the extremely cold weather experienced last winter has led railway operating engineers to consider the necessity for some form of apparatus that will aid in keeping switches and special work at important points free from snow and ice. The cost of snow removal at points like the Grand Central terminal in New York, where tracks run long distances between high walls, may run from $1 to $3 per inch of snowfall per mile of track. Of course, this figure is absurdly high for lightly traveled lines through the open country. Here, there are few switches and the snow is mainly removed by snowplows and flangers, and at switches by the crews before they operate them. But on all lines the costs due to delays caused by storms and blizzards aggregate large sums. The actual cost is difficult to calculate, as it embraces not only detentions and the tying up of passenger, freight, mail and express service, but also the decrease in travel due to poor service.

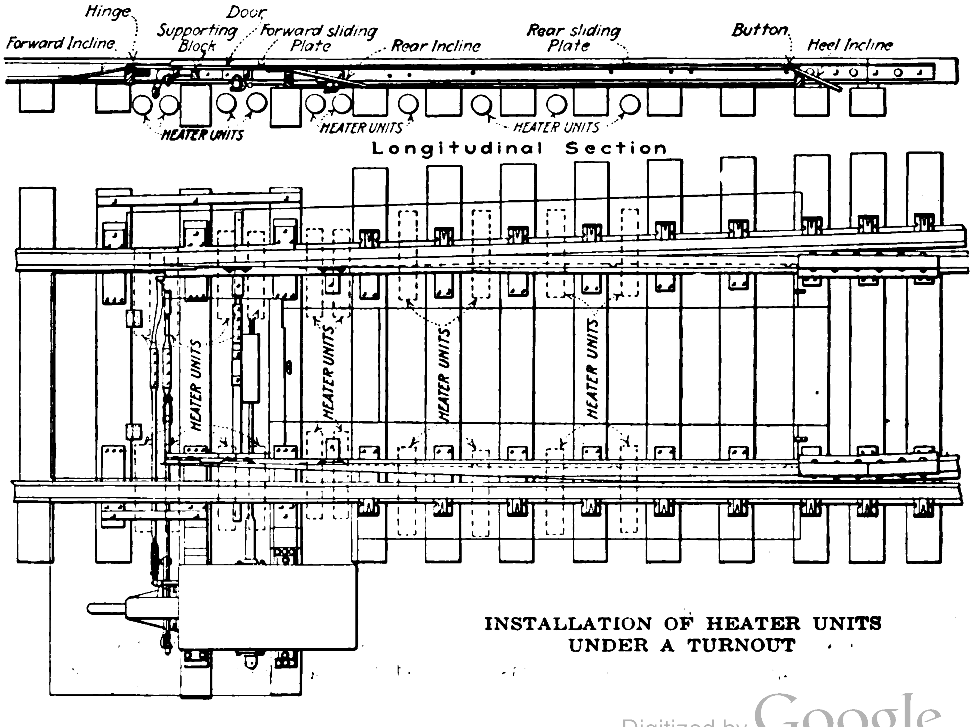
In an endeavor to help solve such conditions an electric heater has been developed under the direction of Francis Boardman, division engineer New York Central Railroad. This is now being placed on the market by the Q & C Company of New York. The heater units consist of resistance wire wound about a porcelain tube with much the same construction as is used in electric car heaters. The tubes and coils are inclosed in 3½ in. wrought-iron pipes, 20 in. long, with pipe caps and waterproof connections for bringing out the leads. This construction provides watertight and moisture-proof units which can be connected in series and placed between ties under switches, or at other points where a clear track is essential. With connections from these units to a switch located at any convenient point, the current can be turned on as soon as a snowstorm starts. Results obtained during a three-year trial with these heaters show that a temperature rise of about 100 deg. C. is obtained at the heater in the first half hour and about 135 deg. C. above the outside temperature at the end of one hour. The heat obtained will not set fire to any combustible material but is sufficient to melt snow and ice rapidly and to keep the frost out of the ground so that proper drainage is provided.

During the three years but one case developed where the heaters could not melt the snow as fast as it fell. In this particular case the snow was accompanied by a strong wind parallel to the track which drove it between the switch point and the rail. To prevent a recurrence of such condition a covering was placed over the tie rods, and on either side of the main track rail and the adjacent switch point. Heaters were placed under this protection so that the heat was confined at the most vulnerable point. This housing was made of wood to prevent rapid radiation of the heat and the plate which moves with the switch point was kept warm to prevent an accumulation of snow or ice upon it.

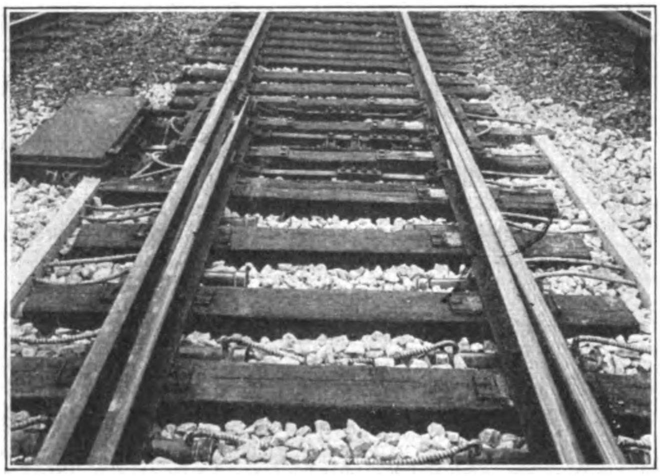

VENT PIPE
NIPPLES
PORCELAIN DISC
IRON ROD
VENT PIPE
NIPPLES
PORCELAIN DISC
MICA FILLERS
WROUGHT IRON PIPE
PORCELAIN DISC
STEEL DISK
IRON ROD
PIPE CAP
NO. 14 PHOENIX WIRE
PORCELAIN TUBES
PIPE CAP

DETAILS OF HEATER UNIT

As at present designed these heater units take 11 amp. with a voltage of 36⅔ across each unit. For a turnout


Hinge
Door
Supporting Block
Forward sliding Plate
Forward Incline
Rear Incline
Rear sliding Plate
Button
Heel Incline
HEATER UNITS
HEATER UNITS
HEATER UNITS
Longitudinal Section
HEATER UNITS
HEATER UNITS
HEATER UNITS
HEATER UNITS

INSTALLATION OF HEATER UNITS UNDER A TURNOUT with 15-ft. switch points eighteen heaters were used to provide for the voltage of the system with a total power consumption of 7.26 kw. for each turnout. Where current can be obtained at 1 cent per kilowatt-hour the cost of operation for a turnout would be 7¼ cents per hour. This amount is not excessive because current need be used only while snow is falling and there is no time lost in calling men. Most roadmasters are inflenced, in deciding on their winter force, by the emergencies which snow conditions require. If they do not have to provide for clearing switches they feel safer with a much smaller force, particularly since the use of telephones, motor cars and the like makes it easy to bring gangs from headquarters promptly.



SWITCH WITH ELECTRIC SNOW MELTERS INSTALLED IN BALLAST

Since these electric heaters have been developed, various other uses have been found for them. They are completely effective for taking frost out of the ground. Where the track has heaved so as ordinarily to require large shims above the shoulder of the tie plate and to necessitate slow movement of traffic, the condition has been remedied by placing these heaters in the ground so as to remove the frost and thus allow the track to drop back to its normal place. The heaters can also be used under pipe runs, signal mechanisms, turntable pits, ash-carrying devices and the like.

German Tramway Conditions Serious

GREAT as have been the difficulties in obtaining material by the electric railways in this country, they would appear to be mild as compared with those which have to be faced in Germany. The *Elektrotechnische Zeitschrift* says in a recent issue that tramways and secondary railways in Germany have given large quantities of metal to the government which has been removed from their cars and overhead lines.

The enroachments on line materials have necessitated replacement of at least equal quantities of substitute metals which were very difficult to obtain. As a result the railway companies in Germany have made great efforts to find substitutes and this is exemplified in their attempts to replace contact shoes formerly made of zinc carbon and electro-metal and trolley wheels of copper by cast iron and other metals.

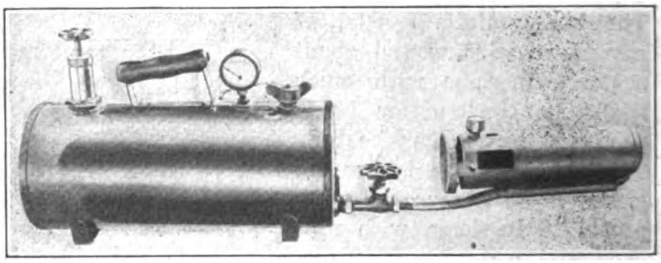
Self-Contained One-Man Kerosene Furnace

A NEW torch known as the "Vulcan one-man kerosene furnace," which is being distributed in the electric railway, lighting and power fields by the Economy Electric Devices Company, is being used very efficiently in electric railway service. This furnace is entirely self-contained, no hose or other flexible connections being necessary. The fuel tank has a capacity of 3 gal. of kerosene, a quantity sufficient for three hours' burning with a flame approximately 18 in. to 20 in. long. A simple valve arrangement within the intake pipe permits the furnace to be burned with the tank in any position and no auxiliary means for starting is neecssary. The design is such that, with from 10 to 20 lb. pressure in the tank, the kerosene gradually becomes heated as it is lifted through the inlet valve to the generator, where it is changed to a vapor and issues from the orifice and is burned as a superheated vapor. Pressure is produced by hand pump and a gage is provided to indicate its magnitude.

KEROSENE FURNACE BEING USED TO PRE-HEAT A THIRD RAIL BEFORE BONDING

This furnace has been used for several years by steam railroads, but has very recently come into use on electric roads. On these it is used for melting ice, sleet and snow around switches and signal apparatus, for thawing drain pipes, frozen coal cars, ash cars, frozen air pipes, for melting ice on car steps, etc. In the summer it can be used to burn weeds in the ballast and to preheat rails and other materials before bending.

Last winter the Chicago Elevated Railroads used one of these furnaces in thawing out and keeping clear the several interlockers on the business loop. It was found that, with its aid, one man could accomplish the work of eight men equipped with the burning saturated waste previously used. Seven additional furnaces have since been used for thawing out frozen water pipes, burning grease from pipe carriers, thawing out switch points and for heating rails for bending. The flexibility, low cost of operation, simplicity and effectiveness of this equipment appealed to the management of the Elevated Railroad and it is expected that a still further extension of its use will follow.



ONE-MAN KEROSENE FURNACE

An Announcing System Speeds Up Car Boarding

Electrically-Operated Destination Signs Direct Traffic in a Transfer Station of the Boston Elevated Railway

THE Forest Hills terminal of the Boston Elevated Railway was formerly the scene of much confusion during the rush-hour period. This was due to the fact that from six to eight elevated trains operating on from one to two-minute headway delivered their passenger loads to distributing surface cars at this point without adequate provision for directing the traffic during the transfer period. In this station the surface cars are loaded from an island platform on the street level which is connected with the larger elevated platform by means of two stairways. The transportation problem that presented itself was that passengers would land on the elevated platform, rush down the nearest stairway and then find, in all probability, that the car that they desired was waiting at the other end of the station. As a result there was much confusion on the narrow loading platform due to two streams of passengers trying to move in opposite directions at the same time.

To relieve this situation the lower platform was divided into car berths and each berth was indicated by a conspicuous marker hung above the stopping point for the car entrance. Figures were used to mark the berths on one track and letters those on the other. Also, guide posts were installed on the upper platform indicating which stairway should be taken to reach a given car berth. An electrically-operated annunciator sign, illustrated in Fig. 1, was installed on the upper platform midway between the two stairways. This sign is operated from a suitable plug switchboard installed in a booth, shown in Fig. 2, at the entering end of the surface car station. In order to inform the motorman of an incoming car of his proper stopping place an additional contact was mounted on the back of the plug board and connected to a signal lamp mounted as one of a vertical group at the entrance to the station. This group of signals is shown at the right in Fig. 2. The lamps are mounted behind disks, the latter being simply plain ground glasses marked 1 to 8 respectively, for one track, and from A to H for the other. Thus the insertion of a plug by the booth operator gives simultaneous notice both to the passengers on the upper platform level and to the motorman of the approaching car.

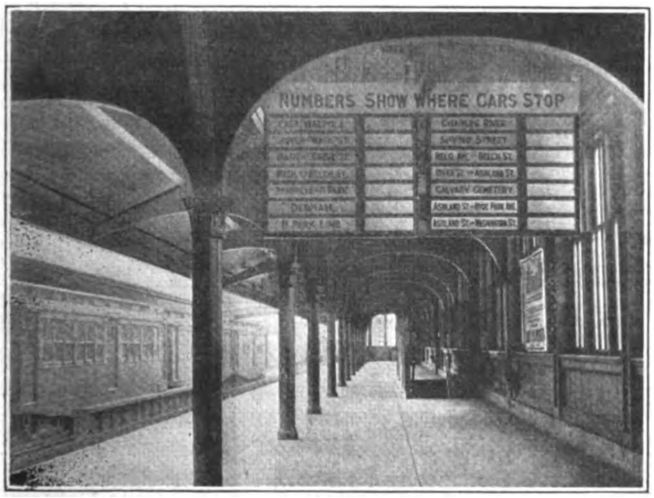


FIG. 1—ELECTRICAL ANNUNCIATOR ON ELEVATED PLATFORM

At the top of the group of motorman signals is mounted a common red lantern, and the electrical connections are such that if the entrance of a car to the station has not been anticipated by the placing of the plug for the desired berth, the red light automatically signals the car to remain outside until its berth signal is illuminated. By means of specially designed relays and a lever switch connected to the trolley, each car as it enters the station extinguishes its own number on the motorman's signal only and leaves the next number for the following car, thus when the last car for which there is room in the station enters, the red light automatically comes into play and prevents another car from entering until given a berth number. To give the proper indications when an articulated car or motor car with a trailer enters the station a double or twin plug is used in plugging up the connection in the operating both. One contact of this plug is long enough to reach both of the jack contacts, thus lighting both the passenger and motorman's signals while the other is long enough to reach only the jack contact which is connected to the passenger signal.

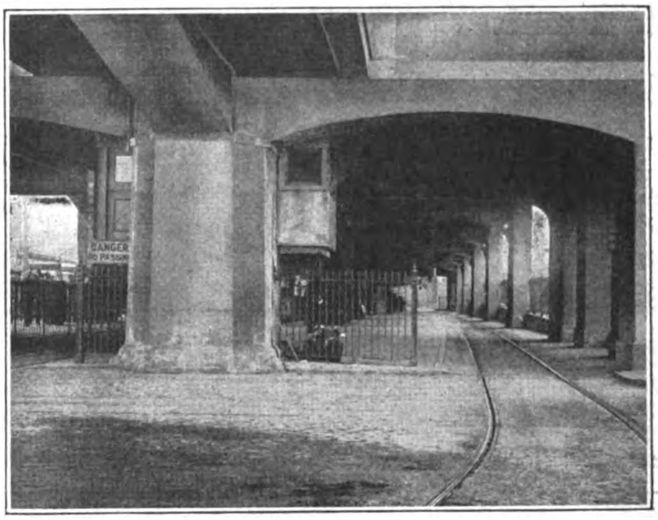


FIG. 2—STATION ENTRANCE SHOWING OPERATING BOOTH AND MOTORMAN'S SIGNAL

This method of car announcing is used only during rush hours and has been found greatly to facilitate the dispatching of cars from the terminal as well as to decrease congestion and therefore the liability to accidents on the lower platform.

The Columbus, New Albany & Johnson Traction Company, Columbus, Ohio, has added to its equipment two motor trucks of 1- and 2-ton capacity respectively. One has a freight body, the other a combination freight and passenger body. The trucks supply practically an extension of the railway service, and they have developed a considerable passenger and express service. Milk is shipped into Columbus via motor truck and electric car, and merchandise is shipped from Columbus to the towns served.

TABLE I—FEEDER COMBINATIONS ANNEALED STRANDED COPPER CABLE RESISTANCES AT 68 DEG. FAHR.

Sizes	Area, Circ. Mils	Ohms per 1000 Ft.	Volts-Drop per 100 Amp. per 1000 Ft.	Pounds per 1000 Ft. Bare	Pounds per 1000 Ft. T.B.W.
0000	212,000	0.0499	4.99	653	800
250,000	250,000	0.0423	4.23	772	985
300,000	300,000	0.0353	3.53	926	1174
400,000	400,000	0.0265	2.65	1240	1553
0000 0000	424,000	0.0250	2.50	1306	1600
500,000	500,000	0.0212	2.12	1540	1894
600,000	600,000	0.0176	1.76	1850	2235
0000 400,000	612,000	0.0173	1.73	1893	2353
0000 0000 0000	636,000	0.0167	1.67	1959	2400
700,000	700,000	0.0151	1.51	2160	2650
0000 500,000	712,000	0.0149	1.49	2193	2694
750,000	750,000	0.0141	1.41	2320	2822
800,000	800,000	0.0132	1.32	2470	2992
0000 0000 0000 0000	848,000	0.0125	1.25	2612	3200
0000 0000 500,000	924,000	0.0115	1.15	2846	3494
0000 750,000	962,000	0.0110	1.10	2973	3622
1,000,000	1,000,000	0.0106	1.06	3090	3674
400,000 750,000	1,150,000	0.0092	0.92	3560	4375
0000 1,000,000	1,212,000	0.0087	0.87	3743	4474
0000 400,000 750,000	1,362,000	0.0078	0.78	4213	5175
0000 0000 1,000,000	1,424,000	0.0074	0.74	4396	5274
500,000 1,000,000	1,500,000	0.0071	0.71	4630	5568
0000 400,000 1,000,000	1,612,000	0.0066	0.66	4983	6027
0000 500,000 1,000,000	1,712,000	0.0062	0.62	5283	6368
0000 0000 500,000 1,000,000	1,924,000	0.0055	0.55	5936	7168
1,000,000 1,000,000	2,000,000	0.0053	0.53	6180	7348
400,000 750,000 1,000,000	2,150,000	0.0049	0.49	6650	8049
0000 1,000,000 1,000,000	2,212,000	0.0048	0.48	6833	8148
0000 0000 1,000,000 1,000,000	2,424,000	0.0044	0.44	7486	8948
500,000 1,000,000 1,000,000	2,500,000	0.0042	0.42	7720	9242
0000 500,000 1,000,000 1,000,000	2,712,000	0.0039	0.39	8373	10,042
1,000,000 1,000,000 1,000,000	3,000,000	0.0035	0.35	9278	11,022
0000 1,000,000 1,000,000 1,000,000	3,212,000	0.0033	0.33	9923	11,822
500,000 1,000,000 1,000,000 1,000,000	3,500,000	0.003	0.30	10,810	12,916
1,000,000 1,000,000 1,000,000 1,000,000	4,000,000	0.0026	0.26	12,360	14,696

TABLE II—TROLLEY AND FEEDER COMBINATIONS—SINGLE TRACK

Starred Trolley; Not Marked Stranded Cable

Sizes	Area Total Circ. Mils	Ohms per 1000 Ft.	Volts Drop per 100 Amp. per 1000 Ft.	Pounds per 1000 Ft. Bare	Pounds per 1000 Ft. T.B.W. (Cable) Bare (Trolley)
		00 *Trolley*			
00*	133,079	0.0800	8.00	403	403
00* 0000	345,079	0.0307	3.07	1056	1203
00* 400,000	533,079	0.0199	1.99	1643	1956
00* 500,000	633,079	0.0168	1.68	1943	2297
00* 0000 500,000	845,079	0.0125	1.25	2596	3097
		000 *Trolley*			
000*	167,805	0.0635	6.35	508	508
000* 0000	379,805	0.0280	2.80	1161	1308
000* 400,000	567,805	0.0187	1.87	1748	2061
000* 0000 0000	591,805	0.0179	1.79	1814	2108
000* 500,000	667,805	0.0159	1.59	2048	2402
000* 0000 400,000	779,805	0.0136	1.36	2401	2861
000* 0000 500,000	879,805	0.01205	1.20	2701	3202
		0000 *Trolley*			
0000*	211,600	0.0503	5.03	641	641
0000* 0000	423,600	0.0250	2.50	1294	1441
0000* 400,000	611,600	0.01735	1.73	1881	2194
0000* 0000 0000	635,600	0.0167	1.67	1947	2241
0000* 500,000	711,600	0.0149	1.49	2181	2535
0000* 0000 400,000	823,600	0.0129	1.29	2534	2994
0000* 0000 500,000	923,600	0.0115	1.15	2834	3335
0000* 1,000,000	1,211,600	0.00875	0.87	3731	4315
0000* 500,000 1,000,000	1,711,600	0.00620	0.620	5271	6209
		DOUBLE TRACK			
		2-00 *Trolley*			
2-00*	266,158	0.0400	4.00	806	806
2-00* 0000	478,158	0.0222	2.22	1459	1606
2-00* 400,000	666,158	0.0159	1.59	2046	2359
2-00* 500,000	766,158	0.0139	1.39	2346	2700
2-00* 0000 500,000	978,158	0.0108	1.08	2999	3500
		2-000 *Trolley*			
2-000*	335,610	0.0318	3.18	1016	1016
2-000* 0000	547,610	0.0194	1.94	1669	1816
2-000* 400,000	735,610	0.0144	1.44	2256	2569
2-000* 0000 0000	759,610	0.0140	1.40	2322	2616
2-000* 500,000	835,610	0.0127	1.27	2556	2910
2-000* 0000 400,000	947,610	0.0112	1.12	2909	3369
2-000* 0000 500,000	1,047,610	0.0101	1.01	3209	3710
		2-0000 *Trolley*			
2-0000*	423,200	0.0252	2.52	1282	1282
2-0000* 0000	635,200	0.0167	1.67	1935	2082
2-0000* 400,000	823,200	0.0129	1.29	2522	2835
2-0000* 0000 0000	847,200	0.0125	1.25	2588	2882
2-0000* 500,000	923,200	0.0115	1.15	2822	3176
2-0000* 0000 400,000	1,035,200	0.0102	1.02	3175	3635
2-0000* 0000 500,000	1,135,200	0.00935	0.93	3475	3976
2-0000* 1,000,000	1,423,200	0.00745	0.74	4372	4956
2-0000* 500,000 1,000,000	1,923,200	0.00552	0.55	5912	6850
2-0000* 0000 500,000 1,000,000	2,135,200	0.00497	0.50	6565	7650
2-0000* 1,000,000 1,000,000	2,423,200	0.00438	0.44	7462	8630
2-0000* 500,000 1,000,000 1,000,000	2,923,200	0.00363	0.36	9002	10,524

(For description of these tables see article by H. E. Davis on opposite page)

Special Wire Tables Facilitate Feeder Calculations

Tables of Combinations Prove of Value On the New York State Railways—Other Combinations Can Be Tabulated as Needed

By H. E. Davis

Electrical Engineer, New York State Railways, Utica-Syracuse Lines, Syracuse, N. Y.

In CONNECTION with his work dealing with the design of distribution circuits the writer has found the tables on page 884 of great value from the standpoints of convenience and labor saving. It is, of course, out of the question to include in tables of this kind all possible combinations but those given cover the principal wire and cable sizes in common use and include all of the combinations used on the New York State Railways, Utica-Syracuse Lines.

In both tables the order of arrangement is that of total area of the combination expressed in circular mils. This order is more convenient than one based on a system of classification according to individual conductor sizes. To find any required combination it is only necessary to consult the table with the approximate total circular mils in mind. The table may also be entered in a similar manner with either the resistance or the voltage drop per 100 amp. per 1000 ft. of track. The figures in the last two columns are the weights per 1000 ft. for bare and triple-braid weatherproof insulated conductors.

Ground Connections for Motor Leads

A Loop In the End of the Lead Is Better than a Terminal and Less Expensive

By Edward D. Ransom, B.E.

THE old smooth-faced brass terminal generally used for motor ground connections is a source of continual trouble unless kept tight at all times, and even then at best it is troublesome. One flat surface against another, even though tightened carefully, is sure to loosen when subjected to vibrations such as are met with on railway motor trucks.

The manner of soldering the lead into the usual type of terminal leaves the strain on a few strands of wire and they soon break due to the twisting motion caused by the truck while rounding curves or passing over poor track joints. The result is either a poor ground connection or an open circuit which invariably shows up in motor trouble, fires and delays to service.

A ground lead developed by one of the larger properties to do away with these troubles, and the method of attaching it to the motor shell by a tap bolt, are shown in the accompanying illustrations. No separate terminal is used but the end of the ground lead is formed into a loop of proper size to fit over the tap bolt. The leads, of proper length for each type of motor, are made up in the electrical department. After the loop is shaped it is carefully wound with copper wire and then thoroughly tinned, thus making a thoroughly solid terminal.

Attention is particularly called to the short section of insulation left on the end of the lead which is solidly clamped to the lead proper by means of a figure-8 metal clamp. This arrangement places the strain or twist on the solid part of the cable, taking all strain off the strands and preventing breakages. The metal clamp is bell-mouthed slightly around the lead to prevent cutting the insulation and to give a better distribution of the strain.

The tap bolt in Fig. 2 was developed to take the place of a plain square-head bolt, with flat and lock washer, which was simply placed through the old terminal and supposedly tightened down. In time the threads became partially stripped or rusty. and the holes "burred up" due to constant removal for the soldering on of new leads. With the present arrangement the tap bolt is firmly screwed into the motor shell and there it stays, doing away with the burring of holes from frequent removal. The ground loop is placed over this bolt, directly against the face of the shell. A thin nut is tightened on it until it is partially flattened down and almost welded into the motor shell, becoming a part of it, the rough strands biting in. On top of this first nut is placed a second one which locks the whole outfit firmly and solidly in place. A cotter key is then placed through the bolt end.

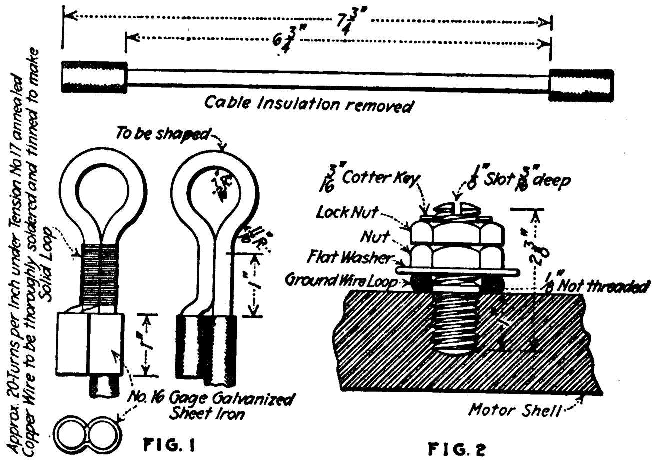

$7\frac{3}{4}''$
$6\frac{3}{4}''$
Cable Insulation removed
To be shaped
Approx. 20 Turns per Inch under Tension No. 17 annealed Copper Wire to be thoroughly soldered and tinned to make Solid Loop
$\frac{1}{8}''$ R.
1"
1"
No. 16 Gage Galvanized Sheet Iron
FIG. 1
$\frac{3}{16}''$ Cotter Key
$\frac{1}{8}''$ Slot $\frac{3}{16}''$ deep
Lock Nut
Nut
Flat Washer
Ground Wire Loop
$2\frac{3}{8}''$
$\frac{1}{8}''$ Not threaded
Motor Shell
FIG. 2

FIG. 1—END OF CABLE LOOPED TO FORM A TERMINAL
FIG. 2—METHOD OF ATTACHING LEADS TO MOTOR SHELLS

Experience with leads of this type has shown that when once installed they will remain permanent and solid for the ordinary life of the cable. After that a new lead can be quickly and easily installed without the necessity of removing the bolt from the shell.

Instruments Needed for Efficient Boiler-room Equipment

In listing the instruments needed in the modern boiler room, in connection with a paper presented at a recent meeting of the Detroit section of the American Society of Mechanical Engineers, R. H. Kuss, consulting engineer, Chicago, Ill., stated that while few instruments are needed for an ordinary plant these must be regularly used and the records reviewed and studied. Every boiler setting should have a draft gage, or draft-gage system, capable of instant and constant indication of boiler uptakes and furnace drafts. There should also be accurate water-measuring and coal-measuring apparatus. Each chief engineer of a plant of, say, 600 b.hp. should possess a standard Orsat or gas-analyzing set and an indicating pyrometer.

Caring for D. C. Aluminum Car Arresters During the Winter

Practical Points Which Experience Has Shown to Be Desirable in Keeping Arresters in Prime Condition

By R. T. WAGNER
General Electric Company, Schenectady, N. Y.

WHETHER or not the direct-current aluminum type of car arrester should be removed from service during the winter months depends upon the local prevalence of lightning storms during that period. In some parts of the Far South where the period of freedom from lightning is very short, or in localities where there is no part of the year altogether without lightning, the arresters should be kept in service continuously. In the North, where lightning is very infrequent after September, the arresters should generally be removed from the cars in the fall and stored for the winter.

PROCEDURE WHEN ARRESTERS ARE LEFT IN SERVICE

It is sometimes desirable to leave the arresters in service during the winter to gain the benefits of protection against disturbances other than lightning, such as electromagnetic surges produced by the operation of the motors and the control equipment. These may produce commutator flashovers or motor damage. It is impossible to predict whether the arresters can be satisfactorily operated during the winter in all cases, as this is entirely a matter of temperature. The danger involved is the possible breaking of the glass jars due to freezing. The electrolyte freezes to the form of a soft slush at about 25 deg. Fahr. To cause it to freeze solid requires a lower temperature maintained for several hours. It is probable that if a car were used every day, so that current flowed through the cells and the balancing resistances, the arrester would not freeze harmfully even though it were kept at night in the practically outdoor temperature of the usual carhouse. During the winter of 1913-1914 thirteen jars filled with electrolyte were placed out of doors and observed carefully, temperatures being determined by means of a recording thermometer. The winter was severe and on three occasions, at least, the temperature was as low as minus 20 deg. Fahr. None of the jars broke. It might happen that under the more severe conditions of service operation some breakage would occur. There has been at least one case of successful operation through the winter in a cold climate. About a year ago W. C. Klein, now superintendent of equipment Lehigh Valley Transit Company, then master mechanic of the Easton (Pa.) Transit Company, after a particularly successful season of protection during the summer, hesitated to remove the arresters from service and decided to operate through the winter. In the spring he wrote as follows:

> We have left all aluminum-cell arresters in service on revenue cars. The arresters are located in the vestibule of the car on the hood above the motorman. Temperature of cars throughout the day is approximately 45 deg. Fahr. At night the cars are stored in carhouse at outdoor temperature with trolley poles removed. In a few rare cases the jars have frozen solid, but in no case have we had jars broken. The writer has observed an arrester, which had cloudy electrolyte prior to being frozen, become very clear after thawing out. Regarding flashovers, grounded cord bands and commutation troubles, have observed same have been practically eliminated. We have been able to maintain our regular service throughout this entire severe winter, which is very good evidence that arresters have afforded some protection. It is our intention to wash the cells thoroughly and refill with new electrolyte and new transil oil before the summer season sets in.

It is thus evident that the arresters may be operated during the winter, but it is inadvisable to do so, unless conditions indicate that this is necessary on account of the useless deterioration of the cells that this involves.

When the arresters are left on the cars, it is simply necessary to follow the same scheme of inspection as is followed during the summer. The best plan is to inspect them at the time of regular car inspections, usually at intervals of two weeks or less. A particularly close inspection should be made in the spring just before lightning storms may be expected. The inspection should cover the points given below. This list might give the impression that many troubles occur in the operation of these arresters, which is not the case as the points enumerated include every kind of trouble that may be met.

QUESTIONS AND COMMENTS FOR THE INSPECTOR'S GUIDANCE

1. *Are there loose connections?*

2. *Is the electrolyte at the proper level, i.e., ⅛ to ¼ in. above the top of the slots in the outside plate?*

It is important that this point be checked as early instructions on this type of arrester provided for a higher level which caused wear of the plate lugs. If the electrolyte of either jar is more than half gone it is evident that the cell has been overheated. This may have been caused by numerous heavy discharges, defective resistors or poor film. The cell should be cleaned, refilled and tested for proper film conditions. The balancing resistors should be checked as outlined in Item 5.

3. *Is the fuse blown?*

If no spark appears when the circuit is opened and closed through the arrester, the fuse should be tested to see if it is blown. If found blown the cells and circuits should be checked to see that no short-circuit exists and the arrester re-fused if circuit conditions are correct. In event of the fuse blowing again, the cells should be cleaned, refilled and tested out with series lamps. A good film condition is indicated by a bright, snappy spark on closing the circuit.

4. *Are the positive (outside) plates worn off at the surface of the electrolyte?*

If so, the cells should be replaced.

5. *Do the cells sparkle?*

Sparking is due to over-voltage being applied to the cell. If the arrester is not used beyond its rated voltage this could only occur because the voltage across the cells has become unbalanced. It is, therefore, evident that the balancing resistors have become defective and should be replaced. The balancing resistors are used to divide the voltage equally across the two cells. To test the resistance it is necessary to merely place the coil or section of a coil to be checked across the trolley circuit in series with a voltmeter suitable for the circuit. This is the series voltmeter method of measuring a resistance. An open resistor will give no reading on the voltmeter, while a "shorted" tube will show full circuit voltage on the meter. The individual resistance units in any arrester should give very closely the same voltage reading. On any circuit with voltage from 450 to 650, and with a voltmeter of the usual resistance for a 600-volt or 750-volt instrument, the balancing resistors are in satisfactory condition if the readings do not differ by more than 10 volts.

6. *Are any cells hot?*

A hot cell, that is, one quite warm to the touch, is taking more than its share of the voltage due to either a defective balancing resistor or to poor film condition. If the resistance tests are satisfactory, the cell should be removed for cleaning and testing.

7. *Is the electrolyte badly discolored?*

If it is only slightly discolored, so that the plates can still be plainly seen, it is satisfactory. If it is so badly discolored that the plates can be seen only with difficulty or not at all, the electrolyte should be replaced, the old electrolyte being thrown away. The best policy with regard to electrolyte renewal is to replace the solution once a year, or at least every two years, as standard practice. This will insure the best possible operating condition as regards this very vital factor in the efficiency of the arrester.

8. *Is there a sludge or sediment in the bottom of the cell?*

If there is sufficient to touch, or nearly to touch the bottom of the cell plates, the cells should be emptied, cleaned and refilled, and films should be tested out.

As a suggestion for a convenient method of removing cells or balancing resistors from arresters in active service for testing and overhauling, as required in any of the various cases referred to, the following scheme is recommended: A few spare pairs of cells and some spare resistance units, the number depending upon the number of arresters in service, should be kept at some convenient location where they can be kept connected to the trolley circuit and at a moderate temperature. Facilities should also be available at this point for cleaning and reforming cells, and for testing cell films and resistance units. When cells of arresters in service are found on inspection to indicate a condition that calls for overhauling, the complete pair or pairs of cells involved should be removed and replaced from the stock of spares. The same procedure can be followed with the balancing resistance units. The questionable units can then be overhauled and repaired at leisure by some person especially responsible for this work. Such a scheme insures minimum delay in car schedules and obviates the necessity of allowing the car equipment to operate for a time without protection.

CARING FOR ARRESTERS OUT OF SERVICE

When it is decided to remove the arresters from service the cells only should be taken from the box. The oil and electrolyte should be poured out of the jars and the jars thoroughly cleaned. If the plates are in good condition it is not necessary to remove them from the porcelain covers. The plates should be washed with clean gasoline, or ivory soap and hot water, and rinsed in clear, hot water. The plates should be handled with care so as not to scratch the film. Washing powders, sand paper, etc., should under no circumstances be used. When the jars, plates, ring and gaskets have been thoroughly cleaned, the plates should be stored in the empty jars for the winter.

Electrolyte which is badly discolored or which has a sediment at the bottom should always be thrown away. If it is only slightly discolored, it may be kept in the carboy in which it was originally shipped. Clean glass carboys or bottles should be used. They should be filled to the neck, tightly corked and kept in a place of moderate temperature. By spring the oil will have risen to the top and the electrolyte can be siphoned out. One company that has a large number of arresters pours the electrolyte into a large earthenware vessel with a draw-off at the bottom. When the oil has sufficiently separated, the electrolyte is drawn off into carboys and bottles and the oil into separate containers. As the oil cannot be completely separated from the electrolyte, and as electrolyte that has been in service has naturally deteriorated, used electrolyte and new electrolyte should not be mixed. Mixing them would result in contamination of the fresh electrolyte. In refilling cells each pair should be filled with either new or old electrolyte, never with a mixture. Never should one cell be filled with old and the other with new electrolyte. Corroded cell plates, torn gaskets, cracked jars and cracked covers should be discarded.

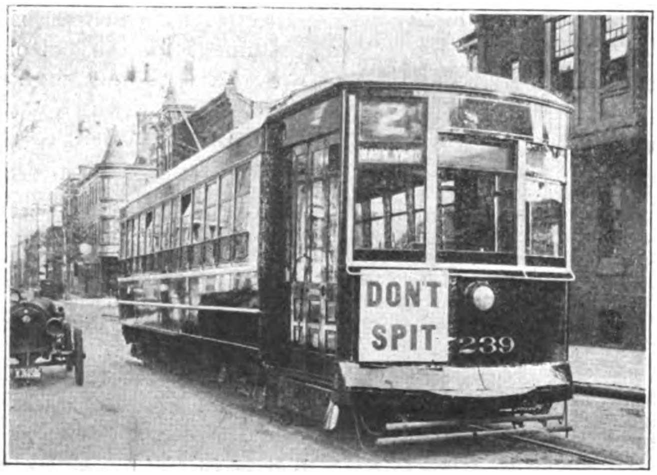
The balancing resistors should then be tested for open circuits and "shorted" resistances. As stated above, the balancing resistances should check quite closely, showing not more than 10 volts difference by the series voltmeter method or not more than 10 per cent variation in actual resistance values in a single arrester. The wooden box should be examined also. If it has been in service for two or three years it may need repainting. A record of necessary repairs should be kept and these should be made during the winter. A list should be made of all parts necessary to put the arresters in good operating condition. These should be ordered in time to have them on hand when it is desired to put the arresters back into service. It is particularly important this year that the ordering of new parts be not delayed too long, not only on account of probable delays in transportation, but also because of difficulties in obtaining materials to manufacture the electrolyte and the aluminum parts.

Railway Electrical Engineers Meet

THE tenth annual convention of the Association of Railway Electrical Engineers was held at the Hotel La Salle, Chicago, Oct. 29 to 31, with about 150 delegates in attendance. The program included committee reports on data and information, illumination, electrical equipment and practice for ore and coal docks, electric headlights, train lighting equipment and practice, shop practice, electric welding, conservation of equipment and methods for increasing efficiency, layout for engine terminals, shop-yard and classification-yard lighting, care and maintenance of railway stationary power plants and electrical organization.

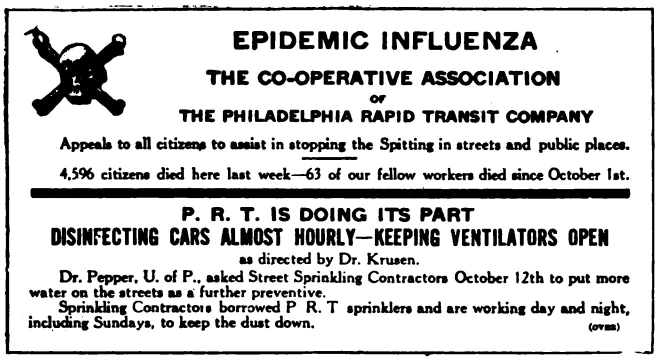
The following officers were elected for the ensuing year: President, J. E. Gardner, Chicago, Burlington & Quincy Railroad; first vice-president, L. S. Billau, Baltimore & Ohio Railroad; second vice-president, L. C. Hensel, Frisco Lines; secretary-treasurer, Joseph A. Andreucetti, Chicago & Northwestern Railroad; executive committee, Ernest Lunn, Pullman Company, and F. J. Hill, Michigan Central Railroad.

Philadelphia Rapid Transit Company's co-operation in combating the influenza epidemic, by focusing attention on means of prevention



By the use of this and other publicity matter the company rendered material aid in stamping out the disease

FIRST DASH SIGN USED—OTHERS WERE USED LATER



EPIDEMIC INFLUENZA

THE CO-OPERATIVE ASSOCIATION
OF
THE PHILADELPHIA RAPID TRANSIT COMPANY

Appeals to all citizens to assist in stopping the Spitting in streets and public places.

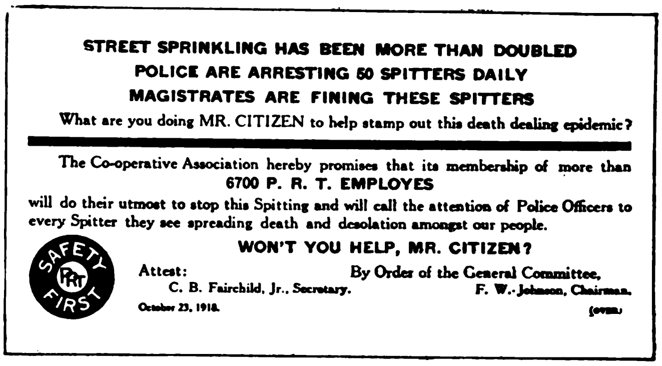
4,596 citizens died here last week—63 of our fellow workers died since October 1st.

P. R. T. IS DOING ITS PART
DISINFECTING CARS ALMOST HOURLY—KEEPING VENTILATORS OPEN
as directed by Dr. Krusen.

Dr. Pepper, U. of P., asked Street Sprinkling Contractors October 12th to put more water on the streets as a further preventive.

Sprinkling Contractors borrowed P. R. T. sprinklers and are working day and night, including Sundays, to keep the dust down.

(over)


SAFETY FIRST
PRT

STREET SPRINKLING HAS BEEN MORE THAN DOUBLED
POLICE ARE ARRESTING 60 SPITTERS DAILY
MAGISTRATES ARE FINING THESE SPITTERS

What are you doing MR. CITIZEN to help stamp out this death dealing epidemic?

The Co-operative Association hereby promises that its membership of more than
6700 P. R. T. EMPLOYES
will do their utmost to stop this Spitting and will call the attention of Police Officers to every Spitter they see spreading death and desolation amongst our people.

WON'T YOU HELP, MR. CITIZEN?

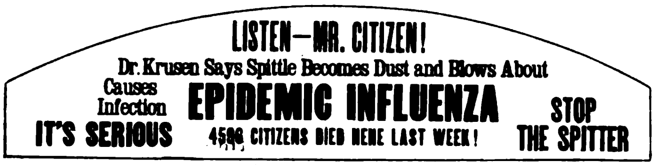
Attest:
C. B. Fairchild, Jr., Secretary.

By Order of the General Committee,
F. W. Johnson, Chairman.

October 23, 1918.

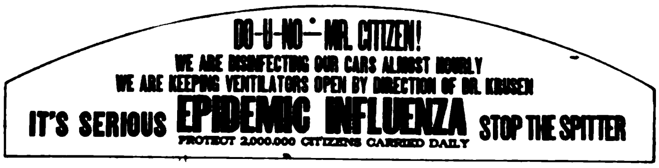
(over)

FRONT AND BACK OF CARDS HANDED TO PASSENGERS ON OCT. 25



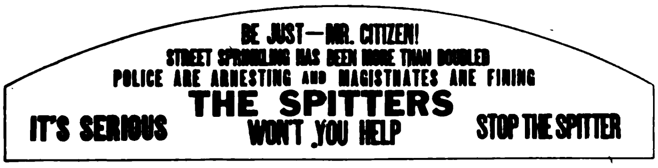
LISTEN—MR. CITIZEN!
Dr. Krusen Says Spittle Becomes Dust and Blows About
Causes Infection EPIDEMIC INFLUENZA STOP
IT'S SERIOUS 4596 CITIZENS DIED HERE LAST WEEK! THE SPITTER

THE FIRST BULKHEAD SIGN USED IN THE CAMPAIGN



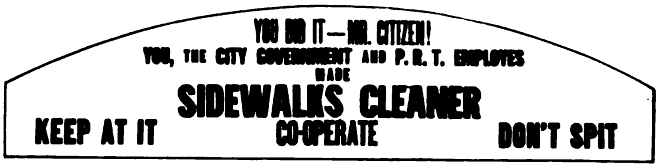
DO-U-NO?—MR. CITIZEN!
WE ARE DISINFECTING OUR CARS ALMOST HOURLY
WE ARE KEEPING VENTILATORS OPEN BY DIRECTION OF DR. KRUSEN
IT'S SERIOUS EPIDEMIC INFLUENZA STOP THE SPITTER
PROTECT 2,000,000 CITIZENS CARRIED DAILY

SECOND BULKHEAD SIGN USED IN CAMPAIGN



BE JUST—MR. CITIZEN!
STREET SPRINKLING HAS BEEN MORE THAN DOUBLED
POLICE ARE ARRESTING AND MAGISTRATES ARE FINING
THE SPITTERS
IT'S SERIOUS WON'T YOU HELP STOP THE SPITTER

THIRD BULKHEAD SIGN IN PHILADELPHIA CAMPAIGN

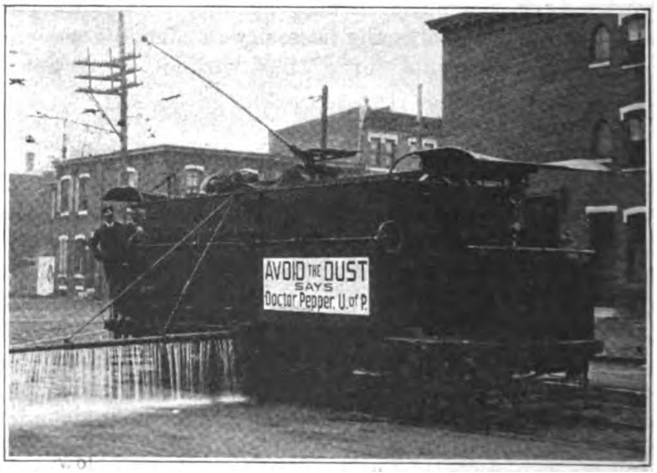


YOU DID IT—MR. CITIZEN!
YOU, THE CITY GOVERNMENT AND P. R. T. EMPLOYES
MADE
SIDEWALKS CLEANER
KEEP AT IT CO-OPERATE DON'T SPIT

FINAL BULKHEAD SIGN IN ANTI-SPITTING CAMPAIGN

OPEN ALL VENTILATORS
DOCTOR PEPPER U. of P.
THE SPITTERS

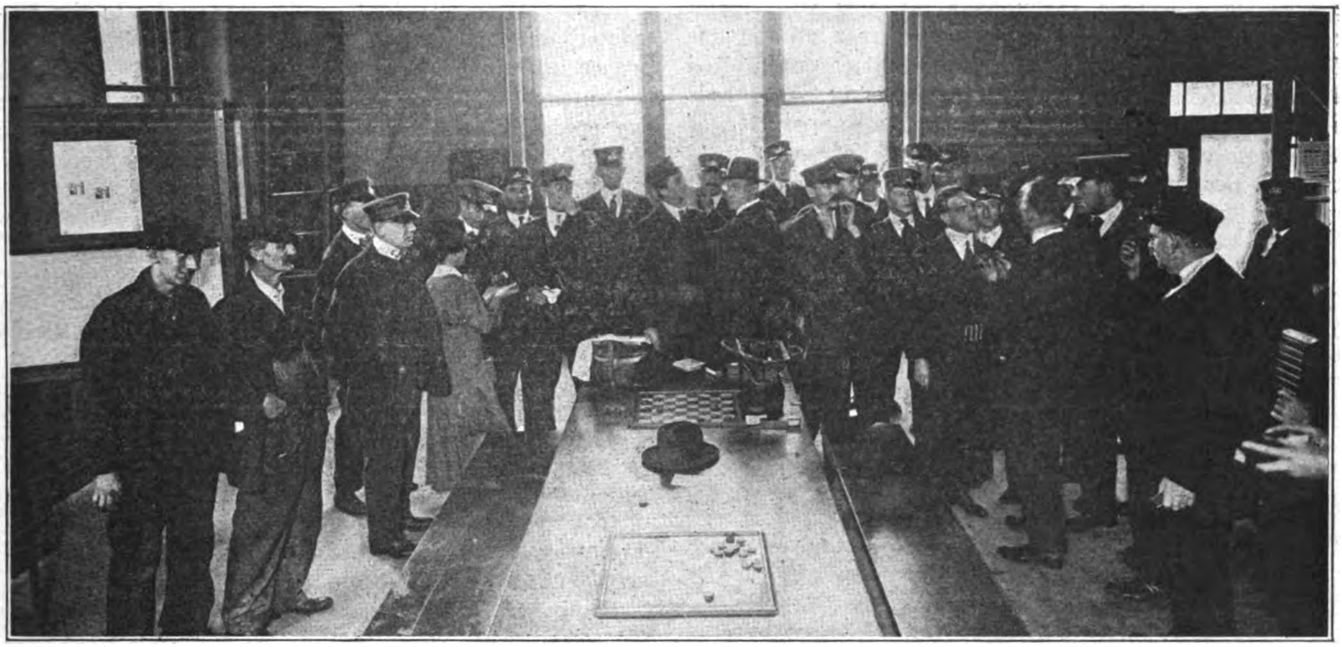
THE BULKHEAD AND OTHER SIGNS WERE PLACED IN PROMINENT POSITIONS



THE COMPANY'S STREET SPRINKLERS WERE PUT AT THE DISPOSAL OF THE CITY

Influenza Crusade in Philadelphia

Active Anti-Spitting Campaign of Philadelphia Rapid Transit Company, Extending Over Ten Days, Undoubtedly Greatly Assisted in Reducing the Influenza Epidemic in Philadelphia



PHYSICIANS AND NURSES EXPLAINING USE OF NASAL APPLICATORS AT CAR HOUSE

CONTINUING the campaign against the spread of epidemic influenza, the preliminary steps of which were described on page 705 of the issue of this journal for Oct. 19, the Philadelphia Rapid Transit Company on Monday, Oct. 21, launched one of the most drastic anti-spitting crusades ever undertaken.

On Monday, Oct. 21, the general committee of the co-operative association of the company's employees met in special session and enthusiastically indorsed a letter, which among other items recited the dire effects of the epidemic and urged upon their fellow employees the most cordial co-operation with the company and with the city government in stopping the spitting menace. This letter was mailed to the homes of the employees. It was signed by F. W. Johnson, chairman, and C. B. Fairchild, Jr., secretary, of the general committee of the co-operative association and said, in part:

> There have been seventy-five deaths among the employees since Sept. 1, twenty-two of which were non-members; two were members of the old Beneficial, and the families were promptly paid the $150 and the $500, as was formerly done. Fifty-one employees had duly made application for membership in the new co-operative association and their widows or their beneficiaries became immediately entitled to the payment of $1,000 in death benefits. $38,000 has already been paid by the Metropolitan Life Insurance Company on this account and the remainder is being paid as rapidly as proofs of deaths can be supplied.
>
> The epidemic influenza is doing its terrible work; our fellows are dying at a rapid rate—sixty-three since Oct. 1. What shall we do about it? Dr. Krusen, health department director for the city, and Dr. Pepper, dean of the medical department, University of Pennsylvania, both say that spitting is doing it. The spittle dries up and blows into peoples' faces, spreading the infection and causing many deaths. They say it is criminal to spit now, and if we must spit, to spit into our handkerchiefs. Don't spit, and keep the card we are sending you inclosed with this constantly on your person. Be governed by its instructions and prove yourself a real co-operator in this emergency of life and death.

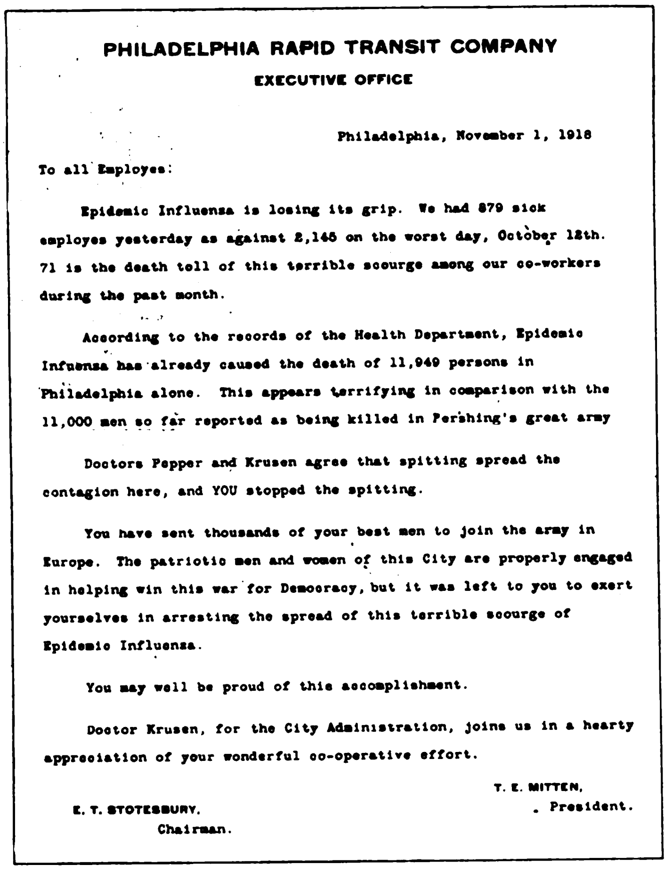
On Tuesday morning, Oct. 22, there appeared upon the front dash of each of the 2000 cars operated by the company, a sign reading "Don't Spit," in block letters, 8¼ in. high, on a white background and legible half a square away. Simultaneously, there appeared on the interior bulkhead over the door of each car, the first bulkhead sign shown. By noon, the cars had carried the "Don't Spit" message to fully three-quarters of the population in Philadelphia and the surrounding territory reached by the lines of the Philadelphia Rapid Transit Company. By nightfall, the crusade was the talk of the town and the good work was on.

The campaign reached its climax Friday, Oct. 25, when various things happened in quick succession. Beginning at daybreak, there appeared on the rear of every car a sign reading, "Spit Spreads Death," in large black letters corresponding to, and supplementing, the "Don't Spit" sign on the front dash. During the night these two signs had also been posted on the electric light poles throughout the entire business section. At the same time a new interior bulkhead sign, reproduced herewith as the second bulkhead sign, was displayed in all the cars.

A meeting of the transportation department co-operative committee had been called the previous day, at which the utmost effort of the conductors and motormen as well as of other employees had been pledged to help stop the spitting.

On Friday morning the conductor of each car was supplied with a large market basket filled with cards, of which both sides are reproduced. The conductor handed one of these cards to each passenger entering the car, and by nightfall 2,000,000 of the cards had been so distributed.

Throughout the day a special detail of 500 plain-clothes men from the police department, augmented by 2000 members from the Home Defense Reserve, in plain clothes, were spread throughout the city with strict orders from the police officials to arrest all persons found spitting on sidewalks or other places prohibited by the act of the Assembly against spitting. Hundreds of arrests were made, and through the co-operation of the committing magistrates, each offender was fined the full penalty of $2.50.



PHILADELPHIA RAPID TRANSIT COMPANY

EXECUTIVE OFFICE

Philadelphia, November 1, 1918

To all Employes:

Epidemic Influenza is losing its grip. We had 879 sick employes yesterday as against 2,145 on the worst day, October 12th. 71 is the death toll of this terrible scourge among our co-workers during the past month.

According to the records of the Health Department, Epidemic Infuenza has already caused the death of 11,949 persons in Philadelphia alone. This appears terrifying in comparison with the 11,000 men so far reported as being killed in Pershing's great army

Doctors Pepper and Krusen agree that spitting spread the contagion here, and YOU stopped the spitting.

You have sent thousands of your best men to join the army in Europe. The patriotic men and women of this City are properly engaged in helping win this war for Democracy, but it was left to you to exert yourselves in arresting the spread of this terrible scourge of Epidemic Influenza.

You may well be proud of this accomplishment.

Doctor Krusen, for the City Administration, joins us in a hearty appreciation of your wonderful co-operative effort.

T. E. MITTEN,
President.

E. T. STOTESBURY,
Chairman.

LETTER OF APPRECIATION SENT TO EMPLOYEES BY MANAGEMENT ON NOV. 1

On Wednesday, Oct. 30, the third of the interior bulkhead poster signs was displayed in all the cars. The location of this bulkhead sign, together with the frame holding the smaller sign reading "Open All Ventilators," described in the previous article, is shown in the interior view of the car.

The fourth and last of the poster series, which went into the cars on Thursday, Oct. 31, is shown in the final poster.

As previously described, President T. E. Mitten at the beginning of the influenza epidemic, had placed at the disposal of the street cleaning department the company's entire fleet of sprinkling cars and carts, with the help of which the normal street sprinkling was more than doubled during the epidemic period. This was done with the view of stopping the spread of the contagion through the medium of street dust. The sprinklers were also utilized to carry large banners as part of the preventive propaganda.

As a further safeguard to the health of its own employees, the company had previously distributed, free of cost, to each of the 11,000 employees a nasal applicator and a tube of nasal ointment known as V. E. M. which was found to be a cooling antiseptic for clearing the nasal passages. An accompanying view shows one of the demonstrating squads, consisting of a physician, a nurse and an assistant nurse, explaining to the motormen and conductors at one of the carhouses, the proper use of the nasal applicator.

The final move in the anti-spitting campaign, after the epidemic had practically subsided, was made on Nov. 1, in the form of a personal letter of appreciation, also reproduced, which was mailed to the homes of all the employees and signed by Chairman E. T. Stotesbury and President T. E. Mitten.

Municipal Tramways Association Discusses Power Supply

A BRIEF meeting of the Municipal Tramways Association, Inc., of Great Britain was held on Sept. 26 and 27 at Leicester. There was but one formal paper, on power supply. T. B. Goodyer, general manager Croydon Corporation Tramways, was elected president of the association.

The paper on power supply was read by Ernest Hatton, engineer and general manager Newcastle Corporation Tramways. He discussed particularly the government reports on coal conservation and electric power supply which have been widely studied in the United States. The principal point made was that while a general scheme of power generation and utilization, including railway electrification, will undoubtedly conduce to economy no very radical or sudden reductions in energy generation costs are to be expected.

T. B. GOODYER
President-Elect Municipal Tramways Association

Mr. Hatton said that any successful scheme of general power supply must be able to "carry on its back" the annual charges of plants superseded. With the introduction of electric traction originally the ability of the new system to carry the then existing expenditure on horse traction was a vital factor. The same principles must apply in the unification of the power supply. If the controlling authorities are satisfied that the electrification of the railway systems of the country is desirable then this policy will lend itself to the most active and advantageous method of setting up a general power supply all over the country. This follows because the railways touch all centers of population and industry within reasonable distances and as a rule provide the shortest routes and best opportunity for laying main trunk line cables. Such a system of power supply will be advantageous to street and interurban traction services.

More Opinions on Public Ownership

Telegraphic Canvass by Electric Railway Journal Brings Out Valuable Comment on Subject from Several Angles

IN LAST week's issue of this paper there was printed the first instalment of replies to an inquiry from the editors designed to secure an expression of views on the subject broached in a resolution presented by James D. Mortimer at the New York conference of the American Electric Railway Association. The text of the resolution was printed in the issue for Nov. 2, page 795. Following are more replies received since the Nov. 9 issue went to press.

Why Confuse the Issue by Branching Out on New Lines?

I do not believe that the Association should go on record for municipal operation in any blanket form. The industry must have relief, which means that we must charge enough for our services to cover operating expenses, taxes, interest and a fair return on money honestly and actually invested. A wholesale indorsement of municipal operation will not meet the situation.

While we are fiddling with this our deficits will increase, as will receiverships also. After months of fighting we have broken away from the nickel. Public service commissions realize that they must act to the limit of their powers, and the public now is awakening to the fact that something must be done to preserve adequate service. To branch out on a new policy will only confuse the issue and slow up the present movement. Would it not be better to hammer home the fact that the business must bear its legitimate charges and leave the character of the operation to be determined by local conditions in each case?

There should be an organization of the owners of securities similar to the National Association of Railway Security Owners, heretofore not represented. Competent counsel should be permanently employed and every effort should be brought to bear to secure federal action and direction. A national advertising campaign should be planned to inform the public and to hold up the hands of state regulatory bodies. Service at cost, regardless of the form of operation, is our salvation. If any municipality desires that its public officials operate a property it should be allowed to take the property over provided that adequate guarantees and protection are given to stock and bond owners. But these cases are local; why not pound away on the service-at-cost plan and not confuse the issue?

PHILIP J. KEALY,
President Kansas City (Mo.) Railways.

Five Reasons for Caution in Advocating Municipal Ownership

I do not concur in the views expressed in the resolution for the following reasons: First, a blanket policy may lead to a blanket measure of value, the poorest properties thus being the gage for better properties. The relations between communities served and electric railways are individual and local in nature, and should be dealt with accordingly. Second, where the public does not realize the justice and the need in its own interest of increasing fares, and reducing the public obligations of the electric railways to enable them to meet new conditions, then it is not apt to deal broadly when importuned to acquire railways. Third, many communities have been responsive to the need for increased fares. The campaign along that line has been in part successful and should be continued vigorously. It should not be weakened with public ownership propaganda. Fourth, local conditions, such as extensions of lines beyond municipal limits, the serving of more than one municipality, or the legal obligations of municipalities will in many cases make very difficult or impossible the sale of the electric railways to the public under any conditions satisfactory to the public or to the owners. Fifth, the very broad question of public ownership and operation of business on a large scale is deeply involved, and it demands, from the public viewpoint, very serious consideration.

I believe that the establishment of closer relationships, as suggested by Mr. Gadsden, involving in many cases the taking of steps which are intermediate to, but do not involve, public ownership and operation but do involve a direct public responsibility for and interest in the adequate maintenance of electric railway service and return on capital invested, would be a better course to follow where electric railways are in trouble, than that expressed in the resolution. PAUL SHOUP,
President Pacific Electric Railway, Los Angeles, Cal.

Only Two Alternatives if Railways Are to Survive

The electric railway industry is in desperate straits. I know of no electric railway in the country that is now receiving from its patrons the cost of serving them. This is due to the insufficiency of fares and fare systems under which the railways are compelled to operate, and owners of street railways cannot continue indefinitely to provide for deficits. There are but two ways in which electric railways can continue to serve the public. One is recognition by the public of the fact that the cost of service must be provided, and that honestly-invested capital is entitled to fair treatment and a fair return. This means the adjustment of rates and rate systems to meet these conditions. The other solution is municipal ownership, under which service will be continued and the cost of service paid either by the patrons or by the taxpayers. If the cost of service is to be paid by the patrons, that cost would certainly not be less under municipal than under private management subject to public regulation. Before declaring oneself unequivocally in favor of municipal ownership of the electric railways one must first conclude that the public will not deal honestly and fairly with private ownership under which all of the advantages of municipal ownership and operation may be secured and none of its disadvantages imposed. I am not yet ready to declare that I have lost faith in the willingness of the public to deal fairly with this industry; I still hope the public will accord fair treatment.

FRANKLIN T. GRIFFITH,
President Portland Railway, Light & Power Company, Portland, Ore.

Deprecates Agitation to Facilitate Sale to Public

In cities like San Francisco, where the municipality has already inaugurated a competitive system, it is a condition and not a theory that confronts us. It is elementary that a street car system to be profitable must be a monopoly, and inasmuch as the city cannot be expected to sell out to the private corporation the latter must favor a sale to the city if a reasonable price can be obtained. In any event, I am thoroughly opposed to the agitation by private corporations for municipal ownership if intended to facilitate sale, because it will defeat its own purpose in that it will look to the public simply as an effort to unload something that has proved unprofitable. Let us at least await the time when an aroused public opinion will concede to the public utilities compensatory rates and permit of a showing that will assure something better than rubbish prices.

JESSE W. LILIENTHAL,
President United Railroads of San Francisco.

Would Federal Ownership and Operation Be Best?

In my opinion municipal ownership will be the most practical demonstration of Bolshevikism that can be inflicted upon the nation at this time. Possibly state ownership is a lesser evil but, since electric railways are not local but are national ways of transportation, why not try federal ownership and thereby make possible the financing and carrying of the enormous investments necessary? It might possibly be better to wait until the several governmental agencies demonstrate ability wisely to regulate before asking them to assume burdens of ownership, management and operation, and in the meantime inform the people and ask them to insure that these investments are permanent and shall not be destroyed at the will or caprice of contending political factions. It seems to me that at this time the government should be relieved of every burden that private enterprise can carry and to that end coordination of purpose and co-operation are essential.

F. W. BROOKS,
President Detroit (Mich.) United Railway.

Combined Benefits of Private and Public Control Are Obtainable

To speak broadly, municipal ownership has not been successful. It cannot be separated from politics, which is bad for any business. The 5-cent fare has been a false fetich throughout the United States. Many roads that have operated on a 5-cent fare have lost money every day since they commenced operations, and are only just finding it out. There are many companies which, were they to charge full depreciation on cars, tracks, power houses, etc., would find that they have not earned more than bare operating expenses, and yet they have been declaring dividends annually. Unfortunately, so-called "high finance" in some companies has caused the public to condemn all street railways. I see no reason why the public should not be satisfied to pay rates of fare higher than 5 cents, beyond the inconvenience and the annoyance caused through "breaking" the 10-cent piece and taking coppers in change. Much of the opposition to higher rates of fare would vanish if we had an intermediate coin between the 5- and the 10-cent pieces that would fit most car fares in the country. Under municipal ownership the public would pay all the bills. Why not remit all taxes on street railways, relieving them from maintaining paving, but putting them under an indeterminate franchise. Their operation, the fares and the dividends could be under railway commission control and yet the benefits of private control would be attained. The public would pay less and get more efficient service than under municipal ownership. Offering to sell out under present conditions is equivalent to a man on his deathbed trying to take out life insurance.

W. CLAYTON,
Vice-President San Diego (Cal.) Electric Railway.

Various Complications Are Involved in Public Ownership Proposition

I believe that municipal ownership would be more extravagant and inefficient under present conditions than ever before and would be unfortunate for the public interest. From the standpoint of the electric railway seeking relief from war conditions the proposition is one which must be decided by each electric railway for itself after considering its own problems. Conditions differ greatly and are affected by interurban lines, as well as by combined sources of power with other electrical industries and by consolidation with other utilities.

CLEMENT C. SMITH,
President Wisconsin Public Service Company and Wisconsin Railway, Light & Power Company.

Municipal Ownership Agitation Largely Political

I believe that a general application of the municipal ownership theory to electric railways would be prejudicial to the best interests of the country. Through the exercise of paternalism in connection with such properties individual initiative and enterprise, which thrive under private operation, would be restricted or even destroyed. But the public must pay the cost of operation. Electric railway operators are not desirous of sitting around a corpse. If the public refuses to allow operation except at a loss, the municipalities or the state must step in and furnish the service. The present exigency, however, does not demand a change so radical and so theoretically undesirable. The municipal ownership issue is largely a political one, and utilities do not help their case by fighting it. If operators were to say that municipalities might purchase the properties, although this would not be advisable, city officials would not have such an opportunity to play politics. The public looks with suspicion upon any operator who insists upon maintenance of control over a losing proposition, but it will aid the one who shows himself to have only one interest at heart—the giving of proper service, at cost, regardless of who the operator is. In other words, municipal ownership is not a general remedy for electric railways ills, and the public will understand this and act accordingly if the matter is properly handled by the companies.

REPRESENTATIVE OPERATOR.

Commissioners Meet in Washington

Special War Committee Reports at Convention of National Association of Railway and Utilities Commissioners

THE National Association of Railway and Utilities Commissioners held its annual convention on Tuesday, Wednesday and Thursday of this week in the rooms of the Interstate Commerce Commission in Washington, D. C. The program consisted mainly of reports of standing committees, which will be covered in detail in a later issue. Winthrop M. Daniels, chairman of the Interstate Commerce Commission, made the address of welcome, following which was the annual address of Charles E. Elmquist of Minnesota, acting president of the association.

The most important matter before the convention was the report of the special war committee, presented by Joseph B. Eastman of Massachusetts. In this it was asserted that the state commissions have worked in harmony with the spirit and needs of the times. They have allowed and facilitated reductions of service needed for the conservation of labor and fuel by refraining from requirements reasonable under ordinary conditions but wasteful of capital and energy in time of war, and by permitting without undue delay or controversy increases fairly demanded by the rapid advances of wages and prices and necessary to relieve utilities of more than their fair share of the burden of war conditions. In the committee's opinion, while federal control of railroads may perhaps be tolerable in war times, it is neither expedient nor wise in time of peace. It is desirable in the public interest that the state commissions should possess under federal control substantially the same authority over service and rates and the same general powers of supervision and investigation which they have exercised under private ownership.

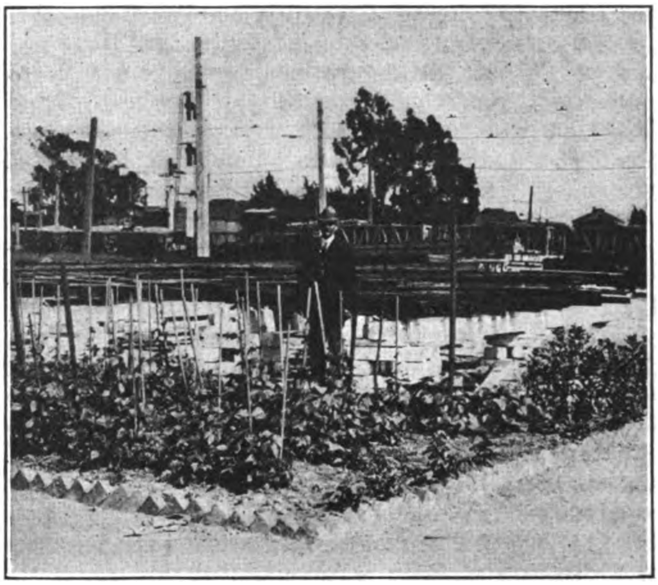
C. A. Prouty, director of public service and accounting of the United States Railroad Administration, addressed the convention on Wednesday afternoon. He declared that Director-General McAdoo was anxious for the co-operation of the state commissions and desired to co-operate with them. He advised the state commission, before making orders affecting railroads under government control, to submit to the Director-General the proposed order. Speaking for himself, Judge Prouty said that if this were done he had no doubt the Director-General would approve the course suggested by the state commissions unless there was some grave reason to disapprove it.

The following officers were elected: President, Charles E. Elmquist of Minnesota; first vice-president, Charles M. Candler of Georgia; second vice-president, Joseph B. Eastman of Massachusetts; secretary, James Blaine Walker of New York; assistant secretary, L. S. Boyd of Washington, D. C.

Garden Idea for Track Yards

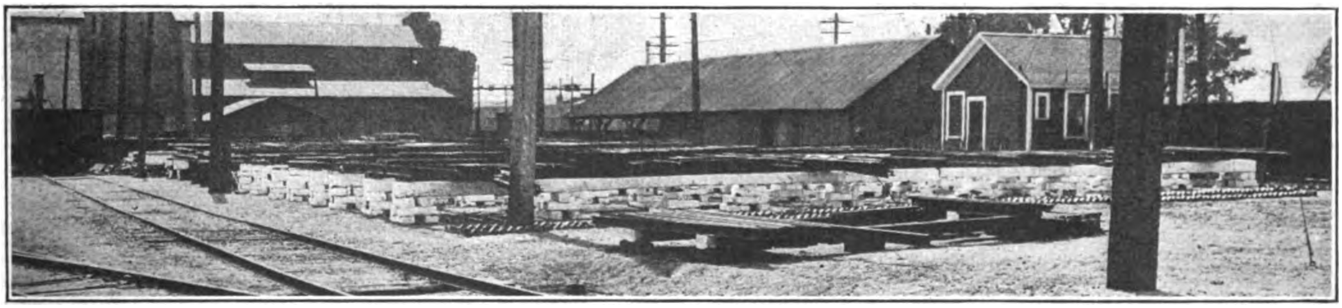
It Not Only Makes Them Attractive in Appearance but the Storage Is More Efficient

CHARLES CHRISTOPHER, storekeeper of the San Francisco-Oakland Terminal Railways, has found that the subtle influence of a garden-farm does more to inculcate care and cleanliness in a track storage yard than any amount of pleading or commanding.



FLOWERS ARE GROWN IN THE TRACK YARD

At one time the special work and other track materials stored at the yard lay in masses of weeds and were often hard to find. To-day, the weeds have been practically banished by the use of quarry dust, while the assignment to the men of odd areas for personal cultivation has done wonders in promoting care and neatness. The men, mainly Italians, raise the plants themselves, and they are thoroughly conscientious in removing sticks, stones and scrap that do not belong to the yards. The very fact that the special work pieces are mounted on neatly whitewashed wooden skids has had a helpful influence, for when the men see that the company has some regard for this material they are more careful than if it were dropped higgledy-piggledy.



THE RAILS AND PIECES OF SPECIAL WORK ARE MOUNTED ON WOODEN SKIDS

The photographs show conditions as they are to-day.

Urges Electrifying of California Road

Representative of Oil Division of Fuel Administration Points to Oil and Capital Economy—Purchase of Power

Electrification of the mountain division of California railroads has been recommended to Director-General of Railroads McAdoo by D. F. Folsom, director of the Pacific Coast section of the Oil Division of the Fuel Administration, as a means of conserving fuel oil and reducing the operating expenses of the sections of the railroads involved by $4,923,300 a year. The recommendation, based on the report of W. F. Dietrich, engineer of the Oil Division of the Fuel Administration, shows that the electrification of 510 miles of railroad would mean an annual saving of 3,062,000 barrels of fuel oil, the total cost of which is $6,147,000, and that the cost of power to operate the trains over these sections at 0.75 cent per kilowatt-hour would be $2,000,000, indicating a reduction in the bill for motive power of $4,147,000 annually. The first cost of the electrification is placed at $23,012,000, on which there is estimated an annual profit of 9.4 per cent, after allowing for depreciation, amortization, taxes and interest.

The railroad divisions affected by the recommendation are the Sacramento division of the South Pacific, 157 miles from Roseville, Cal., to Sparks, Neb.; the Shasta division of the Southern Pacific, 215 miles from Gerber, Cal., to Ashland, Ore.; and the San Joaquin combination division of the Southern Pacific and Santa Fé railroads, 138 miles from Bakersfield to Saugus.

With oil valued at an average figure of $2.02 a barrel and electricity at 0.75 cent per kilowatt-hour (a total of $2,000,0000), the annual saving in the cost of power is $4,147,000 in favor of electrification. The purchase of hydroelectric power is contemplated throughout the report, but it is pointed out that even if the electricity were generated by oil there would be a saving of about half the consumption now used as locomotive fuel.

The following table gives the power required and the fuel oil saved by the proposed electrification:

Division	Kw.-Hr. per Year	Maximum Kw. Demand	Barrels of Oil Saved
Sacramento	104,200,000	47,600	978,000
Shasta	73,200,000	33,400	907,000
San Joaquin	89,000,000	40,000	1,177,000

A summary of the first costs after deduction of salvage, the percentage of profit on the net investment and the annual saving obtained in each of the three districts considered in the report is given as follows:

Division	First Cost	Annual Saving	Per Cent. Saving *
Sacramento	$8,100,000	$1,592,600	7.6
Shasta	8 038,000	1,903,800	11.7
San Joaquin	6,784,000	1 426,900	8.7
Total	$23,012,000	$4,923,300	9.4

* After deducting 12 per cent for depreciation, amortization, taxes and interest.

The total first cost is as follows:

Substations, at $45 per kw	$8,100,000
Track bonding, at $1,000 per mile of main track and $800 per mile of sidings	851,000
Transmission line, at $8,000 per mile	3,760,000
Contact system, at $8,000 per mile of main track and $6,000 per mile of sidings	6,620,000
Block signal changes	1,166,000
Inspection shops and sheds	45,000
Electric locomotives, at $600 per ton on drivers	8,910,000
	$29,452,000
Credit for steam locomotive equipment released	6,440,000
Total net cost	$23,012,000

The estimate for locomotives includes twenty 150-ton passenger, sixty-three 100-ton freight and ten 100-ton switching locomotives.

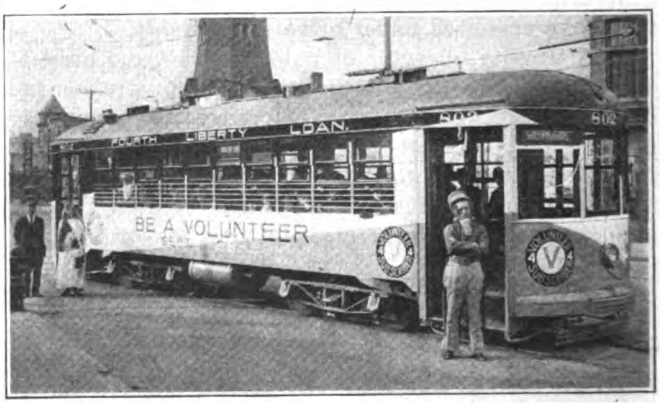
The power requirements for the proposed electrification are estimated as follows: 730,000 kw.-hr. per day, 267,400,000 kw.-hr. per year, 121,600 kw. maximum demand and 30,400 kw. average demand.

A part of the report follows:

> Railroads consume more coal and fuel oil than any other single industry. Over 20 per cent of the annual production of coal and fuel oil in the United States is consumed by the railroads, and half this amount is wasted by the inherent inefficiencies of steam locomotives. Western railroads consumed 31.2 per cent of California's 1917 production of fuel oil.
>
> The great saving in locomotive fuel by the generation of power in central power plants is made possible by reason of the fact that the steam locomotive carries its power plant on its back and consumes a large portion of its energy in carrying its own fuel. Roughly, about 12 per cent of the energy of the locomotive fuel supplied to the steam locomotive is used in hauling its own fuel in tenders and in coal cars or oil tank cars to the distributing points along the line. Other large wastes of fuel are occasioned by the starting of fires, keeping hot and standing at sidings. In mountain districts there is the added waste of keeping up steam on the long downhill grades and more inefficient utilization of fuel on the uphill grades, especially in starting.

Special Liberty Loan Car

A VERY effective Liberty Loan car was put in service for the Liberty Loan week at South Bend, Ind., on the Chicago, South Bend & Northern Indiana Railway Company's line. It was not simply decorated by bunting but especially painted for the occasion. The car selected was one of the new 800-type of cars which happened to be in the paint shop at the time. Broad stripes of red, white and blue running diagonally across the car from vestibule corner post to vestibule corner post and from roof eave to lower step gave the car a very striking and patriotic appearance. Then the lettering shown in the illustration was placed on the sides, and on both ends.



THIS CAR WAS PAINTED RED, WHITE AND BLUE

The plan was carried out by L. E. Hollar, superintendent of transportation, who was also chairman of the advertising for the railroads in St. Joseph County for the Fourth Liberty Loan drive. The car was put in service on Sept. 28 and F. Stevens, dressed as Uncle Sam, was motorman, and Miss Hazel Hollar was Miss Liberty and acted as conductor and collected fares. Later others acted in these capacities and the car has operated on all of the lines of the company, in fact, it was kept in service for some time after the loan closed and was known as the "Red, White and Blue Car."

AMERICAN ASSOCIATION NEWS

Electric Railway War Board Bulletin

IN THE report of the war board, presented at the New York conference, a list of the bulletins issued by the board was included. For purpose of reference the list is reprinted below:

Bulletin No. 1.	Coal Conservation.
Bulletin No. 2.	Public Improvements.
Bulletin No. 3.	Trainmen's Pledges; Coal Report.
Bulletin No. 4.	Organization of Traffic Bureau.
Bulletin No. 5.	Traffic Information Wanted.
Bulletin No. 6.	Expenditures for Public Improvements; Coal for Electric Railways; Co-operation of State Commissions; Information as to Conservation Activities; the War Board Pledge; Newspaper Clippings.
Bulletin No. 7.	Report on Coal Savings in Washington.
Bulletin No. 8.	The Controller of the Currency Urges Authorities and Public to Assist in Maintenance of Public Utility Credit.
Bulletin No. 9.	Bill to Provide for Taking Over Certain Electric Railways (Shipping Board Act).
Bulletin No. 10.	War Finance Corporation Measure.
Bulletin No. 11.	Correspondence Between the President and the Secretary of the Treasury.
Bulletin No. 12.	Organization and Fuel Supply.
Bulletin No. 13.	Government Control Act (Steam Lines).
Bulletin No. 14.	Unnecessary Improvements.
Bulletin No. 15.	Transportation—Shipbuilding Plants, with Questionnaire.
Bulletin No. 16.	Return Loads Bureaus, with Pamphlet.
Bulletin No. 17.	Electric Railways "War Utilities."
Bulletin No. 18.	Power to Take Over Electric Lines (Shipping Board Act as Passed).
Bulletin No. 19.	Rules Governing Procedure for Taking Up Industrial Disputes with the National War Labor Board.
Bulletin No. 20.	Local Transportation in Housing Act.
Bulletin No. 21.	War Finance Corporation Urges Public Utility Commissions and Municipal Authorities to Allow Companies to Increase Fares.
Bulletin No. 22.	United States Chamber of Commerce Acts.
Bulletin No. 23.	Federal Control of Utility Rates.
Bulletin No. 24.	Transportation of United States Mail by Electric Railways.
Bulletin No. 25.	National War Labor Board Ruling Regarding Policy of Board.
Bulletin No. 26.	Announcement Decisions National War Labor Board in Twenty-two Electric Railway Cases.
Bulletin No. 27.	Letter to the President from the National Association of Railway and Public Utilities Commissioners Relating to Increased Rates.
Bulletin No. 28.	Letter from Capital Issues Committee to State Public Utility Commissioners on Non-essential Improvements.
Bulletin No. 29.	Skip Stops—U. S. Fuel Administration.
Bulletin No. 30.	Operation of the Draft.
Bulletin No. 31.	Priorities Classification.
Bulletin No. 32.	Non-War Construction—War Industries Board.
Bulletin No. 33.	National War Labor Board Decision in Birmingham Case, Declining Jurisdiction.
Bulletin No. 34.	Non-Essential Improvements—Capital Issues Committee—War Industries Board.
Bulletin No. 35.	Conservation of Non-Ferrous Condenser Tubes—War Industries Board.
Bulletin No. 36.	Comparative Income Account of 388 Electric Railways.
Bulletin No. 37.	Tie Requirements.
Bulletin No. 38.	National War Labor Board Decisions in Ten Additional Electric Railway Cases.

Stirring Meeting at Manila

FIVE HUNDRED employees of "Meralco," including 186 members of the company section, attended the meeting of this section held on Sept. 3. The guest of honor was Carl W. Hamilton, president Visayan Refining Company, who gave a patriotic address which aroused real enthusiasm. He paid a glowing tribute to the part which America has played in world events, such as the opening up of China and Japan, leading naturally to the circumstances of the war just closed. He showed that America purposes to do for the Philippines what she has done for other rising and struggling peoples. Prophesying that America will come out of the war the richest nation on earth, the one with the greatest navy and the largest merchant marine, he said that there is no reason why the $1,000,000,000 spent by America in tropical products yearly should not be spent in the Philippines. He urged the development of the Philippines on a high plane, stating: "The Filipinos have religion; they have manners and many other splendid characteristics in common with the great Western nation. If for no other reason we must not sit back and allow other nations, whose religion is constituted of the so-called 'non-Christian' type, to develop this great country to the detriment of Christianity and the highest ideals which the world has ever seen." He urged for those present the development of the highest type of spiritual life.

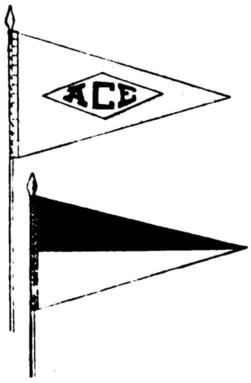
Following Mr. Hamilton, C. N. Duffy, who has just resigned the vice-presidency of the company, told briefly the story of Mr. Hamilton's life. From the standpoint of the Philippines he said: "We must learn to appreciate our advantages. We must wake up to the situation. As Mr. Hamilton has well said, 'the Philippines, the people in the Philippines, a Christian people and an educated people, and practically a people as an independent nation, should be leading the Orient.'"

Following the speeches the audience was entertained by a "pulmotor sketch" followed by a violin solo, a poem and songs from President Bury, sword fencing and two four-round boxing contests.

Fuel Economy in New York Bus Service

Rivalry of 400 Bus Drivers for Title of "Ace" Brings Average Mileage for Week from 6 Up to 6.82 Miles per Gallon

THE fuel economy "ace" has arrived; he is a product of the Fifth Avenue Coach Company of New York. The ace is the driver who runs his bus with the lowest fuel economy per mile for a given week. One ace is chosen from each garage where the buses are taken care of and the winning drivers are permitted to carry the ace flag on their buses until a rival driver takes the honor away from them. In addition to the ace flag the company uses an honor flag which is given to the driver with the second best record each week. The ace flag is a green triangular pennant in the center of which is a gold colored diamond carrying the word "Ace" in green letters. The honor flag is a triangular pennant half blue and half gold. When the ace system was started last July the buses averaged 6 miles per gallon of fuel. In less than two weeks after the system was inaugurated the fuel average was increased to 6.75 miles per gallon. Many drivers are now far above this figure. One driver now has a reputation of 9.8 miles per gallon of gasoline.



FUEL ECONOMY ACE AND HONOR FLAGS

The buses are all of double-deck type, using four-cylinder engines with 4-in. x 6-in. cylinders. Each bus loaded weights 16 000 lb., and the average service consists of ten stops per mile. Nearly all of the driving is on hard asphalt pavement. Under this economy system each bus has actually saved on an average about 4 gal of gasoline per week

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Seattle Votes for M. O.

Immediate Steps to Be Taken to Buy Puget Sound Lines for Sum of $15,000,000

The city of Seattle on Nov. 5 voted nearly 3½ to 1 in favor of buying the street car lines of the Puget Sound Traction, Light & Power Company for $15,000,000. A preliminary note in regard to this was published last week.

The City Council and Mayor Hanson will take immediate steps to close the deal for the purchase. While no definite date has been set, it is believed the negotiations will be completed by Jan. 1. The Department of Public Utilities has gathered much of the data required by the corporation counsel. The city and the company have agreed upon a division of the real estate and the placing of some of the property in escrow or the provision of title insurance to protect the city.

The purchase of the property of the Seattle & Rainier Valley Railway lines is part of the general scheme for a street railway system owned by the city. The company has offered the property to the city for $1,600,000.

One question to be settled relates to the contract by which the Puget Sound Traction, Light & Power Company will sell the city electric power to operate the street railway system until the Skagit power plant is completed. The company has agreed to a tentative contract to sell the city power for 1 cent a kilowatt, but city officials have raised the question of what may happen if the Public Service Commission should later decide that this was not enough to give the company a fair return on the investment.

The local union has voted to withdraw the request filed with the National War Labor Board for a hearing on the Seattle wages. The business agent of the union, in discussing the election returns, said: "The union is more than pleased with the result of the election. Its members worked faithfully to bring out votes for the purchase. The wages the city now pays carmen on the municipal lines are nearly as high as we had asked of the traction company."

The Mayor and the City Council of Seattle have been notified that the loan of $300,000, which the Emergency Fleet Corporation had agreed to make to the city for extensions to the municipal railway system and for purchase of new cars, will not be made. The Council had proceeded with the purchase of six single-truck and twenty-five double-truck cars, costing $217,000. The cars had been delivered in Seattle and were being placed in service. The City Council, upon receiving advice that the government would not the finance the loan, immediately made plans to care for the proposition. A requisition was issued for $169,025 to pay for the twenty-five cars delivered, and $217,000 will be transferred from the general fund to the street railway fund. The transfer will make the general fund short by $277,000.

Louisville Wages Adjusted

Increase Granted by Company Is Accepted—More Wages if Fare Is Increased

Under an agreement signed by representatives of the Louisville (Ky.) Railway and its unionized employees, in accordance with an understanding reached on Oct. 24 before the War Labor Board, the 7-cent increase previously granted by the company is accepted. The company, however, has agreed to add 7 cents more an hour to the pay should the city permit it to advance the city fare to 6 cents. The union has reserved the option to appeal to the War Labor Board after Jan. 1 for another increase, whether the fare advance is permitted or refused.

Under the contract urban motormen and conductors receive 34 to 38 cents an hour, and those on suburban cars receive 35 to 39 cents. In addition, they are to get time and a half after regular runs have been finished on the ten-hour day basis, ten minutes' pay for work they are required to do each morning preparing to take their cars from the carhouses, and fifteen minutes' pay for making out reports of accidents.

The original demand of the union was that the wage scale for experienced motormen and conductors should be increased to 45 cents an hour, and that of new men to 41 cents. The present standard of 38 and 34 cents respectively was fixed on Sept. 1 by the company after the matter was taken before the War Labor Board on Aug. 15. Before then the rate was 31 cents and 27 cents.

Under the settlement now agreed upon the men receive back pay from Aug. 15 to Sept. 1. The agreement provides for a continuation of the increase of 22.5 per cent allowed on Sept. 1 to shopmen, power-house men and trackmen.

The new contract holds good until Jan. 1. The union agrees that it will not go before the War Labor Board to ask for any increases in pay before that date. The contract provides for the arbitration of future differences.

B. R. T. Wreck Investigation

Motorman Said to Be Incompetent—City Will Not Pay Damages Out of Its Share of Earnings

The investigation into the causes of the recent accident on the Brooklyn (N. Y.) Rapid Transit Company's Brighton Beach line has been postponed during the past week on account of the effect of the war news. At one short hearing the testimony tended to show that the motorman who had charge of the wrecked train had not received the usual instruction given motormen before they are permitted to operate trains in regular passenger service. At a later hearing steps were taken to ascertain the exact division of authority between officials of the Brooklyn Rapid Transit Company and officials of its various operating subsidiaries.

The Public Service Commission has informed the directors of the New York Consolidated Railroad, the subsidiary which operates the elevated lines of the Brooklyn Rapid Transit Company, that it purposes to enter an objection on behalf of the city against any attempt of the company to include wreck damages in the financial accounting to which the city is a party under the provisions of contract No. 4 of the dual system of rapid transit. The commission, in a letter to the company, also objects to the inclusion in the joint accounting of any legal or other expenses, and especially such expenses as may be incurred in criminal proceedings against officers or employees of the company. If any such expenses were so included, it is said, they would thereby increase the city's deficit.

The commission also raises the question, to which it has directed its counsel to give attention, whether the methods of maintenance and operation employed by the company and particularly the facts of the particular accident in question do not constitute a forfeiture or default of the whole contract for operation by the Brooklyn company. This contract provides that the dual system lines must be operated "carefully and skillfully according to the highest standards of railway operation, with due regard to the safety of passengers and employees thereof and all other persons."

The Board of Aldermen has adopted a resolution calling upon its committee on public welfare to prepare ordinances to make for safer traveling facilities and to prevent the employment of green motormen by any electric railway in New York City.

Public Control for Buffalo

Agreement Reached Between City and Company to Drop Litigation and Adopt Massachusetts Plan

An agreement was reached on Nov. 13 between the International Railway, Buffalo, N. Y., and the municipal authorities whereby all pending litigation will be dropped and the so-called Massachusetts plan of electric railway operation and control will be put into effect in this city. Edward G. Connette, president of the company, offers to co-operate with the City Council to determine a fair valuation of the company's properties within the city of Buffalo.

In a statement, President Connette said:

"Upon receiving assurances of a fixed return and of proper provisions for maintenance and upkeep of the property, we will agree to any form of management the Mayor wants. Nothing can be more liberal than that. Furthermore we will then agree to place the city properties in such position that ultimately the city can buy them out of surplus earnings or whenever it has the power to do so. This meets the wishes for municipal ownership. I can guarantee the resignation of the present management in its entirety whenever the city or anyone else is in a position to manage and protect the property, giving us a fixed return on a fair valuation. If the city acts promptly, we will discontinue all litigation. This may be regarded as a complete surrender, and I hope it will bring to an end the bitter feeling against us."

Petitions for a referendum on the 6-cent fare resolution enacted by the City Council are being circulated and will be filed within the next few days. The filing of these petitions automatically suspends the operation of the 6-cent fare resolution until Feb. 20, 1919, the earliest date for another referendum on the action of the City Council. The new agreement between the city and the traction company would put an end to this litigation and would be a solution to the street car problem.

City Council Favors Plan

The agreement between the city and the company will necessitate action on the part of the State Legislature, but President Connette assured the Council that the International Railway would join the city in its efforts to secure the enactment of the necessary legislation. All of the members of the City Council favor the proposed plan.

J. C. Brackenridge, formerly of the Brooklyn Rapid Transit Company, who was retained by the municipal authorities last winter to make a survey of traction conditions, stated in his report that all the physical properties could be replaced new for $26,210,080, and that after allowance for depreciation the property was not worth more than $20,170,851. Of this amount the properties in the city are said to represent $13,261,622. The bonded indebtedness amounts to $75,585,000.

By basing a rate of fare upon a fair valuation of the International properties within the city of Buffalo, municipal authorities believe that the company could be guaranteed an 8 per cent return with a 4-cent fare or not more than a 5-cent fare. Last year the gross operating revenues amounted to $8,171,886, of which $6,616,964 was derived from passenger fares in Buffalo.

In addition to defaulting on the bond interest due on Nov. 1, as announced in the ELECTRIC RAILWAY JOURNAL last week, the company has defaulted in the payment of city taxes amounting to $409,199.20. The bond interest amounted to $427,975. In a public statement President Connette said:

"We are using this money, which rightfully belongs to the city of Buffalo and the bondholders, to give good street car service. We will have to pay this money sooner or later. There is no escaping it. We are trusting to the sense of fairness, of justice, of the people of Buffalo to enable us to pay back this money we diverted to give good service now."

Reconstruction Bills In

Business Men Should Insist Upon Public Hearings Before Measures Are Acted Upon in Committee

A great fight is about to be staged in Congress, according to the view of well-informed Washingtonians, based upon what character of reconstruction commission or agency shall be intrusted with the work of guiding American industry during the period after the war.

Two Bills Presented

Two important bills have been introduced in Congress dealing with this subject. One is a bill by Senator John W. Weeks of Massachusetts, which would provide for a congressional committee on reconstruction, to consist of six senators and six representatives, to be chosen half and half by democratic and republican conferences.

On the other hand, the bill by Senator Lee S. Overman of North Carolina would establish a federal commission on reconstruction, to be composed of five commissioners appointed by the President. The plan of Senator Overman is known in Washington as the administration plan and is said to have the sanction of President Wilson.

Both measures specify the character of the investigations to be made; covering problems affecting labor; capital and credit; public utilities; the results from the demobilization of industrial and military war resources; foreign trade; shipbuilding; housing; existing war legislation, and other vital matters.

It is pointed out in Washington that under Senator Weeks' proposal it would be difficult, if not impossible, in many cases to have questions decided upon a basis other than their political merits. Senator Overman's proposal, however, contemplates the appointment of business men, who might be expected to treat problems from a business point of view.

Additional bills looking to reconstruction are being introduced almost daily, and the indications are that Congress intends to have much to say about the policies to be followed.

Kickers Against Staggered Hours

The Public Service Commission for the First District of New York held a conference on Nov. 12 with representatives of business houses, industries, civic organizations and electric railway operators to determine whether it would not be possible to continue, with perhaps some modifications, the staggered-hour regulations imposed by Health Commissioner Copeland during the recent epidemic of influenza. These provided for an adjustment of business hours in various industries and lines of effort so as to reduce the congestion on the electric railway lines, including elevated and subway roads, in the morning and evening rush hours. The transportation conditions during the change were materially improved both in the morning and at night.

The conference on the subject brought out views both favorable and unfavorable. Union representatives from the clothing industries expressed general satisfaction with the results of the staggered-hour trial and desired the practice to be continued. The stereotype and printing unions, however, were adverse to any change from their old working hours. The department stores asserted that the shift of hours in their case had interfered with buying habits and was unsatisfactory to the clerks. The hearing is to be continued on Nov. 19.

Des Moines Arbitrators Raise Wages

The three arbitrators chosen to pass upon the demand of the employees of the Des Moines (Iowa) City Railway for a wage advance have granted 41 cents an hour for the first three months, 44 cents for the next three months and 47 cents thereafter.

Almost simultaneously the company filed an appeal to the State board of conciliation to secure a fare increase. The board has consented to pass upon the justice of the company's plea. The company asks for a 7-cent fare, based on the increase of $200,000 to the payroll which, it estimates, will be added by the new rates of wages.

Previous references to the efforts of the men to get the wage question before the War Labor Board, and to the refusal of this board to act when the agreement between the company and its men provided for arbitration, were made in the ELECTRIC RAILWAY JOURNAL of Nov. 2 and Nov. 9.

Federal Labor Readjustment

War Labor Board Asks Abolition After Settlement of Pending Cases—358 Cases Already Decided

With the coming of peace it is intimated in government circles that a new wage readjustment policy may be laid down by the government to cover the reconstruction period. In this connection it is noteworthy that abolition of the War Labor Board as soon as cases now in process of disposition are completed was recommended on Nov. 12 to Secretary Wilson by William H. Taft and Frank P. Walsh, joint chairmen.

The joint chairmen, in their letter, said the President had created the board to promote maximum production during the war, and that the end of hostilities had removed the reason for its existence. Cases now in progress should be disposed of, the chairmen said, because a large number of the awards will be retroactive.

Since its inception last April the National War Labor Board has made awards and otherwise disposed of 358 industrial disputes between employers and employees in war industries and industries directly essential to war production. About 100 cases are now in process and 300 unheard cases are pending.

Fifty cases have been dropped or suspended, mainly for failure of the complainants to prosecute. In seventeen cases the board did not take jurisdiction. Thirty-three cases were settled without the intervention of the board after one of the parties to the dispute had sought action by the War Labor Board. Four cases were withdrawn, and 177 were referred for settlement to other departments of the government, under rules of the board. In all, 673 cases were filed with the board between April and Nov. 1.

To Enforce B. R. T. Car Order

Justice Benedict of the Supreme Court signed an order on Nov. 12 on the application of the Public Service Commission requiring the Brooklyn Heights Railroad, a subsidiary of the Brooklyn Rapid Transit Company, to show cause on Nov. 18 why a mandamus should not issue compelling the company to put in operation 135 steel cars of the center-door type.

The application was made by William L. Ransom, counsel for the commission, who said that in 1917 the commission issued an order requiring the Brooklyn Rapid Transit Company, as the holding company, to put in operation 250 of these cars, 135 of which were to be operated on the Brooklyn Heights Railroad. The latter company operates about six different surface lines in Brooklyn. Since the commission issued the order the company, it was charged, had failed to comply with it.

The commission on Nov. 9 denied an application by the companies for a further hearing in the case, basing its action on an opinion of Commissioner Travis H. Whitney. Mr. Whitney accused the company of resistance to legal mandates, defiance of public obligations and disregard of the comfort and safety of passengers. Similiar remarks were made by Mr. Ransom in his application to Justice Benedict.

T. S. Williams, president Brooklyn Rapid Transit Company, has asked that the accusations be expunged from the record, because they are contrary to the facts and constitute a libel upon the companies and their officers. Mr. Williams says:

"There is not the slightest evidence in any of the records or elsewhere that the companies entering into the compromise agreement of Feb. 15 have failed in any respect to live up to its terms, so far as lay within their disposition and power."

New Orleans Shopmen Disappointed

Due to the award of the War Labor Board, which gives 38 cents an hour to pitmen, helpers, dopers and car washers, nearly 100 men have left the employ of the New Orleans Railway & Light Company, New Orleans, La. The men protest that under the wage scale the promotion system is destroyed, and that the man who starts to work as a car washer and knows nothing about railway work, will receive as much pay as the pitmen, who have achieved their places through years of toil. This has seriously handicapped the company and may affect the operation of power-house plants and carhouses.

State Board Seeks P. R. T. Data

The Pennsylvania Public Service Commission, through C. J. Joyce, chief of the bureau of accounts and statistics, has asked the Philadelphia Rapid Transit Company for detailed information bearing upon the company's position with respect to the pending lease between the city and the company for the operation of the city-built high-speed lines.

The commission asks the company to reply to the following question: "Will the company stipulate, and under the law is it your opinion that the company can stipulate, that if the contract be approved, it will not be used at any time to defend an action for the revision of rates?"

The commission also desires a practical illustration of the effect of the deductions from gross revenue provided for under the terms of the proposed contract as applied to the fiscal year ended June 30, 1918. It also asks for a statement of recent operating results and a complete analysis of the surplus of the company, showing the sources from which it is derived.

Another point of information requested is mileage and traffic statistics for the period of operation of transit facilities in Philadelphia by the Philadelphia Rapid Transit Company.

News Notes

Savannah Service Resumed.—The car service in Savannah, Ga., which was interrupted by strike on Nov. 1, was resumed after three days. None of the demands of the strikers was met, it is reported, and the places of strikers who did not return were filled by other employees and by new men.

Westchester Wages Raised Five Cents.—All conductors and motormen of the Westchester Street Railroad, White Plains, N. Y., on Nov. 1 received an increase of 5 cents in their rates of from 34 to 40 cents an hour. The closing date of the company's agreement with the men was advanced from June 1, 1919, to June 1, 1920.

Portland Studying M. O.—A resolution prepared by Commissioner Kellaher, providing for an investigation of existing franchises, conditions and laws with a view to the city of Portland, Ore., acquiring ownership of the electric railway system, has been passed by the City Council. Commissioners Kellaher, Bigelow and Barbur have been appointed as a committee to conduct the investigation.

Cleveland Union to Discuss City Ownership.—The local branch of the Amalgamated Association at Cleveland, Ohio, will within a short time consider a resolution pledging the support of the organization to municipal ownership of the railway. William Reo, secretary of the union, said that the first step toward municipal ownership would be the introduction of a measure in the City Council to that end. Any step taken there would call for a referendum, but if the Council does not act, then the union will aid in the initiation of an ordinance providing for city ownership.

Berkeley Asks Valuation.—On Oct. 29 the City Council of Berkeley, Cal., adopted a resolution calling on the State Railroad Commission to fix a physical valuation of the San Francisco-Oakland Terminal Railways. The valuation will be used as the basis in any negotiations between the city and the railway in the matter of operation or purchase. This action of the Council was taken because an indeterminate franchise is before it for final action. It was felt that a fixed valuation should be decided upon, thus obviating any wrangling later if the city should desire to buy the property instead of having it operated under a joint board of control.

Oklahoma Associations Combine.—The Oklahoma Gas, Electric & Street Railway Association and the Oklahoma Public Utilities Bureau have been merged into the Oklahoma Utilities As-

sociation. The officers of the new associations are: President, J. F. Owens, general manager of the Oklahoma Gas & Electric Company, Oklahoma City, Okla.; first vice-president, C. S. Thompson, manager of the Shawnee Gas & Electric Company, Shawnee, Okla.; second vice-president, J. W. Shartel, manager of the Oklahoma Railways, Oklahoma City, Okla.; treasurer, William Mee, president of the Security National Bank, Oklahoma City, Okla.; secretary, H. A. Lane, State National Bank Building, Oklahoma City, Okla.; assistant secretary, Prof. F. G. Tappan, University of Oklahoma, Norman, Okla. Feb. 13, 14 and 15 were selected as the dates for the first annual meeting of the new organization. The session will be held in Oklahoma City.

Program for Meetings

Investment Bankers' Association

On account of the prevalence of Spanish influenza in St. Louis, Mo., it has become necessary to postpone until some future date the convention of the Investment Bankers' Association set to be held in that city on Nov. 18.

American Institute of Electrical Engineers

The 344th meeting of the American Institute of Electrical Engineers will be held in Toronto, Ont., on Nov. 22 and 23, at the Engineers' Club. The technical papers to be presented are as follows:

"Electrical Power Development in Ontario," by Arthur H. Hull.

"Electrical Equipment of the Canadian Northern Tunnel in Montreal," by W. G. Gordon.

"110,000-Volt Transmission Line Over the St. Lawrence River," by S. Svenningson.

United States Chamber of Commerce

The convention of the war service committees to be held at Atlantic City on Dec. 4, 5 and 6, under the auspices of the Chamber of Commerce of the United States, will be for the primary purpose of planning reconstruction. The original plans, as previously announced in these pages, called for a war emergency and reconstruction conference, but because the war is ended everything will be centered on reconstruction.

War service committees will come together in thirty-five related groups. The plan is to form a great national advisory council with a representative from each of these groups. This council, in turn, will name a small executive committee which will speak for industries as representing all war service committees.

Some of the men who have been asked to speak at Atlantic City are James A. Farrell, John D. Rockefeller, Jr., Secretary McAdoo, Secretary Baker. Charles M. Schwab and President Wilson.

Financial and Corporate

Piedmont Is Doing Well

Increase in Operating Cost Is More Than Met by Higher Receipts—Net Revenue Up 16 Per Cent

The 1917 report of the Piedmont & Northern Railway, Charlotte, N. C., shows a gain of $299,515 or 24.5 per cent in gross revenues. This gain was brought about by the following increases: Passengers, $157,716 or 39.5 per cent; freight, $121,512 or 16.1 per cent; express, $3,963 or 21.8 per cent, and other transportation, $16,322 or 22.7 per cent.

The operating expenses increased but not to so great an extent, the rise being $203,061 or 30.9 per cent. The largest increases were in maintenance of way and structures and in general expenses, these being $64,378 or 84.3 per cent and $67,089 or 34.7 per cent respectively. Maintenance of equipment rose $19,227 or 32.8 per cent; power, $15,190 or 11.8 per cent; transportation, $37,114 or 21.7 per cent, and traffic, $60 or 0.2 per cent.

The net operating revenue gained $96,453 or 16.9 per cent. Taxes jumped, but income additions and deductions did not show material changes, and the result for the year was a gain in net income from $182,224 to $257,837.

In 1917 the company expended $108,719 for road and equipment. The equipment value is now $794,854, against which there is a depreciation reserve of $83,451. Miscellaneous operating statistics are given in the accompanying table.

Two army training camps—Camp Sevier, 5 miles north of Greenville, S. C., and Camp Wadsworth, 5 miles south of Spartanburg—were located on the company's lines in 1917. At Camp Sevier, tracks and station buildings were constructed at a cost of $12,663, and at Camp Wadsworth at a cost of $54,644 to take care of government business. The company also purchased eight passenger coaches and constructed four electric locomotives. The President's proclamation of Dec. 28, 1917, included this property under government control.

Oakland-Antioch Gaining

The operating revenues of the Oakland, Antioch & Eastern Railway, Oakland, Cal., for the twelve months ended Dec. 31, 1917, amounted to $745,834, a gain of $125,618 or 20.25 per cent over those of 1916. The details of the 1917 revenues follow: Passengers, $555,432; freight, $146,893; express and milk, $25,403, and other sources, $18,107.

The operating expenses in 1917 totaled $506,677, as compared to $437,255 in 1916, but the 1917 amount included $15,494 for depreciation of equipment, which was not charged against operating expenses in 1916. The operating ratio decreased from 70.5 per cent in 1916 to 67.9 per cent in 1917. A total of $19,887 in excess of the 1916 amount

COMPARATIVE INCOME STATEMENT OF PIEDMONT & NORTHERN RAILWAY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Passenger revenue	$562,566	36.9	$401,293	32.8
Freight revenue	872,330	57.3	750,988	61.3
Miscellaneous revenue	88,777	5.8	71,878	5.9
Total operating revenue	$1,523,673	100.0	$1,224,159	100.0
Way and structures	$140,722	9.2	$76,344	6.2
Equipment	77,886	5.1	58,658	4.8
Power	144,237	9.5	129,047	10.5
Transportation	207,837	13.6	170,722	13.9
Traffic	28,871	1.9	28,811	2.4
General	260,225	17.1	193,135	15.8
Total operating expenses	$859,778	56.4	$656,717	53.6
Net operating revenue	$663,895	43.6	$567,442	46.4
Taxes	74,604	4.9	48,847	3.9
Operating income	$589,291	38.7	$518,595	42.5
Non-operating income	8,360	0.5	9,653	0.8
Gross income	$597,651	39.2	$528,248	43.3
Deductions from income	339,814	22.3	346,023	28.3
Net income	$257,837	16.9	$182,224	15.0

COMPARATIVE OPERATING STATISTICS OF PIEDMONT & NORTHERN RAILWAY

Calendar Years	Gross Revenue	Operating Expenses and Taxes	Operating Income	Operating Ratio (Taxes Included)	Gross Revenue per Mile of Road	Operating Expenses and Taxes per Mile of Road	Operating Income per Mile of Road
1912	$160,344	$106,748	$53,596	66.6	$3,737	$2,488	$1,249
1913	659,551	402,167	257,383	60.9	6,906	4,211	2,695
1914	949,914	625,570	324,344	65.8	7,850	5,170	2,680
1915	1,010,547	612,262	398,286	60.6	8,103	4,909	3,193
1916	1,224,158	705,564	518,594	57.6	9,608	5,538	4,070
1917	1,523,673	934,382	589,290	61.3	11,913	7,305	4,607

was expended for maintenance of road and equipment in 1917.

The operating income at $206,757 represented an increase of $54,103, or 35.44 per cent over that for 1916. The final result for the year was a deficit of $149,989, as compared to a deficit of $210,231 for 1916.

The passenger revenues rose from $471,121 in 1916 to $555,431 in 1917, owing to a steady development along the entire line. The number of passengers carried was 788,555, as compared to 722,138 in 1916. The freight revenues increased from $108,701 in 1916 to $146,893 in 1917, the tonnage rising from 158,027 to 186,328. These figures bear out the prediction made in the company's 1916 report, to the effect that the territory served was apparently beginning to awaken.

Duluth Net Up Six Per Cent

Higher Operating Expenses, However Absorbed All But $17,800 of the Revenue Increase

The gross operating revenues of the Duluth-Superior Traction Company, Duluth, Minn., for the calendar year 1917 showed an increase of $219,958 or 15.44 per cent over those of 1916. The net income, however, gained only $17,796 or 6.64 per cent on account of the higher costs of operation.

COMPARATIVE INCOME STATEMENT OF DULUTH-SUPERIOR TRACTION COMPANY FOR CALENDAR YEARS 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Operating revenues	$1,621,952	100.00	$1,407,511	100.00
Operating expenses:				
Way and structures	$163,027	10.05	$166,197	11.81
Equipment	119,106	7.34	91,571	6.50
Power	191,625	11.82	171,473	12.18
Conducting transportation	431,219	26.59	348,939	24.79
Traffic	1,747	0.11	813	0.06
General and miscellaneous	158,375	9.76	137,720	9.79
Transportation for investment—credit	2,828	0.18	2,140	0.15
Total	$1,062,271	65.49	$914,573	64.98
Net operating revenue	$559,681	34.51	$492,938	35.02
Taxes assignable to railway operations	119,708	7.38	69,512	4.94
Operating income	$439,973	27.13	$423,425	30.08
Non-operating income	22,435	1.38	16,917	1.20
Gross income	$462,408	28.51	$440,342	31.28
Deductions from income	176,611	10.89	172,341	12.24
Net Income	$285,797	17.62	$268,001	19.04

The operating expenses during the last six months of 1917 showed a large increase owing to the increase in wages, accrued taxes and material costs. In the opinion of the company, the higher expenses will undoubtedly continue during the war.

Expenditures for additions to property during 1917 aggregated $353,437. Of this total $279,815 was for way and structures, $71,013 for equipment and $2,609 for power. The depreciation reserve on Dec. 31, 1917, totaled $701,637.

The revenue passengers carried in 1917 numbered 32,196,521 as compared to 28,081,851 in 1916. The company earned 6.45 per cent on its common stock in 1917 as compared to 5.94 per cent for the year preceding, and 2 per cent was paid thereon in 1917 whereas no payment was made in 1916.

C. C. & C. R. Trust Earnings

Lower Income from Dividends in 1917 Caused $59,000 Decline in Gross Income of Trust

The comparative income statement of the Chicago City & Connecting Railways Collateral Trust for the calendar years 1916 and 1917 follows:

	1917	1916
Dividends	$1,916,831	$1,979,750
Interest	101,682	91,256
Other income	22,338	29,662
Gross income	$2,040,851	$2,100,668
Interest on bonds	$1,078,315	$1,087,208
Bond redemption	105,000	105,000
Interest on bills payable	34,791	24,908
General expense	21,375	20,978
Taxes	25,178	26,052
Total disbursements	$1,264,661	$1,264,146
Net income	$ 776,189	$ 836,522
Dividends on participation shares	750,000	812,500
Surplus income	$ 26,189	$ 24,022

The outstanding point in the 1917 financial results of the Chicago City & Connecting Railways Collateral Trust was the decline of $59,817 in gross income, mostly due to lower income from dividends. As a result the net income shrank 7.2 per cent, and the dividends on the participation shares had to be cut from $812,500 to $750,000. The surplus income for the year then showed a slight increase.

Albany Results Disappointing

A statement of results of operation by the United Traction Company, Albany, N. Y., was made to the public recently by printed advertisement over the signature of H. B. Weatherwax, vice-president. The company said:

"The management of the United Traction Company feels in duty bound from time to time to report to the public and keep it informed as to the company's financial condition, especially as affected by the recent increase of fares from 5 to 6 cents.

"The revenues from operation for the year 1917 fell short $244,270 of paying the operating expenses, taxes and interest on the indebtedness of the company.

"Operating expenses for the year 1918 by reason of war conditions have largely increased. On Feb. 1, 1918, a voluntary increase of 1 cent an hour was given all employees, making the wages of motormen and conductors 31 cents an hour. June 3, an additional 6½ cents an hour was granted to motormen and conductors and a 20 per cent increase to all other employees; the question of a further increase was submitted to the War Labor Board. This board made an award fixing a minimum of 40 cents an hour, retroactive to June 3, 1918. Cost of materials used in operation and maintenance have increased from 50 per cent to 300 per cent.

"Effective on Aug. 19, 1918, the fare charged by the company was increased from 5 to 6 cents per passenger but transfer privileges were enlarged to a considerable extent.

"The revenues from operation for 1918 up to and including July 31 fell short $148,474 of paying operating expenses, taxes and interest on indebtedness of the company for the same period. Up to Sept. 30, after one month and thirteen days of the increased fare, the revenues from operation fell short $203,639 of paying operating expenses, taxes and interest for the first nine months of 1918."

A., E. & C. Feels Expenses

Owing to the change in the fiscal year under the direction of the Interstate Commerce Commission, the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., did not issue a report for the year ended June 30, 1917. Its latest report, however, covers the eighteen months that came to an end on Dec. 31, 1917.

As shown by the accompanying income statements for the last half of 1916 and the entire period of 1917, the burden of higher operating costs has been felt by the company. Although the operating expenses and taxes for 1917 more than doubled those of the last half of 1916, this was not true of gross earnings, and the net income for the year was less than for the six months.

The ratio of operating expenses and taxes to gross earnings was 66.86 per cent for the second half of 1916 and 72.51 per cent for 1917. The charge to reserve for depreciation of equipment in 1917 was $31,844, and for amortization of debt discount and expense, $42,184.

INCOME STATEMENT OF AURORA, ELGIN & CHICAGO RAILROAD FOR LATEST FISCAL PERIODS

	Last Six Months of 1916	Calendar Year, 1917
Gross earnings	$1,109,326	$2,159,349
Operating expenses and taxes	741,515	1,563,900
Net earnings	$367,811	$595,448
Other income	202	198
Gross income	$368,013	$595,642
Deductions	253,425	502,546
Net income	$114,588	$93,096

How to Use Ownership Certificates

The First National Bank, Cleveland, Ohio, is distributing without charge a twenty-four page pamphlet telling bankers and investors how ownership certificates should be used under the income-tax law in connection with the collection of dividends and interest payments. The chief purpose in preparing the booklet was to reduce the number of transit items which arise on account of the ownership certificates being incorrectly or incompletely executed.

The compilation was made by Charles H. Hubbell, federal tax consultant of the bank. He was formerly auditor of receipts for the Illinois Traction Company, Champaign, Ill.

Besides information on ownership certificates, the pamphlet contains data in regard to the various Liberty Bond acts and stamp taxes applicable to drafts and notes, stock certificates, powers of attorney, proxies and bonds.

Interborough Notes Sold

All of the $33,400,000 of three-year 7 per cent convertible notes of the Interborough Rapid Transit Company, New York, N. Y., which were offered for subscription at 98½ a few weeks ago, have been sold. A notice has been sent to syndicate participants by J. P. Morgan & Company, as head of the syndicate, announcing that all members of the syndicate are relieved from all liability in connection with the underwriting.

Following the Liberty Loan campaign it was announced that a little less than one-half of the Interborough notes had been sold up to that time. During the last few days there has been a pronounced revival of activity in the bond and short-term note markets, and this no doubt has been responsible for the quick sale of the remainder of the issue. The War Finance Corporation participated in the underwriting to the extent of $12,000,000.

Financial News Notes

Christopher Street Bonds Extended.—The issue of $210,000 of first mortgage 4 per cent bonds of the Christopher & Tenth Street Railroad, New York, N. Y., has been extended for five years until Oct. 1, 1923.

Successor Company Organized.—The Cincinnati, Milford & Blanchester Traction Company, Cincinnati, Ohio, was incorporated under the laws of Ohio on Oct. 24 with an authorized capital of $400,000 as the successor by reorganization to the Cincinnati, Milford & Loveland Traction Company.

Company Loses Tax Case.—Judge McPherson of Adams County has upheld the right of the Borough of Mechanicsburg to charge an annual rental of $1,200 to the Valley Railways. This matter has been in the courts for years. By the decision the town can now collect back claims of about $10,000.

Oklahoma Railway Issues Notes.—The Mississippi Valley Trust Company, St. Louis, Mo., is offering at 100 and interest to net 8 per cent, $375,000 of bond-secured 8 per cent gold notes of the Oklahoma Railway, Oklahoma City, Okla., dated Sept. 1, 1918, and due on March 1, 1921. The collateral securing the notes consists of $500,000 of first and refunding mortgage 5 per cent gold bonds of the company due on Jan. 1, 1941, or in the ratio of 133 per cent par value of bonds to notes.

Receiver Wants to Cut Loss.—J. Moss Ives, receiver Danbury & Bethel Street Railway, Danbury, Conn., has petitioned the Superior Court for permission to discontinue the branch between Bridgeport and Long Hill. This line for 5½ miles runs over tracks of the Danbury & Bethel Street Railway and for 2½ miles over tracks of the Connecticut Company. The line has been operated at a loss, largely on account of jitneys on the same route.

New Portland Mortgage Filed.—A mortgage has been filed by the Portland Railway, Light & Power Company, Portland, Ore., transferring to the Guaranty Trust Company, New York, in trust, all real estate and properties of the company in Multnomah County and Clarke County, and in parts of Oregon and Washington. The mortgage is executed to secure the payment of the $4,000,000 of the company's general mortgage 6 per cent gold bonds, authorized by the directors on Aug. 21.

Public Service Revenues Up Fifteen Per Cent. — The Public Service Railway, Newark, N. J., announces that its receipts have increased 15 per cent under the increase in fare from 5 to 7 cents and the imposition of a 1-cent charge for transfers. John O'Toole, secretary to President McCarter, says: "Notwithstanding the falling off in the traffic due to the influenza epidemic, the receipts since the 7-cent fare became effective on Oct. 15 have been in excess of those for the corresponding period of last year. The situation is not normal because a period of readjustment follows every change in any line, but we do know that the company's business has materially increased. The experience of the past few days and the indications for the future show that the estimates were about correct."

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$13,689	$12,451	$1,238	$612	$626
1m., Sept., '17	18,378	12,044	6,334	431	5,903

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

1m., Sept., '18	$83,952	*$49,452	$34,500	$19,983	$14,517
1m., Sept., '17	80,836	*42,701	38,135	19,000	19,135
12m., Sept., '18	924,778	*559,287	365,491	237,202	128,289
12m., Sept., '17	871,269	*496,695	374,574	224,813	149,761

CHATTANOOGA RAILWAY & LIGHT COMPANY,
CHATTANOOGA, TENN.

1m., Sept., '18	$173,242	*$130,164	$43,078	$31,959	$11,119
1m., Sept., '17	72,342	*129,262	†56,920	29,539	†86,459
12m., Sept., '18	1,677,838	*1,399,442	278,396	374,184	†95,788
12m., Sept., '17	1,347,092	*1,023,185	323,907	357,053	†33,146

COLUMBUS RAILWAY, POWER & LIGHT COMPANY,
COLUMBUS, OHIO

1m., Sept., '18	$331,983	*$272,316	$59,667	$59,093	$574
1m., Sept., '17	349,881	*244,555	105,326	42,209	63,117
12m., Sept., '18	4,222,247	*3,112,973	1,109,274	649,705	459,569
12m., Sept., '17	3,884,890	*2,664,680	1,220,210	543,204	677,006

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY,
GRAND RAPIDS, MICH.

1m., Sept., '18	$1,920,908	*$1,307,461	$613,447	$514,123	$99,324
1m., Sept., '17	1,695,725	*1,058,018	637,707	442,529	195,178
12m., Sept., '18	21,498,459	*14,486,921	7,011,538	5,849,712	1,161,826
12m., Sept., '17	18,843,595	*11,290,067	7,553,528	5,178,205	2,375,323

*Includes taxes. †Deficit. ‡Includes non-operating income.

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$224,382	*$157,609	$66,773	$38,602	‡$48,185
1m., Aug., '17	210,459	*123,538	86,921	29,149	57,772
12m., Aug., '18	3,153,395	*1,823,366	1,330,029	341,675	‡1,093,769
12m., Aug., '17	2,178,387	*1,271,677	906,710	349,938	556,772

PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.

1m., Aug., '18	$26,279	*$19,923	$6,356	$8,350	†$1,994
1m., Aug., '17	23,298	*18,663	4,635	7,546	†2,911
12m., Aug., '18	310,221	*231,244	78,976	96,238	†17,262
12m., Aug., '17	305,834	*227,882	77,952	87,888	†9,936

PENSACOLA (FLA.) ELECTRIC COMPANY

1m., Aug., '18	$48,779	*$32,904	$15,875	$8,401	$7,474
1m., Aug., '17	34,399	*19,932	14,467	7,833	6,634
12m., Aug., '18	443,339	*286,007	157,332	96,363	60,969
12m., Aug., '17	319,397	*185,338	134,059	93,221	40,838

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

1m., Sept., '18	$2,728,887	$1,672,385	$1,056,502	$818,881	$237,621
1m., Sept., '17	2,419,584	1,389,338	1,030,246	811,165	219,081
3m., Sept., '18	8,180,341	5,196,173	2,984,168	2,451,526	532,642
3m., Sept., '17	7,293,659	4,223,780	3,069,879	2,434,936	634,943

PUGET SOUND TRACTION, LIGHT & POWER COMPANY,
SEATTLE, WASH.

1m., Aug., '18	$1,021,191	*$644,712	$376,479	$263,708	$112,771
1m., Aug., '17	774,847	*490,870	283,977	196,691	87,286
12m., Aug., '18	11,173,578	*6,936,225	4,237,353	2,693,734	1,543,619
12m., Aug., '17	8,837,724	*5,388,166	3,449,558	2,275,183	1,174,375

Traffic and Transportation

Youngstown Plans Presented

All the Lines There Would Be Routed Through the Public Square and Past a Waiting Station

Plans formulated by Peter Witt for Youngstown, Ohio, call for the erection of a large waiting and comfort station and the rerouting of all the lines of the Mahoning & Shenango Railway & Light Company entering the Public Square. The comfort and waiting station will be approximately 100 ft. long and will be erected in the center of the street. It will be constructed of brick and be modern in every respect. The comfort station will be underneath the waiting station, which will provide ample room for both.

According to the plan as reported by Mr. Witt, all city lines will terminate at the Public Square. This, he explains, is necessary in order to provide adequate service for all the lines.

Work on changing the tracks and building the station will not be started before next spring, Mr. Witt stated, which will provide the railway adequate time to secure the necessary material to make the changes.

Plans have been worked out for the erection of a temporary shelter on both sides of the square this winter, Mr. Witt states. The shelter will be constructed of sheet metal and will provide adequate shelter until the permanent station is erected in the spring.

Starting on Nov. 3 the new plan, announced by Mr. Witt several weeks ago, terminating all city lines at the square, was to go into effect.

Passengers coming into the city will be expected to pay their fares when they board the car, while those leaving the city will pay when they get off. Mr. Witt explains that this will be one of the first steps toward improving service. On the lines where traffic is not exceedingly heavy, the motorman will have entire charge of the car and passengers will be requested to pay their fares as they board the car. Mr. Witt states this will relieve a number of conductors who will be available for motormen and enable the company to place some of the idle cars in service.

Another Georgia Petition Entered

The Georgia Railway & Power Company, Atlanta, Ga., has appealed to the City Council for financial relief in the shape of a 6-cent fare. The company states that it is confronted with the possibility of a wage increase, which cannot be met from present revenues, and that it has suffered loss of revenue and increase in expenses on account of an unprecedented drought and the influenza epidemic. It asks, therefore, that the city consent to an increase in the fare until normal conditions are restored.

Several months ago, when the company petitioned the Georgia Railroad Commission for an increased rate, the commission refused to grant a higher fare because the regulatory law expressly prevented it from exercising supervision over already existing franchises. The commission, however, recommended that the City Council grant a 6-cent fare, which the Council refused to do. Mandamus proceedings were then brought to compel the commission to take jurisdiction, and this case is now pending before the higher courts on appeal.

Another Adverse Columbus Ruling

United States District Judge Howard C. Hollister rendered a decision on Oct. 29 adverse to the claims of the Eastern bondholders of the Columbus Railway, Power & Light Company, Columbus, Ohio. He ruled that the company could not escape the provisions of the ordinance under which it has been operating and stated that all the points made by Judge D. C. Westenhaver in a recent decision on similar claims were well taken.

With the exception of the question of complainants' capacity to sue, he said Judge Westenhaver's opinion was applicable to this case. According to Judge Hollister the authorities quoted by the complainants' attorneys to sustain the claim that the franchise might be set aside because of the peculiar conditions existing at present had no bearing on this case. Among other things, he said:

"A novel feature of prime importance lies in the claim of the complainants that the doctrine of implied conditions in the law of contracts is applicable to the facts stated in the bill. If this were the case, a contractor, who by reason of labor trouble or advanced cost of materials was forced into bankruptcy, could urge these reasons for being released from his contract and held without damages for its non-performance."

The bondholders sought to set aside the franchise on the ground that the company could not operate at the present rate of fare because of the greatly increased cost of labor and materials.

The United States Supreme Court on Nov. 4 granted a motion for certiorari advancing for argument early in December the case of the Columbus company arising from the denial by Judge Westenhaver of an injunction against the enforcement of confiscatory fare restrictions.

Influenza Epidemic Obscures Fare Results

Public opposition to the 8-cent fare together with the influenza epidemic in Scranton and Wilkes-Barre, Pa., has caused a decrease in fare receipts of the railways operating in these places which amounts to from 25 per cent to 30 per cent over the receipts for September.

In March of this year both the Scranton Railway and the Wilkes-Barre Railway increased their fare from 5 cents to 6 cents. There was no noticeable falling off in the number of people traveling at this time, but in June a great many men were drafted or went into war industries at other points so that there was a falling off in traffic due to the decrease in population.

On Sept. 15 in Scranton and Oct. 1 in Wilkes-Barre the fare was increased from 6 cents to 8 cents. This increase came just as the influenza epidemic was beginning to be felt. On Oct. 11 all schools, churches, theaters, moving-picture shows, saloons and soda fountains were closed and orders were issued to close all stores at 5 p.m. including Saturdays. This, of course, caused a large decrease in passenger traffic, and the desire of many people to keep in the open as much as possible caused many people to walk to and from their work. A great many will, probably, continue to walk after the epidemic has subsided, but at this time it is impossible to determine how much of the present decrease is due to the increase in fare.

Fitchburg & Leominster Fare Increase Advocated

An advance in fares from a 5-cent to a 7-cent basis was advocated by the Fitchburg & Leominister Street Railway at a recent hearing before the Massachusetts Public Service Commission. The company also proposed to sell eight tickets for 50 cents with pupils' tickets at half this rate. Existing pupils', 5-cent fare and workingmen's tickets (between Shirley and Ayer and in Lunenberg) are to be abolished.

In its appeal to the board on behalf of the proposed rates the company pointed out that the increasing cost of operation and additional necessary charges will require an additional revenue of $77,146 a year in order to maintain the present 6 per cent dividend rate. Additional wages, $53,006, are based on a 30 per cent increase over the payroll of the fiscal year 1918. Increases of 10 to 20 per cent over the wage rates in effect during most of the year to June 30, 1918, are now being paid. The company pointed out the advance in material prices since the year before the war broke out and it was shown that there was a balance of only $2,340 at the end of 1917 after the payment of 6 per cent dividends for that year. The road operates 41.5 miles of track and its gross earnings for the year 1917 amounted to the sum of $402,179.

Low State Rate Confiscatory

Illinois Authorities Forbidden by Court to Interfere With Increase—Commission Grants 3 Cents a Mile

A decision in the case of the Alton, Granite & St. Louis Traction Company, complainant, vs. Edward J. Brundage, attorney general of the State of Illinois, Hubert E. Schaumleffel, State's attorney of St. Clair County, Illinois, Joseph P. Streuber, State's attorney of Madison County, Illinois, and Thomas E. Dempcy, Frank H. Funk, Walter A. Shaw, Fred E. Sterling and P. J. Lucey, commissioners of the Public Utilities Commission of the State of Illinois, defendants, has just been rendered in the Circuit Court, State of Illinois, St. Clair County. The case was brought as a bill in chancery for an injunction restraining the defendants from interfering with the company if it charged a higher rate of fare than that permitted by the laws of the State, and the decision of the master in chancery in favor of the complainants was approved by the court.

Briefly the decision holds that the capital stock of the company is $3,189,000, that its indebtedness on which it has to pay interest is $2,534,000, that its non-interest bearing debt is approximately $200,000 and that the physical valuation of its properties is $3,115,000. The court further finds that although the company is economically managed its income at the present rate of fare is inadequate to pay its operating expenses and fixed charges, that with certain increases permitted by the Utilities Commission the income will not be sufficient to pay these expenses "plus a fair and reasonable return on the investment," that the company has been unable to meet certain interest payments and that foreclosure proceedings would cause irreparable injury to the complainant and its stockholders. The decision continues as follows:

PRESENT RATE MEANS CONFISCATION OF PROPERTY

"The court further finds that the equities of this cause are with the complainant; that to compel the complainant to operate its road and to limit its interurban charges to the maximum rates prescribed by the laws of this State will amount to a confiscation of its property and deprive complainant of its property without due process of law in violation of the Fourteenth Amendment to the Constitution of the United States and also in violation of Sec. 2, Art. 2 of the Constitution of the State of Illinois; and that to subject the complainant to prosecution and the penalties imposed by the laws of this State for making charges in excess of the maximum rates prescribed by the laws of this State would deprive complainant of its property without due process of law in violation of the Fourteenth Amendment to the Constitution of the United States, and in violation of Sec. 2, Art. 2, of the Constitution of the State of Illinois; and the court further finds that the complainant is entitled to relief."

The court therefore issued an order restraining the defendants named from prosecuting the company for charging a higher fare than that now allowed under the law and ordered the company to make application to the commission for permission to charge such fares as "will yield sufficient revenue to pay its operating expenses and a fair and reasonable return in addition thereto on the capital invested by complainant in its said railway system, such rate of fares to be fixed and determined by the said Public Utilities Commission."

The court then said that if the complainant should attempt to put in force a higher rate than 3 cents a mile without receiving the permission of the Public Utilities Commission, the injunction would become inoperative.

COMMISSION GRANTS INCREASE

Following the decision of the court the commission granted the right to the company to charge a fare of 3 cents a mile, beginning Nov. 10. The train or cash fare is 5 cents higher than the ticket fare when the amount of the latter is 30 cents or less, and 10 cents higher when the ticket fare is in excess of 31 cents.

Lake Erie Line Wants More

George Bullock, receiver for the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., has petitioned the City Council of Buffalo, N. Y., for annulment and abrogation of franchise provisions, transfer and other regulations between the city and the company which would interfere with increasing the fare on the company's lines between the heart of the city to Erie, Pa., to 3 cents a mile, or to authorize the receiver to charge such rates as may be fixed from time to time by the Public Service Commission for the Second District. It is the aim of the company to charge 3 cents a mile within the city of Buffalo on its interurban lines.

Lyman M. Bass, of counsel for the company, said that the Buffalo & Lake Erie Company has no connection with the International Railway operating within the city of Buffalo. Under a lease the company operates over the International tracks in Buffalo and is bound by franchise agreements not to charge more than a 5-cent fare within the city. The new fare which the company seeks to charge would be approximately 13 cents from the Buffalo & Lake Erie terminal in Buffalo to the city line. Mr. Bass said:

"We are not afraid of losing our franchise. Unless relief is granted we shall insist upon being released from its obligations."

The company's counsel says that the village boards of Westfield, Portland, Ripley and Brockton have agreed to abrogate certain fare restrictions in franchises for a period of fifteen years from July 1, 1918. It was pointed out that the road had a deficit of $86,000 last year. A deficit of $200,000 is predicted for this year.

Chicago Road Gets 7-Cent Fare

The Public Utilities Commission of Illinois on Oct. 29 granted to the Chicago & West Towns Railway the right to charge a fare of 7 cents on portions of its lines upon which the fare has previously been 5 cents. The commission held that (1) in fixing a reasonable fare the entire system should be considered as a unit; (2) efforts should be made to encourage short-haul traffic and (3) the company is entitled to an increase sufficient to enable it to pay advanced costs in wages and materials that have been forced upon it by causes beyond its control.

The following rates were therefore provided: Cash fare of 7 cents or five tickets for 30 cents; 5-cent fare within the limits of any of the twelve municipalities in which the company operates; commutation ticket charges to be increased approximately 40 per cent. and on certain lines charges of 10 cents. 13 cents and 15 cents to be made. Fares for children will be 4 cents, 5 cents and 7 cents where the adult charge is 7 cents, 10 cents and 13 cents respectively. All commutation tickets that were previously issued must be accepted for passage until Dec. 1. After Nov. 30, such tickets will be redeemed by the company.

The company is required to submit monthly financial reports. Unless otherwise ordered by the commission, the new rates are not to be effective after Dec. 31, 1919. They may be discontinued at any time prior to this date.

Charlotte Wants to Know

The Corporation Commission of North Carolina certifies to the Mecklenburg court the record in the Southern Public Utilities case in which the commission allowed an increase in fares to 7 cents, so Charlotte can appeal to the Superior Court from the order of the commission. The commission holds there may be, under the Ansonville depot case passed on by the Supreme Court, no appeal from the order of the commission fixing fares but that Charlotte can go into the courts to try the contract of 1886 between the city and railway fixing the fares at 5 cents as beyond the power of the commission to change. The commission says:

"We do not believe Charlotte is or can be made such a party to this proceeding as would entitle it to prosecute an appeal from the commission's order under the rules laid down by the Superior Court in the case cited or that the question of fixing the rate of fare to be charged by the Southern Public Utilities Company is a proper question to submit to a jury, but there is raised in the record a question of the franchise contract as to fares entered into Sept. 20, 1886, by the Charlotte Street Railway, the predecessor of the Southern Public Utilities Company, with Charlotte. It is held in many states that franchise contracts of this character do not preclude state authority from fixing rates higher or lower as conditions justify, but Charlotte is entitled to try out the issue in our own courts. Whether it is entitled to do so by way of an appeal in this proceeding is a question submitted to the courts by the certification of this record."

Transportation News Notes

Women Operators in Oklahoma.—The Sand Springs Railway, Tulsa, Okla., has several women in its employ as conductorettes.

Ten-Cent Fare Wanted.—The Valdosta (Ga.) Street Railway has petitioned the Georgia Railroad Commission for authority to increase its fare from 5 to 10 cents.

Grand Rapids Six-Cent Fare Passed.—A 6-cent fare for Grand Rapids, Mich., has been approved by the City Commission without a dissenting vote. The passage of the required ordinance is being taken up, and the increase in fare is scheduled to become effective on Dec. 4.

Jitney Competition Restored.—The City Commission of Sacramento has repealed the ordinance requiring every jitney to secure a permit before engaging as a common carrier. The commission had threatened to take this step unless the company withdrew its application to the California Railroad Commission for a 6-cent fare.

Bay State Ten-Cent Fare Suspended.—The Massachusetts Public Service Commission on Nov. 8 issued an order suspending until Dec. 10 the 10-cent fare schedule of the Bay State Street Railway, Boston, Mass., unless otherwise ordered by the commission in the meantime. Extended hearings were scheduled for the next two weeks.

New Rhode Island Rates Still in Effect.—The Rhode Island Supreme Court has handed down a rescript to the effect that the new rates recently put into effect by the Rhode Island Company under authorization by the Public Utilities Commission are to continue in force until the appeals filed by various cities have been decided upon their merits by the court.

Union Traction Gets Relief from I. C. C.—Permission to increase rates not more than 25 per cent or in excess of existing rates on competing steam carriers has been granted to the Union Traction Company of Indiana by the Interstate Commerce Commission. The increase applies between points on the company's lines and connections in Illinois, Indiana, Kentucky, Michigan and Ohio.

Tuscaloosa Line Gets Six-Cent Fare.—The Alabama Public Service Commission has authorized the Tuscaloosa Railway & Utilities Company, Tuscaloosa, Ala., to charge a 6-cent fare within Tuscaloosa and on the loop line and a 10-cent fare on the Holt extension. The new rates were placed in effect on Oct. 27. The increase had previously been approved by the public of Tuscaloosa at a mass meeting and by the City Commission.

Winona Freight Traffic Growing.—The Winona Interurban Railway, Warsaw, Ind., is handling large quantities of freight in carload lots averaging 200 loads a month. An interchange business has been effected with the Wabash, Big Four and Pennsylvania steam lines. Many government materials, logs, etc., are being hauled. Direct connection with Chicago via boat is made during the Lake travel season for both freight and passenger traffic at Michigan City, Ind., and Benton Harbor, Mich.

New Gary Rates Asked.—Application has been made by the Gary (Ind.) Street Railway for a raise of fare from 5 to 6 cents. The company also desires an increase from 10 to 20 cents on the line from Gary to Hammond, or a little more than 1 cent a mile. It is now possible to go from the Loop, Chicago, to Gary, Ind., a distance of more than 30 miles, for 25 cents. Under the new rate it would cost 85 cents. This new rate would also be in effect between Gary and Indiana Harbor.

Will Not Refer Rates to Commission.—The committee of the whole of the Board of Aldermen of Yonkers, N. Y., to which was referred the petition of the Yonkers Railroad for an increase in fares, has decided that a reference of the question of a proper rate to the Public Service Commission would be of doubtful legality and the aldermen will not delegate any of their powers. On Nov. 14 the aldermen refused to approve two 5-cent zones for Yonkers and one 5-cent zone outside.

Memphis Asks for a Seven-Cent Fare.—The petition of the Memphis (Tenn.) Street Railway for a straight 7-cent fare will be considered by the Mayor and City Commissioners at a special meeting. It is stated that Mayor Monteverde is in favor of submitting the question to a referendum vote, even should the petition which was filed some time ago be favorably considered by the commission. Before the recent award of the War Labor Board, a 6-cent fare petition had been filed by the company, but the award makes necessary the 7-cent rate.

Influenza Affects Jersey Line.—At a fare hearing before the Board of Public Utility Commissioners of New Jersey on Nov. 4 Gaylord Thompson, vice-president and general manager of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., stated that the influenza epidemic between Trenton and Princeton had caused a large decrease in revenues. He also said that the increase in fares allowed last spring had been more than wiped out by the wage increase given by the War Labor Board. The prices of coal and materials are about the same as when the new fare was permitted.

Berkshire Increase to Be Tried.—Representatives of cities and towns have reached an agreement with the Berkshire (Mass.) Street Railway whereby the proposed fare schedule will be tried for thirty days and the company will maintain its present service. In the meantime, the representatives of both sides will endeavor to reach a compromise for a permanent arrangement. The agreement received the sanction of the Public Service Commission on Nov. 8. The new fare plan, which was filed to become effective on Nov. 12, provided for the reduction of the 5-cent fare areas in the cities, the rearrangement of the 5-cent suburban zones and the abandonment of 44 miles of non-paying lines, as noted in the ELECTRIC RAILWAY JOURNAL of Oct. 19.

San Antonio Wants Fare Rehearing.—Application for a rehearing on its rejected plea for a 6-cent fare has been filed with the City Clerk of San Antonio, Tex., by the San Antonio Public Service Company. A reference to the rejection of the company's first application was made in the ELECTRIC RAILWAY JOURNAL of Oct. 19. As to the assertion that the City Commission has no right to disregard the 5-cent clause in the franchise, it is pointed out that in the Altgelt case, brought to test the validity of the children's half-fare statute, the company contended that the 5-cent provision was a valid contract. This plea was overruled by the District Court, the Court of Civil Appeals, the Supreme Court of Texas and the United States Supreme Court, upon the ground that a city cannot contract away the exercise of the state police power of rate-making.

I. T. S. Quick to Respond with Service.—The Illinois Traction System is now operating a daily freight train between Springfield and Carlinville, Ill., to provide transportation especially for groceries and produce which are in much demand in Carlinville and vicinity. During the past year the Standard Oil Company has done some important mine development in and around Carlinville and four large mines have been opened. These shafts promise steady work and good wages for several thousand miners. As a result, the city of Carlinville, as well as adjacent towns, has experienced a boom which is conservative and stable, and the Illinois Traction System is sharing in the greatly increased business of that locality. Excellent freight service is given by this company from St. Louis, Springfield, Peoria, Decatur and Bloomington to Carlinville, and the officials of the company report greatly increased freight business in and out of Carlinville.

Legal Notes

CALIFORNIA—*Degree of Care Required When Car Is Run on Wrong Track.*

Though it is unusual to operate a west-bound street car on a south track, the railroad need use only reasonable and ordinary care under the circumstances, and not special and particular care. (Busch *vs.* Los Angeles Railway Corporation, 174 Pacific Rep., 665.)

NEW JERSEY — *Municipal Restrictions Must Be Reasonable.*

The power of a municipality to impose lawful restrictions upon granting consent to the location of tracks of a street railway is subject to the condition that they must be reasonable, not only at the time but at all times. (Atlantic Coast Electric Railway *vs.* Board of Public Utility Commissioners et al., 104 Atlantic Rep., 218.)

NEW YORK.—*Company Not Responsible for Person Injured Between Cars.*

A street railroad, to reduce accidents to passengers in boarding or alighting, had been using for more than a year lower but wider cars than formerly. No order of the Public Service Commission had been made, but the engineer of the commission had supervised in part the construction of this type of car. On a section of track, where the tracks were closer together than elsewhere in the city, the clearance between the new cars was reduced to 9½ in. A pedestrian was caught between two cars and was crushed to death. Held, that the use of such cars on such tracks was not a public nuisance, the cars being of the latest and best standard type, and the right to relocate the tracks to provide wider clearance being at least doubtful. (Levine *vs.* New York Railways, 169 New York Sup., 1032.)

NEW YORK—*Injuries from High Voltage under Employers' Liability Act.*

Notice of a railroad company to employees to avoid high-voltage wires and stating that they assumed the risk thereof, though signed and read by an employee, did not change the rules of law governing assumption of risk, since it was not a contract, but even if it was, there was no consideration because it was signed after the original employment, and in any event it would be contrary to public policy in so far as it relieved the company from liability for its own negligence.

Risk of negligence of a fellow servant in turning on current in high-voltage wire without warning, producing an unsafe place to work, may be assumed under the federal employers' liability act, unless the place was rendered unsafe by the negligence of the master. (Fried *vs.* New York, New Haven & Hartford Railroad, 170 New York Sup., 697.)

OREGON.—*Specific Performance Not Necessary in Right-of-Way Agreement.*

Where plaintiffs granted right-of-way in consideration of railway's agreement to build a dike which the railway failed to build as specified in the contract, plaintiffs were not entitled to specific performance, since they could have had another build the dike and could recover as damages the cost thereof. (Cartwright et ux. *vs.* Oregon Electric Railway, 171 Pacific Rep., 1055.)

PENNSYLVANIA.—*Public Service Commissions Have Power to Increase Rates.*

Where contracts fixing a rate "unlimited" in time have been entered into by public service companies, the State has the right through the Public Service Commission, notwithstanding the contracts, to inquire into and adjust the rate to a reasonable basis. (St. Clair Borough *vs.* Tamaqua & Pottsville Electric Railway, 103 Atlantic Rep., 287.)

PENNSYLVANIA.—*Accident on Line Operated Under Lease.*

Where plaintiffs took passage on defendant's interurban car for continuous passage to a point near by in another state, knowing no other carrier than defendant, defendant company was liable for collision damages, although the fare was collected in six installments of a nickel each, and the collision occurred in the fifth fare zone, over the state line, on tracks belonging to another company on which defendant operated under an operating agreement and although defendant had no charter to operate outside the State, for defendant's liability is determinable by its express or implied contract of carriage with plaintiffs, not by its charter powers or length of its line. (Simpson et ux. *vs.* Southern Pennsylvania Traction Company, 103 Atlantic Rep., 884.)

PENNSYLVANIA—*Injury to One Passenger from Iron Pipe Carried by Another.*

Street cars being for the use of people with or without their luggage, negligence cannot be inferred because a workman is permitted to carry tools, etc., and while there might be some piece of machinery or instrument so dangerous that to suffer a passenger to take it with him on a street car would be evidence of the company's negligence, that could not be affirmed of an iron pipe carried by an alighting passenger. Hence, where a passenger while entering a car was struck by an iron pipe which a workman who was leaving the car was carrying, the carrier was not liable. (Wood *vs.* Philadelphia Rapid Transit Company, 104 Atlantic Rep., 69.)

RHODE ISLAND.—*Injury at Corner for Car Overhang.*

A pedestrian about to cross the car tracks, being warned back by the motorman and stepping back a short distance, should have known that the car in rounding the corner would project beyond the rails. Hence she could not recover for injuries due to the fact that she failed to step back far enough to clear the car. (Mignault *vs.* Rhode Island Company, 103 Atlantic Rep. 716.)

TEXAS—*Injury to Employee Through Carelessness of Military Guard.*

Where soldiers, not under the control of a railway company, were placed on guard around its power plant in the interest of the general public by the United States military authorities during a warlike situation, and not at its request, the company was not liable to a servant, shot through the negligence of a soldier. (Sweetman *vs.* Laredo Electric & Railway Company, 204 Southwestern Rep., 701.)

UTAH — *No Injury to Householders When Fares Are Raised.*

That a street railway franchise called for commutation tickets, and in reliance thereon many persons built homes in the suburbs of the city along the street railway, does not estop the company from raising the rates by permission of the Public Utilities Commission. The constitutional provisions (Art. 1, Sec. 11) that "every person for an injury done to him * * * shall have remedy by due course of law," apply to judicial questions, and, unless a railroad rate as fixed by the Public Utilities Commission is either clearly oppressive or confiscatory, no judicial question is presented. (Salt Lake City *vs.* Utah Light & Traction Company, 173 Pacific Rep., 556.)

VIRGINIA—*Prosecution of Holder of Railroad Brass Not Malicious.*

Where a junk dealer was in possession of railroad brass, probable cause existed for his indictment under Code 1904, Sec. 3715, making the possession of such property, bought or received from any other person than the manufacturer thereof, or his authorized agent, or of a regularly licensed dealer therein, prima facie evidence of a fraudulent intent, and he should not recover in an action for malicious prosecution, although he was frank, concealed no fact within his personal knowledge and did not personally receive such goods. (Virginia Railway & Power Company, *vs.* Klaff, 96 Southeastern Rep., 244.)

WASHINGTON—*Injunction Will Hold Against Illegal Operation of Jitneys.*

Damage to a street railway by deprivation of fares by the illegal operation of jitney buses was "special damage," within the meaning of the rule permitting injunctive relief to one who unlawfully interferes with the property rights of another, though there was no actual injury to the physical property of the railway. (Puget Sound Traction, Light & Power Company, *vs.* Grassmeyer et al., 173 Pacific Rep., 504.)

WEST VIRGINIA.—*Physical Examination by Company's Physician—Special Injury Because of Enfeebled Condition.*

It is doubtful whether the court has the power to require the plaintiff in an accident suit to submit to an examination by a physician of the defendant,

but the plaintiff was certainly within his rights when after submitting to one such examination he declined to submit to another except at the trial.

One suffering an injury from the negligence of another is entitled to recover all of the damages resulting from such negligence, even though, because of his enfeebled condition, the injury to him is much more severe than would have been sustained by one in good health. (Perkins *vs.* Monongahela Valley Traction Company, 95 Southeastern Rep., 797.)

New Publications

Goggles, Freight Elevators and Safe Clothing for Men and Women in Industry

Respectively Nos. 14, 15 and 16 in the series on "Safe Practices," issued by the National Safety Council, Chicago, Ill., 10 cents each.

Petroleum, an Economic Study of a Limited Resource

By C. G. Gilbert and Joseph E. Pogue, of the Division of Mineral Technology, United States National Museum. Bulletin 102, part 6, of the Smithsonian Institution, United States National Museum, Washington, D. C.

This is a part of a series entitled "Mineral Industries of the United States" and is a general study of the subject which should be of interest to electric railway men who depend upon petroleum in part or entirely for their power supply.

Efficiency in the Use of Oil Fuel

A handbook for boiler plant and locomotive engineers. By J. M. Wadsworth. Bureau of Mines, Washington, D. C. One copy free from Bureau of Mines, extra copies 15 cents each from Superintendent of Documents, Government Printing Office, Washington, D. C.

This is a very convenient handbook for users of oil fuel, containing tables of data, information regarding oil-burning apparatus and directions for operating fuel-oil plants economically. The book is of size suitable for slipping into the pocket.

Tests to Determine the Rigidity of Riveted Joints of Steel Structures

By W. M. Wilson and H. F. Moore, University of Illinois. Bulletin 104 of the Engineering Experiment Station, University of Illinois, Urbana, Ill. Copies can be obtained free from the station.

This bulletin gives the results of tests made to determine whether serious error is produced in the computation for stresses in steel frames by the assumption that the joints are perfectly rigid. The test pieces used were connections which are types common in engineering structures and which resist loads and moments by methods fundamentally different.

Personal Mention

New British President

T. R. Goodyer, Manager of Croydon Corporation Tramways, Elected as Chief Executive

The closer relations which are bound to exist between Great Britain and America after the war make a biography of the newly-elected president of the British Municipal Tramways Association of interest, especially as he is known to many American readers through visits to this country and by his writings on technical topics.

The new president, Thomas Boyce Goodyer, is tramways manager of the Croydon Corporation Tramways and has had a long experience with both municipal and private undertakings. For a number of years he was secretary of the Edinburgh Street Tramways. After an experience in a transportation way with several of the smaller tramways he was appointed in April, 1898, general traffic superintendent of the British Electric Traction Company, Ltd., owner of many of the smaller tramways systems in Great Britain. It was shortly after this that he visited the United States and Canada to study the development of the industry here. In 1901 Mr. Goodyer was appointed general manager at Croydon, for the British Electric Traction Company, the lessee of the Croydon Corporation Tramways, but when this property became municipalized in 1906, he remained with the property and has since occupied his present position.

Mr. Goodyer has been an active member of the executive council of the Municipal Tramways Association for some years. He has also been a member of the Tramways & Light Railways Association. He contributed an article on British tramway practice to the Sept. 28 issue of this paper.

I. T. S. President Returns from France

William B. McKinley, president of the Illinois Traction System, Champaign, Ill., and Congressman from the Nineteenth Illinois District, has returned from a visit of six weeks to the western battlefront in Europe. Mr. McKinley inspected 600 miles of the front during his trip and was the guest of the English and French governments. He traveled for the most part in an automobile and made a thorough investigation of the general British and French military positions.

Mr. McKinley paid especial attention to the business management of the military forces, noting the problems of transportation, electric lighting, feeding, clothing and arming the allied troops. He was much impressed with the double-track railways constructed in France and equipped with American locomotives, as well as by the electric lighting plants which have been set up in various parts of the allied fronts. The general splendid business efficiency manifested by the American, British and French armies was a theme of special consideration by Mr. McKinley.

Mr. McKinley was accompanied on the trip by Newton M. Harris, vice-president of the First National Bank, Champaign, Ill.

E. E. Corken has been appointed secretary of the Springfield (Ill.) Consolidated Railway to succeed E. L. Maxwell.

W. S. Dixon has been appointed master mechanic of the Connecticut Company at Waterbury to succeed E. F. Mott.

James Funderburg has been appointed superintendent of the Springfield (Ohio) Railway to succeed E. B. Gunn.

J. S. Wathey has been appointed purchasing agent of the Butte (Mont.) Electric Railway to succeed William Hosking.

S. A. Sturgeon has been appointed treasurer of the Stark Electric Railroad, Alliance, Ohio, to succeed John M. Blatt.

W. M. Varner has been appointed purchasing agent of the Western Ohio Railway, Lima, Ohio, to succeed H. L. Boysell.

J. E. Irwin has been appointed master mechanic of the Sand Springs Railway, Tulsa, Okla., to succeed T. A. Seacord.

E. Littlefield has been appointed chief engineer of the Cairo Railway & Light System, Cairo, Ill., to succeed W. C. Siebold.

J. H. Bradbury has been elected vice-president of the Denver & Interurban Railroad, Denver, Col., to succeed T. S. McMurray.

Thomas F. Morris has been appointed auditor of the Springfield (Ill.) Consolidated Railway, to succeed George Streckfuss.

N. M. Hudson has been appointed auditor of the Macon Railway & Light Company, Macon, Ga., to succeed J. J. Thames, Jr.

J. P. Pulliam has been elected vice-president of the Evanston (Ill.) Railway, with headquarters at Milwaukee, Wis.

E. P. Clawson has been appointed auditor of the Peoria Railway & Terminal Company, Peoria, Ill., to succeed J. McMahon.

M. J. Murphy has been elected president of the Georgia Light, Power & Railways Company, Macon, Ga., to succeed G. T. Toby.

D. W. Allaman, secretary of the Tulsa (Okla.) Street Railway, has also been elected treasurer of the company, to succeed A. H. Reeder.

Charles Miller has been appointed chief engineer of power station of the Connecticut Company at Hartford to succeed John Fisher.

H. W. Bathiany has been appointed purchasing agent of the Pacific Power & Light Company, Astoria, Ore., to succeed W. N. Voegtly.

A. D. Foster has been appointed auditor of the Portsmouth, Dover & York Street Railway, Portsmouth, N. H., to succeed W. A. Levitt.

C. A. Slaney has been appointed secretary and auditor of the St. Cloud (Minn.) Public Service Company, to succeed A. D. McKenzie.

W. J. Gail has been appointed superintendent of the Buffalo & Lake Erie Traction Company at Buffalo, N. Y., to succeed R. H. Douglass.

A. N. Richardson has been appointed operating superintendent of the Illinois Northern Utilities Company, Dixon, Ill., to succeed P. T. Sealey.

Wayne Warfield has been appointed superintendent of lighting of the Savannah (Ga.) Electric Company to succeed J. L. Alexander.

Charles I. Taylor has been appointed vice-president of the Black River Traction Company, Watertown, N. Y., to succeed Frank Lebkuecher.

D. E. Moran has been appointed chief engineer of power station of the Peoria Railway & Terminal Company, Peoria, Ill., to succeed A. M. Scott.

T. C. Roderick has been appointed assistant general manger of the Tri-City Railway of Iowa, Davenport, Iowa, to succeed Clark Anderson.

J. N. Hinds has been appointed master mechanic of the Dayton, Springfield & Xenia Southern Railway, Dayton, Ohio, to succeed Ira Scofield.

Lieut. Walter A. Neely, former superintendent of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., has been wounded in France. He was injured about the hip and arm by a shell.

W. G. Fitzpatrick has been appointed general claim attorney of the Detroit (Mich.) United Railway and subsidiary companies to succeed F. E. Rankin and George A. Chapman, the latter being appointed assistant general claim attorney.

Walter B. Gibson, assistant treasurer of the Galveston (Tex.) Traction Company, has resigned to accept a position with the Eastern Texas Electric Company, Beaumont, Tex., as railway superintendent. Both of these properties are operated by Stone & Webster.

Robert O. Himel, assistant treasurer of the Eastern Texas Electric Company, Beaumont, Tex., has been appointed assistant treasurer of the Galveston (Tex.) Electric Company to succeed Walter B. Gibson, who has been appointed to the position of railway superintendent of the Eastern Texas Electric Company.

George A. Chapman, formerly one of the two general claim attorneys of the Detroit (Mich.) United Railway, has been appointed assistant general claim attorney of the company and its subsidiary lines, W. G. Fitzpatrick becoming general claim attorney vice F. E. Rankin.

P. R. McComas has been named general manager of the Illinois Central Electric Railway, with headquarters at Canton, Ill. Mr. McComas has had a number of years' experience in both steam and electric railway work. He was formerly assistant general manager of the Peoria & Pekin Union Railroad, Peoria, Ill.

W. E. Wood, superintendent of the El Paso (Tex.) Electric Company, has been appointed local manager of the Galveston (Tex.) Electric Company. Mr. Wood has been connected with Stone & Webster properties since his graduation from the Georgia School of Technology in 1907. He occupied various positions with the Jacksonville (Fla.) Traction Company, including that of superintendent. He was transferred from that company to the position of general superintendent of the Houston (Tex.) Traction Company, later being appointed to the position of superintendent of the El Paso Electric Company.

W. B. Atwood has resigned as safety engineer of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, to become associated with Mr. Culbertson of the Culbertson Construction Company in general construction work. His leave taking is sincerely regretted by the Mahoning & Shenango system, with which he has been connected since April, 1918. Mr. Atwood was general superintendent of the Wheeling (W. Va.) Traction Company for two and a half years, prior to which he acted as vice-president of the Geneva, Seneca Falls & Auburn Railway, Seneca Falls, N. Y., for five years. His successor will not be appointed for the present.

H. L. Treeman has been promoted by the J. G. White Management Corporation, New York, N. Y., from industrial engineer of that organization to the position of manager of the electric department of the Eastern Pennsylvania Railways and the Pennsylvania Light, Heat & Power Company, Pottsville, Pa. Both of these utilities are operated by the management corporation. Mr. Treeman was graduated from Oklahoma Agricultural and Mechanical College in 1909, with the degree of bachelor of science, having specialized in mechanical and electrical engineering. He was associated with the Edison Electric Illuminating Company, Brooklyn, N. Y., as power engineer for a number of years. In 1915 he left the service of that company to accept the position of industrial engineer with the J. G. White Management Corporation, as above mentioned.

Obituary

Paul H. Cordes, first lieutenant of Company C, Thirtieth Engineers, was killed in action on Sept. 12 on the western front. Lieutenant Cordes was thirty-one years old. He had been in the employ of the Worthington Pump & Machinery Corporation twelve years, for the last five years holding the position of sales engineer in the Chicago office.

Ira H. Metzger was killed in the catastrophe on the Brooklyn (N. Y.) Rapid Transit System on the evening of Nov. 1. Mr. Metzger was a thoroughly trained technical man and an advertising writer of unusual ability. For the last two years he has been in charge of the copy department of Rickard & Sloan, Inc., New York. Prior to that he was associated with the Service Department of *Industrial Management* and the ELECTRIC RAILWAY JOURNAL. Mr. Metzger was twenty-nine years old. His many friends in trade press and advertising circles will learn of his untimely death with deep sorrow.

T. L. Robinson, of the Winnipeg (Man.) Electric Railway, died on Oct. 24. Mr. Robinson went to Winnipeg as an employee of the company last winter. He was engineer in charge of the rehabilitation of rolling stock, and the reconstruction of the cars now in service was carried out under his direction. Before going to Winnipeg, Mr. Robinson had, for a number of years, held the position of designing engineer for the McGuire-Cummings Manufacturing Company, Chicago, and was loaned by that company to the directors of the Panama Exposition at San Francisco to design electric cars capable of dealing with the enormous crowds of visitors to the exposition. His death was due to complications following an attack of Spanish influenza.

Morton F. Plant, retired, financier and yachtsman, died of pneumonia on Nov. 4 at his home in New York. Mr. Plant was born in New Haven, Conn., on Aug. 18, 1852. He was educated in the Russell Military School in New Haven, and began his business career in 1868 in the service of the Southern Express Company at Memphis, Tenn. The Plant system of railroads bore the marks of his business genius, and he served as vice-president of the system until 1902, when the system became part of the Atlantic Coast Line, in which company he was a director. He was vice-president and director of the Chicago, Indianapolis & Louisville Railway, trustee of the Connecticut Trust & Safe Deposit Company, director of the National Bank of Commerce of New Haven, chairman of the board of directors of the Southern Express Company and a director of the Shore Line Electric Railway, Norwich, Conn.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Safety Features Essential for the One-Man Car

Decision of Massachusetts Commission Expected to Exert Favorable Influence on Rolling Stock Market

A recent decision of the Massachusetts Public Service Commission is of considerable interest to the trade from the rolling stock standpoint. The Connecticut Valley Street Railway desired permission to operate its existing equipment on two branch lines with one man per car, closing the rear door except on certain trips where the traffic would warrant the use of an extra man as a conductor. In view of the present high cost of operation, the advanced price of new equipment and the state of its finances, the company felt that it ought not to go to the expense of furnishing new cars under existing conditions. The commission, however, dismissed the petition on the ground that the proposed operation of old cars unfitted with the customary safety features for one-man service would be insufficiently inside the danger line to justify the board's consent. The usual safety features in the commission's mind include the automatic control of door locks and opening, removal of power, setting of brakes and sanding rails. The commission feels that the operation of one-man cars is to be encouraged and stands ready to approve the use of new one-man cars of modern design or of old cars properly reconstructed for such use. An interesting "slant" in the decision is a statement to the effect that it is possible that in some cases all the special devices associated with automatic control might not be necessary, but the commission leaves it to the company to submit which, if any, of these features should be omitted in the interest of cutting down the first cost of providing such service. The commission intimated that apparently reasonably prompt deliveries can be expected, either of new equipment or of apparatus necessary for reconstruction.

An indorsement of this kind from a board of the standing of the Massachusetts commission of the necessity for employing safety features in the one-man car is looked upon in traction circles as a clear intimation that makeshift methods of the temporary character proposed in this case cannot take the place of an investment in the real safety car, whether that car be bought new or rebuilt to meet the new conditions. The company is not to be criticised unfavorably for seeking to solve its problem at the lowest possible cost and in the honest belief that by the method proposed safe and satisfactory operation could be had. It appears, however, that there is a minimum expenditure which must be made in order to insure that degree of operating safety which has given the one-man car its current name of the "safety car." That point is the purchase and application of enough material to equip such a car with the fundamentally essential safety features, and beyond this, an operating company may go as far as wisdom dictates. New England has been slow to adopt the safety car in comparison with some other sections of the country. With the increasing shortage of men due to the immediate demands of the war and the remarkably promising field many of the roads in that section offer for supplying an increased and faster service of attractive character in competition with other agencies of transportation and locomotion, it would seem that the time cannot long be postponed when the safety car shall come into its own even as it has in the West and South. A decision like the foregoing is bound to exert a favorable effect on the rolling stock market within the range of its influence, and should make it easier to raise funds for such equipment even on properties at present hard pressed for revenue.

Five-Year Increase in Traction Material

The extent to which material prices have advanced in the past five years is well illustrated by the prices of typical material as billed to the Fitchburg (Mass.) & Leominster Street Railway in 1913 and 1918 which follow:

	1913	1918
Axles	$13.50	$36.80
Armature coils	18.10	35.00
Babbitt	.25 lb.	.42½ lb.
Track bolts	5.70 keg	15.00 keg
Machine bolts	1.86	4.64
Track brooms	3.75	6.75
Cap and cone	.35 each	.85 each
Cement	2.05 bbl.	3.20 bbl.
Composition castings	.25 lb.	.38-.40lb.
Trolley cord	.37½ lb.	.70 lb.
Coal	4.86 ton	8.34 ton
Commutator segments	22.10 set	37.83 set
White shellac	1.65 gal.	4.00 gal.
Foliage green paint	.85 gal.	2.35 gal.
Switch rubber	.50 lb.	.90 lb.
Duck	.35	.50
Field coils	13.90	30.00
Journal bearings	.25	.40
Lumber (spruce)	28.50	56.00
Spikes	3.80 keg	14.00 keg
Transfers (per thousand)	.16	.22 M
Friction tape	.22½ lb.	.46 lb.
Ties	.55 each	.63 each
Wheels	16.75 each	32.50 each
Wheels, trolley	.85	1.25
Trolley wire	.1805 lb.	.29155lb.
Ears	.219	.48

Reconstruction Program Under Way

Modification of Priorities—Return of Labor to Peace Basis the Work of the Week

Reconstruction is replacing war in business circles. Many problems are involved, and serious ones. It has frequently been said that industry will find it more difficult to return to a peace basis than it was to turn from a peace to a war basis.

For some time raw materials and their fabrication have been controlled by government agencies. To suddenly release this control might mean business chaos for many months. The War Industries Board, therefore, has revised its priorities list, modified the enforced curtailment of production in a number of lines by 50 per cent and served notice that it will continue to exercise supervision over industry until peace is signed. What form a government program will take after that is not known, but there are serious doubts in Washington that existing agencies will be named. Congress is apparently becoming impatient to take the lead and to formulate its own program.

Among the modifications of previous curtailment there is announced this week the lifting by the War Industries Board of the ban on certain kinds of construction. Construction projects that do not require permits or licenses from the non-war construction section are of interest to the supplier of traction materials in the section following:

"The construction, extension, improvement, maintenance or repair of any public utility, including water supply systems, sewer systems, light and power facilities, and street and interurban railways."

Street railways have been obliged in the past to secure permits in order to procure considerable of the equipment for construction and maintenance even when contracts had previously been placed for the material. No deliveries could be made until the permit was secured. The present ruling relieves the roads of the necessity for obtaining such permits.

Even though an armistice has been signed, government contracts must be continued on a large scale. B. M. Baruch, chairman of the War Industries Board, stated a few days ago. Certain contracts, however, surely must be cancelled and already this has happened to such an alarming degree that the Chamber of Commerce has brought it to the attention of President Wilson, suggesting some announcement of the government's policy in this connection.

Major General George W. Goethals, assistant chief of staff and director of purchase, storage and traffic, has signed a statement showing that provisions have been made for the cancellation and termination of contracts before completion. To settle questions under the contract, a board of contract adjustment has been created by order of the Secretary of War. The functions of this board are to hear and determine all claims, doubts or disputes which may arise under any contract made by the War Department. The board is clothed with all powers necessary and incident to the performance of its duties.

CONTRACT ADJUSTMENT BOARD

Through the operation of the Board of Contract Adjustment, contractors supplying the army will be able to submit any differences that may arise between them and the contracting officers of the various supply bureaus to this board which will act without any of the technicalties of court procedure, thus insuring a speedy and equitable adjustment. The services of lawyers will not be necessary, as the contractor or his representative may appear before the board and state his case freely and fully with the assurance that he will be given an impartial hearing and a prompt decision. The decisions of the board will be final and conclusive on all matters submitted to it for determination, but appeals may be made to the Secretary of War.

The release of labor from war industry and its re-employment in peaceful production is receiving the attention of the War Labor Board. Some government work, such as shipbuilding, will continue to employ large quantities of labor. Community war labor boards have been instructed to find out what the local labor needs are so that war plants can be relieved of surplus labor intelligently and quickly. Labor to be so transferred is being asked to fill out a questionnaire showing the individual past experience and individual fitness.

In all of these plans for reconstruction, therefore, every effort is being made to put business and industry on a peace basis gradually, so that there may be as little disturbance to business as is possible.

Scrap Market Quiet

Conditions Such That Lower Prices Are Expected—Consumers Not Buying

All activity has gone from the scrap iron and steel market. Consumers are terminating contracts with dealers as fast as they can and dealers consequently have no mind to purchase. Prices for other scrap metals are declining but with such a dead market in iron and steel scrap, no prices other than those that have been prevailing, namely the government prices, are quoted. These are the maximum prices and considering conditions it would not be surprising if any business done in the next couple of weeks is at somewhat lower prices. Indications on Friday were that offerings were being made at slightly lower prices than were current last week.

Washington-Virginia Specifications

The Washington-Virginia Railway, Washington, D. C., as mentioned in a recent issue of the ELECTRIC RAILWAY JOURNAL, expected delivery on Nov. 1 of twenty motor and twenty trail cars from the J. G. Brill Company. Specifications for the motor cars appeared in last week's issue. The specifications of the trail cars follow:

Number of cars ordered	20 trailer
Name of road	Washington-Virginia Railway
Date order was placed	June 21
Date of delivery	Nov. 1
Builder of car body	J. G. Brill
Type of car	Interurban passenger
Seating capacity	52
Weight, total	38,000 lb.
Length over all	48 ft. 0 in.
Truck wheelbase	6 ft. 0 in.
Width over all	8 ft. $2\frac{1}{16}$ in.
Height, rail to trolley base	12 ft. 1⅛ in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Agasote
Roof	Arch
Air brakes	Westinghouse A. M. M.
Axles	A.E.R.A. E-B
Bumpers	Brill
Car signal system	Electric Service Supplies
Car trimmings	Edwards
Couplers	Tomlinson
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote
Door operating mechanism	National Pneumatic
Hand brakes	National Staffless
Heater equipment	Peter Smith electric
Journal bearings	M. C. B.
Journal boxes	M. C. B.
Paint, varnish or enamel	Brill
Registers	Ohmer
Sash fixtures	Edwards
Seats	Winner
Seating material	Rattan
Slack adjuster	Westinghouse
Step treads	Feralun
Trucks	Brill, M. C. B. 2x
Ventilators	Railway Utility
Wheels (type and size)	33 in. chilled iron

NEW YORK METAL MARKET PRICES

	Oct. 31	Nov. 14
Copper, ingots, cents per lb	26	26
Coppr wire base, cents per lb	28.75	28.75
Lead, cents per lb	8.05	8.05
Nickel, cents per lb	40	40
Spelter, cents per lb	9.10	8.65
Tin, Chinese*, cents per lb	$77.00 to $77.50	74.50
Aluminum, 98 to 99 per cent., cents per lb.	†33.10	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Oct. 31	Nov. 14
Heavy copper, cents per lb	23.00 to 23.50	22.50 to 23.00
Light copper, cents per lb	20.00 to 20.50	18.00 to 18.50
Red brass, cents per lb	23.00 to 24.00	22.00 to 23.00
Zinc, cents per lb	6.25 to 6.50	....
Yellow brass, cents per lb	15.00 to 16.00	14.00 to 15.00
Lead, heavy, cents per lb	7.50 to 7.75	7.25 to 7.50
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.00 to $16.50	$16.00 to $16.50

ELECTRIC RAILWAY MATERIAL PRICES

	Oct. 31	Nov. 14
Rubber-covered wire fase, New York, cents per lb	34	34
Weatherproof wire (100 lb. lots), cents per lb., New York	38.75 to 40.00	38.75 to 40.00
Weatherproof wire (100 lb. lots), cents per lb., Chicago	38.75 to 39.76	38.75 to 39.76
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, girder (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cebts per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	*2.90	*2.90
Sheet iron, black (24 gage), Pittsburgh, cents per lb	*5.00	*5.00
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	*6.25	*6.25
Galvanized barbed wire, Pittsburgh, cents per lb	4.35	*4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	*3.95	*3.95
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	15 to 25	15 to 25
Waste cotton (100 lb. bale), cents per lb	12½ to 13	12½ to 13
Asphalt, hot (150 tons minimum) per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.52	‡$1.63
Linseed oil (boiled, 5 bbl. lots), New York, per gal	†$1.54	‡$1.65
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	64	64

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

‡ Bid price, no quotation.

Franchises

Fayetteville, N. C.—Herbert L. Jones, Richmond, Va., has asked the City Council of Fayetteville for a franchise to construct an electric line in that city.

Track and Roadway

Alabama Power Company, Birmingham, Ala.—Plans are being made by the Alabama Power Company, which is controlled by the Alabama Traction, Light & Power Company, for improvements and additions to its system.

Washington, D. C.—A public hearing will be held on Nov. 19 before the Public Utilities Commission of the District of Columbia on the application of the Washington Railway & Electric Company for permission to construct a double track on Seventeenth Street, between H Street and Pennsylvania Avenue, to connect the lines of the company with the Capital Traction system. The cost will be about $120,000. The Bureau of Housing, it is understood, will furnish the money for the construction, with the company depositing bonds as collateral. Its application requests authority for the issuance of bonds to the amount of $150,000 for this purpose. If the improvement is authorized, construction work will be begun as soon as possible. The proposed link between the two railway systems is a part of the belt line proposed by Traffic Expert Beeler. Final action has not been taken on the belt-line plan as a whole.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Work will be begun shortly by the Trenton & Mercer County Traction Corporation repairing and laying new tracks in various parts of the city to fulfill the orders of the Board of Public Utilities Commissioners of New Jersey.

New York Municipal Railway Corporation, Brooklyn, N. Y.—The Public Service Commission for the First District has sent a letter to the Board of Estimate insisting that speedy action be taken on what is called the Ashland place agreement to amend the rapid transit contract between the city and the New York Municipal Railway Corporation so as to provide for a connection between the elevated railroad in Fulton Street and the Fourth Avenue subway. The elevated road has been reconstructed east of Nostrand Avenue but from that point west the line would be placed underground under the proposed agreement, and until the matter is decided heavy steel cars cannot be operated over the line, as the old structure is not sufficiently strong to bear their weight. Attention is called to the fact that the recent catastrophe on the Brighton Beach line was largely due to the use of wooden cars. If the Board of Estimate should refuse to approve the agreement the rest of the elevated line will be reconstructed according to the original plan and steel cars can then be used. The agreement was submitted to the Board of Estimate last December, but no action has been taken.

Brantford (Ont.) Municipal Railway.—At a recent meeting of the City Council of Brantford, notice was given of the introduction of a by-law to provide for raising $100,000 by debentures to extend the tracks of the Brantford Municipal Railway in the Terrace Hill district, the by-law to be submitted for the ratepayers' approval at the municipal elections on Jan. 1. The estimated cost of the proposed extension is $28,000 a mile, exclusive of equipment. The exact route has not been finally determined.

Petersburg-Hopewell & City Point Railway, Petersburg, Va.—It is reported that the Petersburg-Hopewell & City Point Railway contemplates the construction of an extension to Prince George Courthouse.

Power Houses, Shops and Buildings

Pacific Gas & Electric Company, Sacramento, Cal.—It is reported that the Pacific Gas & Electric Company has completed arrangements for the construction of a new substation at Knight's Landing, Yolo County, estimated to cost about $250,000. The company plans to erect a new power line through Sycamore to a point near Colusa.

Georgia Railway & Power Company, Atlanta, Ga.—According to *Here We Are*, published by the Georgia Railway & Power Company, construction work has been speeded up on the various substations of the company. Work at the Boulevard substation will consist of the increase of the Lindale line transformer capacity to 6000 kva. This will be accomplished by the installation of two banks of three 1000-kva. transformers each, with a spare transformer for each bank. The transformers are to be connected 110,000 volts delta to 38,000 volts Y, and the two banks will be operated in multiple. Authority has been given for the purchase of spare transformers for the Lindale and Newnan substations.

Columbus (Ga.) Power Company.—A 7500-kw. steam turbine and two 600-hp. boilers are being installed by the Columbus Power Company, controlled by the Columbus Electric Company. A further extension of the boiler room and the installation of two more 600-hp. boilers is also under way.

Gary (Ind.) Street Railway.—The United States Housing Corporation has allowed the above concern $170,000, which it will spend on necessary improvements. A 1000-kw. rotary unit substation is being added. The erection of 5 miles of feeder lines, an addition to the company's carhouse and enlarged storage yards are among the improvements.

Arkansas Valley Interurban Railway, Wichita, Kan.—Plans are being made by the Arkansas Valley Interurban Railway to construct a station and shops on Douglas and Waco Avenues, Wichita.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me.—The capacity of the power plant of the Lewiston, Augusta & Waterville Street Railway at Deer Rips has been increased from 11,000 volts to 22,000 volts. New transmission lines are being erected to Brunswick and Bath to supply additional power. New transformers and machines have been installed at the Bath station of the company and are ready for service.

Cumberland County Power & Light Company, Portland, Me.—Owing to the setting of the drawbridge between Portland and South Portland, the Cumberland County Light & Power Company has decided to relay its submarine cables between Portland and South Portland, increasing the length 760 ft.

Boston (Mass.) Elevated Railways.—The board on curtailment of non-war construction has authorized the Boston Elevated Railway to take up reconstruction work at the Clarendon Hill and East Boston carhouses, made necessary by fires on these premises. A lobby and stock room will be rebuilt at the former place, with pit extensions and increased track facilities in the yard. At East Boston thirty-two cars were housed prior to the fire and capacity for but ten cars has since been available, pits for eight cars being maintained out of doors. To enable winter inspection and housing to be carried on more advantageously an inexpensive covering will be provided, including a single tile wall, second-hand front and rear doors and I-beams salvaged from a condemned bridge. In granting the petition the board stated "that the uninterrupted operation and maintenance of street cars is as important to the community as the operation of trains is to the nation."

Columbus, Delaware & Marion Railway, Columbus, Ohio.—The electric light plant at Caledonia has been abandoned and a transmission line is being erected from the plant of the Columbus, Delaware & Marion Railway at Marion to supply current.

West Penn Power Company, Connellsville, Pa.—It is reported that Sanderson & Porter, New York, have the contract for the construction of the $5,000,000 power plant to be erected at Springdale by the West Penn Power Company, which is controlled by the West Penn Railways.

British Columbia Electric Railway, Ltd., Vancouver, B. C.—It is reported that the British Columbia Electric Railway will make considerable alterations and some new construction at its station on Carroll Street.

Consolidated Light, Heat & Power Company, Huntington, W. Va.—A 33,000-volt electrical transmission system will be erected from Ashland, Ky., to Ironton, Ohio, 5 miles, by the Consolidated Light, Heat & Power Company, which is controlled by the Ohio Valley Electric Railway. The company will also change the equipment of five of its substations in Ashland, Huntington and Ironton.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—It is reported that because of the increasing demand for power, plans are being made by the Milwaukee Electric Railway & Light Company for the construction of a new power plant.

Rolling Stock

Hydro Electric Power Commission of Ontario, Canada, has ordered a No. 2, double-end, double-track snow plow, equipped with flanges for right or left running, from the Canadian Car & Foundry Company for delivery early in December. The plow will have a clearance height of 15 ft. and is being built at the company's Amherst, N. S., works.

Winona Interurban Railway, Warsaw, Ind., is rebuilding its summer cars so that they can be used during winter months. One motor and two trail cars are being remodeled in this way. These cars are of the thirteen-bench style. They will be covered with pantasote on outside and will be equipped with automatic safety door operation. They will be remodeled so that they can be operated as one-man cars, electrically heated. The interurban cars are being equipped with electric heaters. There will be six heaters in each car auxiliary to water heaters. All cars are being equipped with Golden Glow headlights with dimming devices.

Gary (Ind) Street Railway will add ten new motor cars of the one-man type and which can be utilized as one-man or two-man cars. They will also add fourteen additional single-truck cars. These are being built by the American Car Company of St. Louis. Four trailers of the Coleman type will also be added. The ten combination one or two-man cars will be of the double-truck side middle entrance type. They will be equipped with all automatic safety devices so that they can be in complete control of the motorman when operated as one-man cars. These new cars will have four 25-hp. motors. This order is greater than that reported in these columns for Oct. 19.

Trade Notes

Bound Brook Oil-less Bearing Company announces the appointment of E. L. Evans as superintendent of plant No. 1. Mr. Evans was former chief inspector of this plant.

Railway Improvement Company, New York, announces that the Columbus, Delaware & Marion Electric Company, Marion, Ohio, has ordered fifteen Rico coasting recorders. The contract covers a complete installation for all the railroad company's interurban passenger cars.

F. Y. Stewart has been appointed manager of the tape department of the United States Rubber Company with headquarters at the company's main office in New York. Mr. Stewart was formerly manager of the Walpole Tire & Rubber Company from the time it was bought and finally absorbed by the United States Rubber Company about three years ago. The Walpole friction tape is now manufactured, sold and distributed by the various branches of the United Rubber Company in the principal cities of the

Western Electric Company, Inc., announces the election of Charles G. Du Bois as a vice-president of the company. Mr. Du Bois entered the employ of the company in 1891 at its New York office, and occupied successively the positions of chief clerk, secretary and supervisor of branch houses. In 1907 he became comptroller of the American Telephone & Telegraph Company and in this capacity inaugurated and supervised a comprehensive system of accounting for the Bell Telephone System. During the winter of 1917-1918 he was in Washington in the capacity of comptroller of the American Red Cross, which position he still retains. Mr. Du Bois is forty-eight years of age and was graduated from Dartmouth College in 1891.

Chicago Pneumatic Tool Company announces the appointment of A. M. Brown as district manager of sales, 1740 Market Street, Philadelphia, succeeding G. A. Barden, who remains in Philadelphia as sales representative for the company. For some time past Mr. Brown has been stationed in the New York offices of the company as assistant manager of the compressor sales division.

New Advertising Literature

Paragon Electric Company, Old Colony Building, Chicago, Ill.: Twenty-four-page booklet giving engineering information on grounding for telephone systems, telegraph systems, railway signal installations, lighting and power circuits and trolley circuits.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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It's Sabotage to Reject Savings

WE REFERRED recently in these columns to the desirability of making public at frequent intervals the statistics of income and expenses so that the public might be informed of the financial condition of the railway serving their community. Closely related to this subject is the policy which a company should adopt as regards possible economies. Some seem to act as if they believed that any admission from them that new methods might effect a saving, would prejudice their plea for a higher fare.

While it is our firm belief that no economies attainable can offset an unchanging fare in a rising market, we can think of no worse policy than that mentioned. To grant an increase in fare is not the most popular pastime of our regulatory bodies. They must have ample grounds for their decision. Not the least of these grounds is that the applicant has exhausted all the available resources of the art. If it is shown by the commission's engineers that certain possible economies were ignored, the manager who has done the ignoring will not find the road to a favorable decision beset with thornless roses. Furthermore, we haven't found yet that even those who have secured higher rates of fare can afford to overlook any economies. Higher fare or no, we must save! *Save!* SAVE!

Of Course the Cities Want to Settle—On Their Own Terms

THE labored explanations of the secretary of the Conference of Mayors in New York, noted in a recent issue, as to the attitude of municipalities in that State toward public utilities, may indicate the desire of the cities to co-operate in rate cases. They also show, however, the inability of the cities to talk the language of agreement on the subject.

The municipalities in New York are at present in an illogical frame of mind. They want peace in the utility world, but they insist that rate increases be granted by the "proper" officials only in the "proper" way. They are opposed to subterfuges on the part of utilities, but they take it for granted that their own record renders them above suspicion. They evidently have no faith in State or federal regulation of rates on the basis of justice, and they wish full power under permissive public ownership to deal with their utilities in their own enlightened way.

The regulatory law in New York has been held by the courts to be defective in regard to the grant of commission control over municipal franchise rates. Some cities have released their railways from the franchise restriction as an act of simple justice, but the Conference of Mayors as a body is obsessed with misconceptions of regulatory practice and procedure and with the delusion that it is better to leave rate decisions to inexperienced, politically-motivated municipal councils than to grant jurisdiction to the well-equipped commissions. The commissions are often slow of action and irresolute of judgment, but these attributes in a rising labor and material market work injury to the utilities, not to the cities. If New York municipalities want to act co-operation instead of merely talk it, the proper course lies open. Let them stop quibbling and submit their cases frankly to the commissions for settlement—they will secure all the justice they deserve.

We Can't Always Blame the Commissions

AS A RESULT of the present electric railway situation, the statement is sometimes made that the principle of regulation by commission has "broken down." It is true that in these abnormal times regulation by commission has not proved a panacea for all electric railway ills. It has not overcome at the same time the scarcity in labor and material, the high money rates and the effect of the war on riding and personnel. Fares have not been increased as rapidly as they might have been or to the degree that the railways on many occasions asked, but in most cases where the commissions have had the power to raise fares they have done so at least to some extent. The real question is what would have been the situation if there had been no commissions and if the company had been obliged to appeal to the cities and legislatures as in the days before commission rule.

Time certainly brings changes. Some seven or eight years ago a civic improvement association requested the railway in its city to use more distinctive route signs. Upon the refusal of the railway, the case was taken to the public service commission. There the manager and the general counsel of the railway argued at length that the commission had no legal authority to compel the company to make the change. Nevertheless the commission ordered the signs to be installed and they were put in. Within the past year the same manager and the same lawyer have argued that the same commission has full legal power to raise the fare to any amount necessary to assure good service!

No system of regulation or government is perfect, but regulation by commission is the best plan yet devised for controlling the affairs of public utility companies, and these companies can greatly help or impair its success as they accept or fight reasonable requests made for the purpose of improving the service.

Getting at the Ultimate Consumer of Electric Railway Energy

IN THE extent to which devices have been installed on cars for the purpose of checking the correctness of their operation we in the United States are far behind our ally, Great Britain. Just why this condition has come about is not easy to explain, any more than is the fact that the air brake has not been widely adopted in that country whereas the contrary is true with the electric brake. It would be considered almost unthinkable in England to put a lot of expensive motor and control equipment on a car without giving the motorman something to indicate that the equipment is being handled effectively. The number of cars so equipped in this country is still relatively small.

While every effort should be made to reduce power consumption by means of the skip stop, by cutting down power plant and line wastes, by using better car equipment and by other means beyond the control of the motorman, it must not be forgotten that the motormen are the "ultimate consumers" of the energy. They are the men who have it in their power to waste all that is saved elsewhere. Their intelligent co-operation in energy saving must somehow be secured.

Granting for purpose of argument that the motormen desire to save power, and it is practicable to furnish the necessary incentives to this end, it is obviously impossible to turn this desire into tons of coal unless the men can know when they are operating efficiently, and especially when they are not.

Just how far the British managers have been successful in securing the full results possible with checking apparatus on the cars we are unable to say. After all, such apparatus is a means to an end rather than an end in itself. The present point is simply that they appreciate the importance of having the checking apparatus there.

To What Extent Should Washington Control Intra-State Railways?

ONE of the first questions to be taken up in any plan of reconstruction for the electric railways is the future extent of federal control. Is the supervision which has been exercised from Washington during the war period over wages to be continued during peace and is federal supervision to be extended so as to include federal supervision over rates, or will there be a resumption of state control in practically all electric railway matters, except where interstate commerce is concerned?

In the days before the war electric railways generally favored state rather than national control. This was shown in 1914 when the Interstate Commerce Commission requested statistics on accidents, whether occurring in Detroit or elsewhere, from the Detroit United Railway because the company did some business which was interstate in character. At that time counsel for the company, assisted by a committee from the American Electric Railway Association, at a hearing before the Interstate Commerce Commission urged that such subjects should be reserved for state action, and this view was accepted.

During the past year the federal government, through the National War Labor Board, which was organized for the purpose of devising for "the period of the war" methods of labor adjustment, has passed upon a number of labor disputes on electric railways, and the federal government has taken over or assisted in the financing of other electric railway undertakings under various acts of legislation. The slowness with which the state authorities, in some cases, acted on pleas for higher rates has led, during the past year, to a strongly expressed sentiment by many electric railway men that the rate-making power should also be assumed by the federal government. Now that the war is over, it is safe to say that many of the states will feel as if they were the best judges as to the needs of the electric railways within their boundaries, and many electric railway men will agree with them.

It Must Not Be Public Ownership By Default

ANY plan for the solution of the troubles of the electric railways must comprise certain fundamentals. Among these are:

1. Unity of interest between company and public, and the public's confidence.
2. Safe and dependable service, responsive to the needs and demands of the public.
3. Adequate revenues, either direct or indirect, for good wages, skillful direction, adequate reserves and sufficient return to invested capital to preserve credit.
4. A keen incentive for efficient operation.
5. Flexibility enough to meet the widely varying needs of different communities.

It is to determine the best way of securing these desiderata that the American Electric Railway Association at its conference on Nov. 1, authorized the appointment of a committee "to make a study of reconstruction problems, particularly those relating to local franchises."

Fortunately the committee will not be pioneers in their research, and much time should therefore be saved. The Massachusetts legislative committee, from whose studies the present "service-at-cost" laws in that state arose, made a comprehensive study of the whole field. There are also numerous working agreements and partnership relations, beginning with the Cleveland plan and continuing through the arrangements in force in Chicago, Kansas City, New York and Cincinnati, differing from the conventional American plan and all available for immediate study. As Ivy Lee points out in an article elsewhere in this issue, the legislative sessions of the coming winter are near at hand, and there is need for quick and united action; otherwise, in some states, it may be public ownership by default.

There are certain to be important changes in some states in the existing relationships between companies and communities. There will surely be established in other communities a greater measure of public participation in management. The danger is that in the effort to attain these ends, legislators, insufficiently informed in the industry and its intricate bearings, both social and financial, may adopt unwise methods, ignorant as they undoubtedly are of the large body of experience with existing railway franchises.

If this possibility—perhaps probability—of precipitate action is to be forestalled, some effective educational work must be done immediately.

Cities Should Recognize that Track Depreciation Is Cumulative

IN NO DEPARTMENT of an electric railway company has the present shortage of men and materials been felt to a greater extent, perhaps, than in the way department. In spite of wage rates, which have been relatively high, it has been practically impossible to compete in the labor market against the various contractors engaged in war work, especially when these contractors have used methods to take men from other work which would manifestly be called unfair in any other than war times. As a result of these conditions, combined with the actual losses of men already in the army, many way departments have been obliged to do their work with forces anywhere from 30 to 50 per cent of normal.

Meanwhile, the condition of the tracks has been deteriorating for want of attention, and the rate of deterioration is constantly increasing. Each "bad track" condition which is not attended to promptly tends to create more in its immediate vicinity. The ultimate result is threefold. The cost of repair increases greatly; in some instance the car service must be reduced because of poor track, and the damage to equipment increases the troubles of the mechanical department which is already under a great handicap for lack of men and material.

The material phase of the present situation is even more alarming than the shortage in man-power. Steel rails are as scarce as precious stones, and it is almost impossible to obtain them at any price. Orders more than two years old remain unfilled upon the books of the mills, and no hope is extended as to when delivery will be made. It is about as difficult to secure ties. Much of the tie timber on the Atlantic coast at least comes from the South by water, and since the government took over coastwise shipping, very few ties have been shipped.

The situation as to prices of all kinds of track material is so well known that it is only mentioned because prices now tend to curtail purchase, and in many cases there is not sufficient cash in hand, nor can credit be obtained, with which to purchase. Nevertheless, many people seem to think that by some form of the conjurer's art the railways can take a dollar's worth of nickels and make it buy two dollars' worth of rails in spite of the fact that everything the public buys has advanced in cost except the transportation for which in many cities it still pays only a nickel.

It is doubtful if there were over 100 miles of track reconstructed this season in this country. It is stated that no reconstrucion has been done in England since the beginning of the war. Every mile of reconstruction deferred now means greater operating expense and future difficulty. The future demand for track materials will be unprecedented, if the railways are not bankrupt, and even bankrupt roads in large cities must continue operation somehow. The *Tramway & Railway World* estimated an immediate demand in Great Britain for 20,000 tons of rail and that a total of 318,000 tons will be needed by 1921. Most of this rail will have to be obtained from America. On the basis of these figures we may assume present rail requirements here of 80,000 tons, with a total of about 3,000,000 tons up to 1921. This indicates that anyone who thinks that prices will drop within a year or so after the war is likely to be very much mistaken.

We cannot forget the other materials which are required in electric railway service, and it is quite safe to say that the problems which confront the executive, as presented by way department conditions alone, are extremely difficult of solution. Meanwhile the engineers will continue to do their best with the diminishing means at their command, to keep some kind of tracks under the cars. In these circumstances, it is obvious that war service, or war conditions, are not leading to efficiency but rather to the reverse, and unless there is public recognition soon of the fact that an efficient railroad is a city's best asset, there is bound to come an awakening.

Higher Fares Just as Important Now as Ever

CESSATION of hostilities in Europe has given rise to all sorts of speculation as to what will be the effect on business in this country. This is of special concern to public utilities, and while all have occasion to rejoice at the approaching return of peaceful days, the outlook for electric railways is not much if any bettered by the return of peace.

Take the situation of the electric railway companies which have not yet filed applications for higher fares or those whose petitions for relief have not yet been acted upon. While the future seems to hold out more hope than it did a few months ago, hope does not pay expenses and it would be unfortunate if it lead the too timid executive into relaxing his efforts for extra revenue which he thought essential not long ago. Some petitions have been filed based on financial estimates that a certain rate of fare was necessary to save the company from bankruptcy. The authorities who are considering such applications are likely to be optimistic to the extent of believing that conditions are going to improve rapidly and that the public meanwhile should not be burdened with a rate of fare which the future may prove to be excessive.

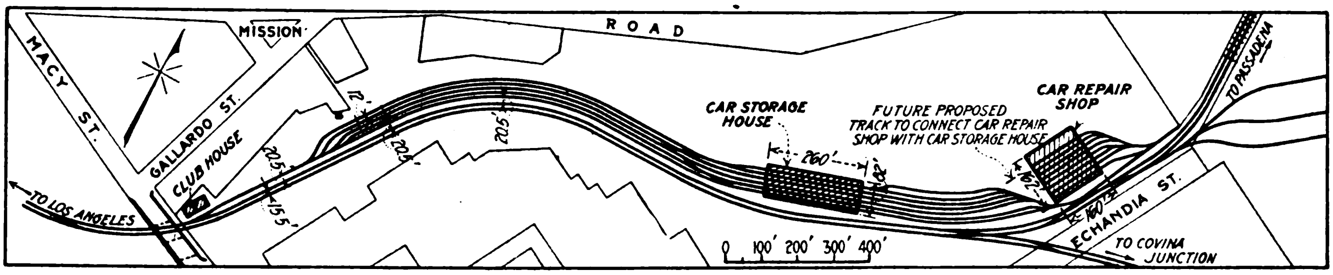
This is the time for the electric railway companies to insist that conservatism be not stretched to their financial detriment. Many of these companies have struggled along on the brink of disaster for several years. They do not hope or ask to regain the losses of the past. But they do feel that they are entitled to a return on their investment and that they should not be put off with a compromise that will give only partial relief until better days bring lower costs and added business.

No one knows how many months or years will pass before costs of materials and supplies will go down to a normal level. No one is expecting that the price of labor will be reduced in the near future, if indeed it ever goes down for employees of electric railways. This being the case, the companies which can make a showing that entitles them to relief should not be put off. Their bills must be paid, and they must be put in a position to raise new capital for extensions and improvements which the return of prosperous times will call for. These utilities are the backbone of the nation in time of peace as well as of war. Justice should be done and no half-way measures will do.

Pacific Electric's New Car Storage and Repair Facilities

Three Divisional Storage Track Layouts, with Carhouses and Repair Shops, Have Recently Been Placed in Service

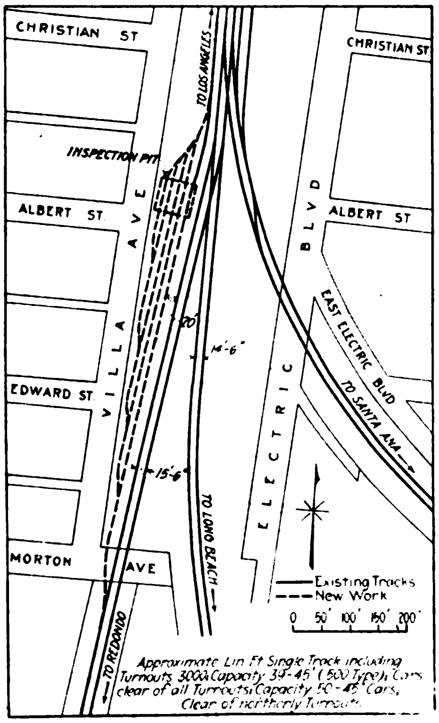
BY CLIFFORD A. ELLIOTT
Cost Engineer Maintenance of Way Department, Pacific Electric Railway, Los Angeles, Cal.


MACY ST.
MISSION
ROAD
GALLARDO ST.
CLUB HOUSE
TO LOS ANGELES
CAR STORAGE HOUSE
FUTURE PROPOSED TRACK TO CONNECT CAR REPAIR SHOP WITH CAR STORAGE HOUSE
CAR REPAIR SHOP
TO PASADENA
ECHANDIA ST.
TO COVINA JUNCTION
260'
0 100' 200' 300' 400'

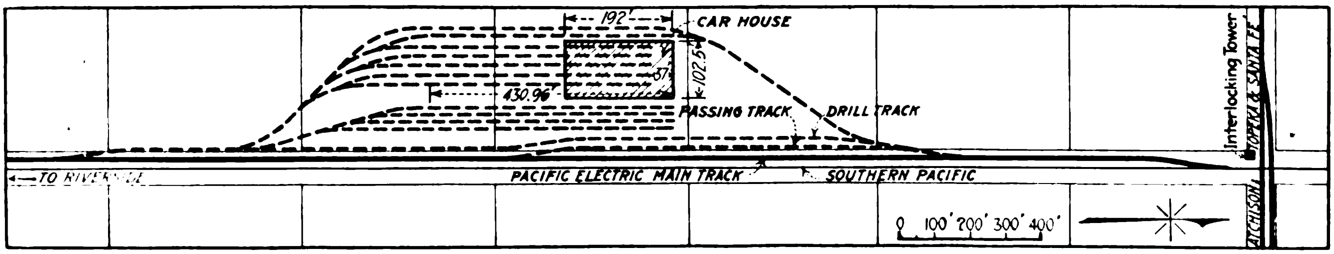
CARHOUSE AND STORAGE YARD TRACK LAYOUT AT MACY YARD, LOS ANGELES, CAL.

THE Pacific Electric Railway's main division carhouses, storage tracks and shops were, prior to 1917 and 1918, located in Los Angeles, approximately 1 mile from the main passenger terminal. This carhouse and shop site comprised 28 acres of land, of which approximately 6½ acres was taken over by the Los Angeles Union Terminal Company for its market terminal layout reviewed in the issue of ELECTRIC RAILWAY JOURNAL for Feb. 19, 1916, page 376. On the property not disposed of the Pacific Electric retained its main freight receiving and dispatching stations, together with the freight switching tracks that serve the Los Angeles district proper. The property sold to the terminal company had become of such great value, due to its logical location with respect to the constant increase of industrial activity in this particular district, that it was to the advantage of the company to make way for this industrial project and to seek other locations for its carhouses and shops.

The main shops, now under construction, are being established at Torrance, approximately 16 miles from Los Angeles. The proposed new shop layout was reviewed in the issue of the JOURNAL for July 21, 1917, page 95. New carhouse facilities, with storage track layouts, were arranged for at convenient locations, and the company resorted to a divisional plan in carrying out its improvements. This plan was followed in order that trainmen could begin their runs most conveniently, with provision for handling minor repairs and cleaning cars under standardized conditions. Further, the idea was to perfect arrangements for more highly organized switching and inspection of cars. The divisional carhouses are equipped to such an extent that they can care for quite a variety of small repairs and thus avoid unnecessary "deadheading" of the cars to the shops at Torrance. The carhouse and storage tracks for the northern division, the cars of which terminate their runs at Los Angeles, were located 2 miles from the company's Los Angeles main passenger terminal at Macy Yards,


CHRISTIAN ST
CHRISTIAN ST
TO LOS ANGELES
INSPECTION PIT
ALBERT ST
ALBERT ST
EDWARD ST
MORTON AVE
EAST ELECTRIC BLVD
TO SANTA ANA
TO LONG BEACH
TO REDONDO
14'-6"
15'-6"
Existing Tracks
New Work
0 50' 100' 150' 200'
Approximate Lin Ft Single Track including Turnouts 3000; Capacity 39-45' (500 Type) Cars clear of all Turnouts; Capacity 50-45' Cars, Clear of northerly Turnouts

TRACK LAYOUT AT WATTS STATION

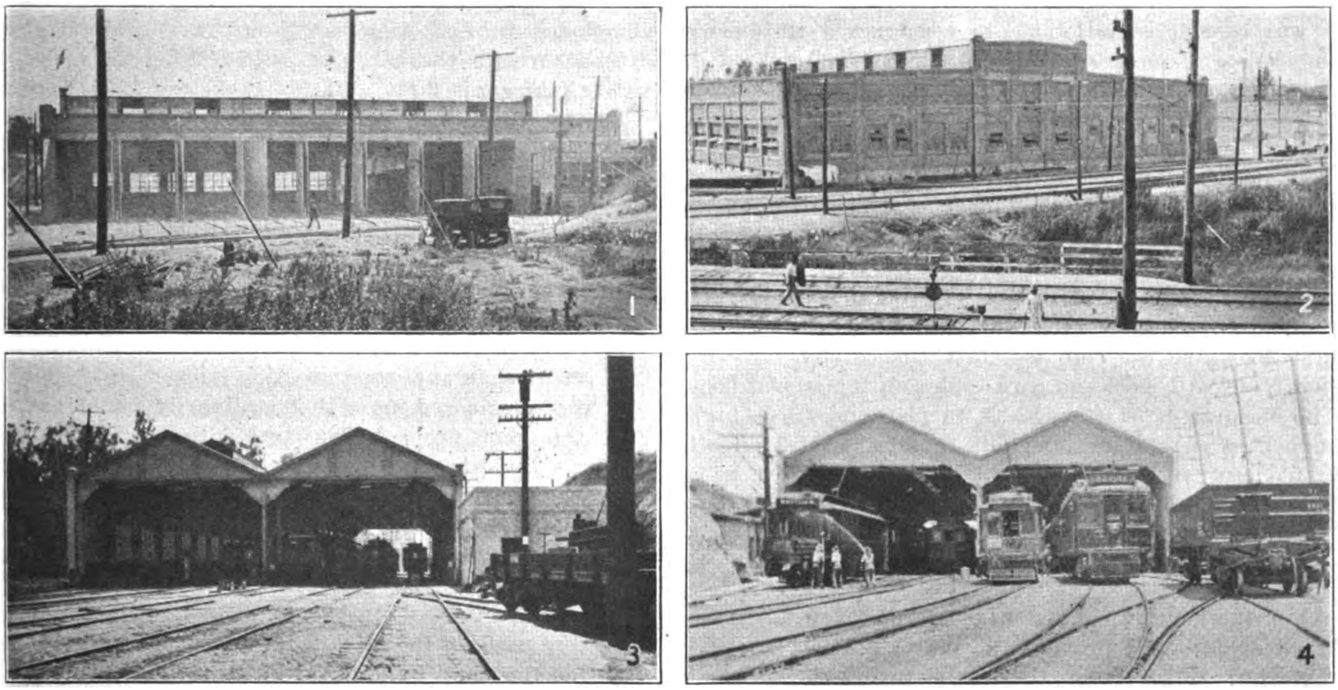

192'
CAR HOUSE
102.5'
37'
430.96'
PASSING TRACK
DRILL TRACK
Interlocking Tower
TOPEKA & SANTA FE
ATCHISON
TO RIVERSIDE
PACIFIC ELECTRIC MAIN TRACK
SOUTHERN PACIFIC
0 100' 200' 300' 400'

CARHOUSE AND STORAGE YARD TRACK LAYOUT AT SAN BERNARDINO on the Pasadena "Short Line." Property located on a steep hillside, and of no use for any other purpose, was utilized. Some 51,000 cu.yd. of earth was removed with steam shovels to provide the proper level for the contemplated tracks and buildings. The site was obviously well drained.

The new layout has proved effective in lessening congestion in the streets, the former layout having been in the districts of dense traffic where extreme city restrictions interfered with the maintenance of schedules and necessitated much inefficient switching in the endeavor to obtain the fullest service possible from the old carhouses and storage tracks.

In constructing the new Macy Yards car-storage track layout fifteen tracks were provided with storage as follows:

	Car Storage Capacity
One main lead track	42
Four storage and car inspection tracks	166
One car inspection track	15
One storage track	7
Eight tracks through car repair shop	16
Total, fifteen tracks	246



BUILDINGS OF THE PACIFIC ELECTRIC RAILWAY AT MACY YARDS, LOS ANGELES

Fig. 1—Car repair shop with track entrance. Fig. 2—Side view of same. Fig. 3—One end of car inspection house, small building at right being the storehouse. Fig. 4—Other end of inspection house, small building at left being the car foreman's office.

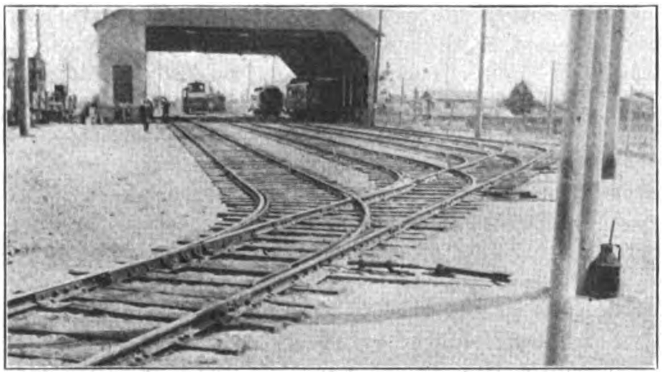
The principal structures in these yards were the car inspection house, 82 ft. x 260 ft., and the car repair house, 160 ft. x 160 ft. The inspection house is steel framed, and has brick exterior walls with asbestos-covered roof, steel sash and cement floor. It contains six concrete inspection pits, each 260 ft. long. The repair house has brick and concrete exterior walls, combination wood and steel trusses, and H. W. Johns-Manville "Adjex" three-ply roof. The roofing material had previously given four years of service on the company's old main carhouses abandoned at the terminal site. It was reclaimed in first-class condition for reuse.

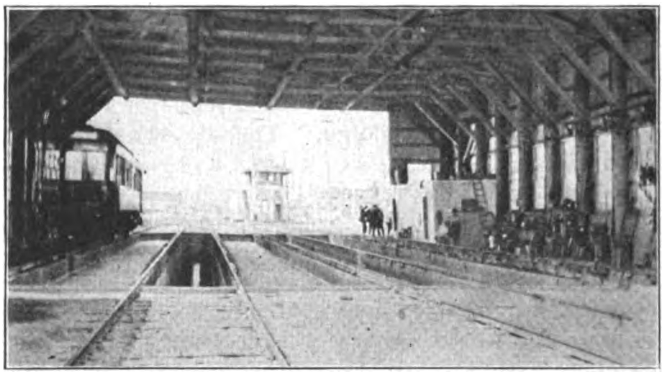
On each side of the new repair shop a 60-ft. car-storage space was arranged, and through the center of the structure a 40-ft. craneway was constructed to accommodate a 20-ton steel traveling crane. Outside and adjacent to the south wall of the shop a platform was built, and car-wheel storage tracks provided.

In the repair shop there are eight tracks with concrete pits for the entire length of the building and a portion of the interior is partitioned off into independent building units for a battery room, an armature room, a machine shop and a blacksmith shop. A separate building adjoining the blacksmith shop, was erected as a fender room. A separate unit outside the shop was also built and equipped with adequate toilet facilities, including shower baths.

The inspection house was constructed in the form described, with tracks extending from end to end, with a view to facilitating through movement of the cars through the yard and the inspection house. Adjacent to this house is a storeroom, 25 ft. x 45 ft., where an adequate store stock is maintained under the direction of a division storekeeper. The storeroom is built of brick, and is furnished with racks for storing material and supplies, so arranged that material can be stored from either side. This facilitates handling and also economizes space. Next to the storeroom are six underground steel storage tanks for oil, with the same number of Bowser oil pumps mounted inside the storeroom. Two of the tanks utilized were old and obsolete oil-tank cars, while the remaining four were reclaimed oil tanks of no further service at other car shops.

At the Macy Yards shop machinery and tools were installed for efficiently handling the work assigned to the division, but the purchase of new machinery and tools was discouraged where it was possible to transfer such from the old carhouses. In addition such brick, steel and other construction material as could be reclaimed at the former site were used to good advantage here. As a consequence of the strict economy exercised, the new storage tracks, buildings, machinery, etc., have





DIVISIONAL CARHOUSE AT WATTS STATION, SHOWING OPEN TYPE OF CONSTRUCTION SUITABLE TO CALIFORNIA CLIMATE

been put in at a cost of approximately $170,000. In addition to the details given I may mention that all concrete pits in these structures are electrically lighted and all structures are protected by means of an auxiliary fire alarm system.

On account of the importance of this division and because a large number of men are employed here and many trainmen begin and end their runs at this station, it was considered advisable to construct a trainmen's club house to replace the one previously maintained at the abandoned carhouse location. A house was therefore designed to be attractive to the men during working and emergency times, especially in view of the difficulty experienced in holding extra men in service. At this station some fifty unmarried trainmen remain daily from 9 a. m. to 3 p. m., to be ready for service in emergency runs. The building constructed is a brick, "class C," two-story structure. It contains an instruction room, a locker room and toilet facilities on the first floor, and the club secretary's office and a recreation room with pool and card tables on the second floor. The building is 31 ft. x 82 ft. in plan and 25 ft. high, supported on concrete and pile foundations. The estimated cost, inclusive of equipment, was $12,000. The building is shown in an accompanying illustration.

SOUTHERN DIVISION HAS LESS EXTENSIVE BUT ADEQUATE FACILITIES

For the southern division a carhouse and a storage track layout were provided at Watts Station, approximately 7 miles from the main terminal passenger station in Los Angeles. At this point the Long Beach four-track line terminates and diverges into double tracks. The Santa Ana double-track line and the Wadda-Redondo double track line diverge here also.

At Watts Station a car inspection house, 150 ft. x 65 ft., was erected which, exclusive of the small tool equipment and light machinery for minor car repairs, cost about $18,000. The building is of frame construction, with frame bays, and is covered with corrugated iron. The outside walls are of concrete, 5 ft. high. Where practicable the frame portion of the carhouse was constructed by utilizing material salvaged from carhouses abandoned in Los Angeles. Four car-storage tracks extend through the carhouse with a total capacity of eighty-four cars.

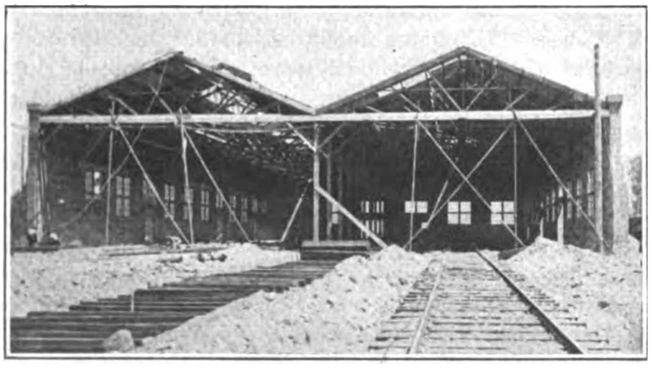
ABOUT $60,000 SPENT AT SAN BERNARDINO

The most central point for the new divisional carhouse on the eastern division was at San Bernardino, approximately 59 miles from Los Angeles. Riverside and Redlands on this division were already suitably provided with carhouses and storage facilities. The growing importance of San Bernardino made better facilities necessary and a structure was erected to serve as a combination repair shop and car inspection house.

It was considered more than ordinarily important to have this shop properly equipped with machinery and tools, as the "deadhead mileage" to the new shops at Torrance is some 75 miles.

The building is 100 ft. x 192 ft. in plan, has brick exterior walls, wood columns, combination wood and steel trusses and a corrugated iron roof. It contains five concrete car-inspection pits. Timbers 12 in. x 12 in. in size were used on the pits above the concrete work.

Inside the main building are a storeroom, a machine and blacksmith shop, and an office for the chief foreman and his force. The building also contains one automobile pit for repairing and overhauling a number of automobile buses, owned by the company and operated



COMBINATION CAR REPAIR SHOP AND CAR INSPECTION HOUSE UNDER CONSTRUCTION AT SAN BERNARDINO

BUILDING FOR TRAINMEN'S RECREATION QUARTERS AT MACY YARDS between San Bernardino and Highland, a distance of 6½ miles. This service was but recently inaugurated.

The track layout at this point provides for ten storage tracks and one through track, the total storage capacity of all storage tracks as installed being ninety-five cars.

Since the construction of the new divisional carhouses, the company has also installed small club quarters at the Sherman carhouses and shops, in the Long Beach passenger station, in the Hill Street passenger terminal at Los Angeles, at the Sixth and Main Streets terminal storage-track yards in Los Angeles, and at the Colorado Street carhouse in Pasadena. Rest rooms and recreation quarters have also been established at six of the divisional carhouses for the use of women car cleaners who, as a war measure, now largely replace the male Japanese cleaners previously employed.

There Is No Further Time for Drifting

A Crisis in the Affairs of the Electric Railways Is Here—Approaching Sessions of Legislatures Render Action by the Industry and a Specific Program Necessary

BY IVY L. LEE

THE course of the electric railways in the United States is going to be given definite direction within the next few months. Their entire future is involved. This immediate action will be taken:

1. Because the financial condition of the industry will force it.
2. Because state utility commission regulation has not been able to meet the situation.
3. Because popular dissatisfaction with the actual condition of affairs will force the legislatures to act.

The industry has been drifting—waiting for something to turn up. There is no longer any time for drifting. It is absolutely certain that the sessions of legislatures during the coming winter are bound to attack this problem. What course shall they take?

Several plans have been suggested for the amelioration of the railway situation, relating both to the fare and to the method of operation. For the former the choice lies between an increase in the flat fare or else an increase in the average fare by the zone system. In modes of operation the suggestions most frequently made are public ownership, service at cost, or some partnership arrangement which would unite the interest of both company and city in profitable operation.

FLAT FARE INCREASE NOT A PANACEA

While several hundred companies in the United States have been enabled to make an increase of flat fares, it is now apparent that this method will not meet the whole situation. There are two reasons for this. In some states the commissions are without power to authorize the companies to increase the flat fare or make any other increase of fare contrary to franchise stipulation. This throws the whole matter into the hands of local councils and means politics.

But even in states where commissions have the power to increase fares the situation has not been met. Massachusetts, Maine, New Jersey and Pennsylvania are evidences of this. The instance of Massachusetts is particularly enlightening, for as Public Service Commission regulation there has existed for more than thirty years the failure of that system seems conclusive.

The increase of fare from 5 to 6 or even 7 cents has not resulted, in most cases, in sufficient increase of revenue. It has proved that there is a point at which an increase of flat fare results in a decrease of revenue.

ZONE SYSTEMS

While there has been relatively little experience with zone systems in the United States, the experience has been sufficient to show that the problem of collecting the fares in dense traffic conditions is so great that the zone system is not practicable. It may be practicable in less well-populated communities. Palpably, the zone system will meet the situation in only a limited number of communities.

In addition to changes in the rate of fare, service-at-cost and partnership arrangements have been effected, and lately the movement for public ownership has gained headway. That the headway gained has been unintelligent matters not. It is a fact and as such must be dealt with.

The New York State Conference of Mayors has declared itself openly for the program of public ownership. Both political parties in the State of New Jersey have declared for public ownership. Seattle has just voted for municipal ownership. San Francisco has it already.

In New Jersey the decision by the Court of Errors and Appeals sustaining the Public Utility Board's jurisdiction over fares, regardless of franchises, will result in a legislative warfare over municipal ownership and both party platforms had municipal ownership planks.

THE TIME FOR DRIFTING HAS PASSED

Whatever be the merits or the demerits of any one of these systems, it is perfectly plain that within a very few months some one of these plans, or combination of them—something that differs from the existing system—is going to be selected as a legislative basis.

Therefore, the time for drifting is passed. The industry must now perforce get behind some definite, concrete program, if it is not to be municipal ownership by default.

The American Electric Railway Association is the one important national body representing the industry in this country. Yet, at its conference in New York on Nov. 1 the lack of a definite program was notable.

It was only after the day's proceedings were practically over and after at least one-half of those in attendance had left the conference hall that Mr. Mortimer offered the resolution committing the American Electric Railway Association to a policy of furthering legislation looking toward public ownership, which has been so ably debated in the columns of the ELECTRIC RAILWAY JOURNAL. That something of this sort would happen might have been suspected from the paper by Mr. McCulloch, in which the argument was entirely in favor of a policy of public ownership. Mr. Mortimer's resolution was referred to the executive committee.

The resolution at first seemed fated to go by without any serious debate, when the gage was seized by Mr. Gadsden, whose resolution for the appointment of a committee for a complete study of the situation looks toward real constructive action.

The incident was by far the most important of the conference. It is important because it is symptomatic and significant of the thought of the times.

LEGISLATURES MEET SOON

Unquestionably a large fraction of the community and even some railway men have come to a feeling that public ownership is bound to come and even now that it is the best solution, under the circumstances. That is why those who regard this policy as a mistaken method of conserving the interests of the public itself must get actively behind some better program.

The result of the studies made by the industry within the last few years must be put into some concrete form. Legislative sessions of the coming winter are almost upon us. Shall the association allow the legislatures to undertake the solution of this program uninformed, guided only by political interest and partisan rancor, or shall it, by an intensive, intelligently directed effort, see that public sentiment is informed and legislators and other officials are enlightened so that the resultant action may be something really constructive?

The public realizes in a more or less definite way the difficult situation of the electric railways. Yet the collective mind is such that the public will not agree to sufficient increases of fare. They will not agree to any program which they believe or suspect will be mainly for the benefit of stockholders. They want financial control separated in interest from operation.

So extreme, in fact, is this attitude of mind, that many, even leading citizens, do not hesitate to say that they prefer to see the electric railways go into bankruptcy. They frankly are not open to argument. They insist upon a much larger—or even complete—public control of the electric railways.

WHAT THE MASSACHUSETTS MEN DID

At the New York conference, Mr. Loring of Boston gave a very instructive paper on the way that the situation has been met in Massachusetts. With less reason for popular antipathy toward the electric railways in that State than in many other states, it was nevertheless realized that the public would not stand for increases which apparently were for the benefit of the companies alone. A campaign of education was started to get stockholders, bankers, investors of all sorts, and leading minds in all communities behind a service-at-cost program with the result that the present legislation in Massachusetts was put into the form of law without any serious opposition.

It need not be claimed that the Massachusetts law is an example of perfection. It undoubtedly is not. But it cannot be denied that a significant forward step has been taken. It has been demonstrated that the tendencies of legislation can be guided by intelligent information furnishing work. It need not be public ownership by default.

One important objection made to the service-at-cost system is that it fails to preserve sufficient incentive to economical operation. It is argued that a city partnership plan does preserve this incentive. Experience in partnership cities is available and should be carefully studied.

Under this legislation people in Boston, for instance, have been paying a 7-cent fare and they have been doing it without complaint. It may be that they will have to pay a 10-cent fare, but they know that the increase, whatever it may be, will come because it is a necessity of the service and not for the enrichment of stockholders. The legislation has, however, in the service-at-cost plan provided for the stockholder and has rehabilitated the credit of the Boston Elevated, so much so that its preferred stock has been sold over the counter at par, and its common stock and bonds have both notably increased in value.

The system in Massachusetts recognizes that in certain thinly-settled communities no possible increase in traffic will furnish to the companies the needed income, and the way is provided for the community to maintain its service by lending aid to the utility in the form of either reduction of taxes or by direct appropriation for the benefit of the service. In short, communities in Massachusetts are now in the position to have exactly what they are willing to pay for. If any fault is to be found the public must find it with itself.

Under the system as it now exists, whatever its imperfections may be, the notable point is that there is no inherently necessary basis for popular antipathy toward the railway. And this situation was brought about by intelligently concentrated work of education.

A MOVE IN THE RIGHT DIRECTION

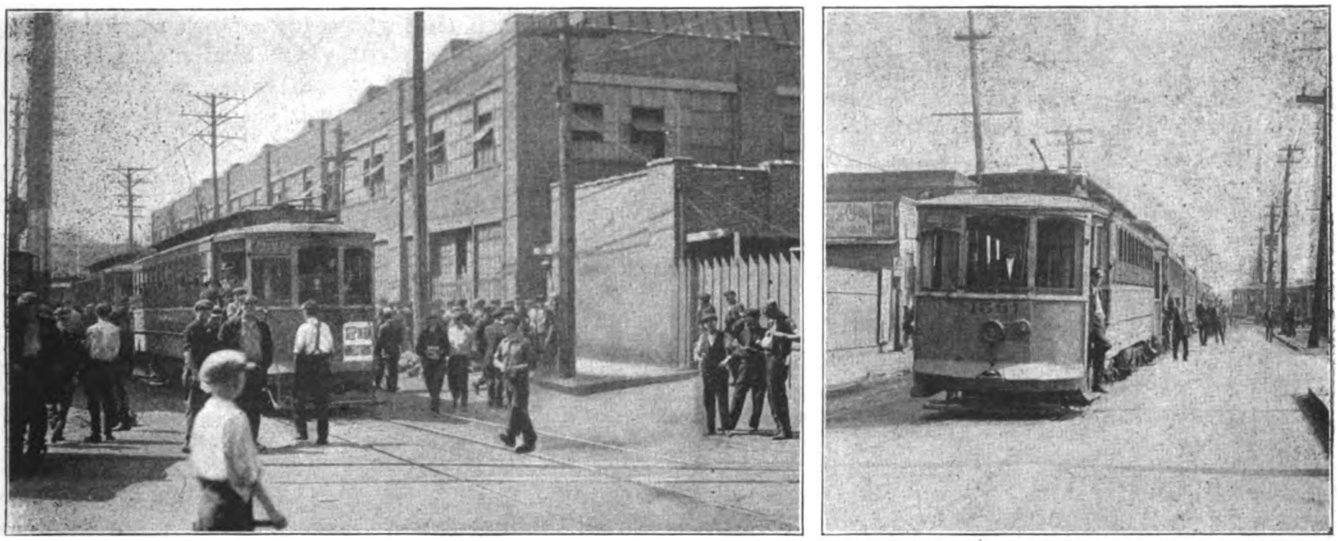
The adoption of the Gadsden resolution puts the American Electric Railway Association in a position to benefit by the experience of Massachusetts and elsewhere. If it can improve on the legislation of that State so much the better.

An end must now come to drifting or floundering or uncertainty or vacillation. The early signing of the treaty of peace in Europe is no more likely than that the immediate treatment of the electric railway industry will be determined in this country in the next few months.

Despite the progress that has been made in the cultivation of public ownership sentiment there is still no reason to believe that it reflects the intelligent opinion of the major part of the country. Because the industry has had trouble is no reason for it to throw up its hands. A law that does not reflect sentiment will be a dead letter upon the books. Either the electric railway industry will be a victim of the settlement that is certain to come or it will seek to guide the settlement along intelligent, constructive lines and thus prove of the highest service, not only to itself but to the public.

Public Service Railway Does War Work at Camden and Gloucester

New Cars, Loading Loops and Additional Feeder Copper Were Needed to Get the Shipbuilders to Work on Time—The Improvements Will Cost Nearly $1,250,000



SCENES AT PLANTS ENGAGED IN GOVERNMENT WAR WORK, ON P. S. R. LINES

CAMDEN, N. J., just across the Delaware River from Philadelphia, the home of Victor talking machines, Campbell's soups, and sundry other more or less well-advertised articles, has been a thriving manufacturing community for years. As at other points along the Delaware River, the excellent water and rail facilities are favorable for shipbuilding, one of the old industries of the vicinity. The district includes the town of Gloucester, whose corporation line, as shown in Fig. 1, on page 920, adjoins that of Camden.

Since the advent of this country into the war, the shipbuilding industry, together with others which are engaged in war work, has grown enormously. There are two large shipyards, one belonging to the New York Shipbuilding Corporation and the other to the Pusey & Jones Company, formerly known as the New Jersey and Pennsylvania Shipbuilding Corporation. The old yard of the first-named company lies between Broadway and the river front on the Camden side of Newton Creek (see Fig. 1). This yard has been greatly increased in size during the past year and an even larger extension is now under construction on the Gloucester side of the creek. At this plant about 11,000 men are now employed and many more will be employed when the new yard is completed.

The other yard is in the southern outskirts of Gloucester and employs about 9000 men. Of course, the actual number of workers in both yards fluctuates, but the total is increasing at a rather rapid rate. In addition to these workers about 4000 men are employed in building workmen's homes in the housing project which is being developed by the Emergency Fleet Corporation on the high ground between the two branches of Newton Creek east of the New York Shipbuilding Corporation's yard. The Welsbach Works and a number of smaller industries in this same vicinity employ several thousand other workers. The employees of these plants for the most part live in Gloucester and a number of the smaller towns in the district. A few live across the river in Philadelphia.

THE ELECTRIC LINE IS THE MOST IMPORTANT MEANS OF LOCAL TRANSPORTATION

To transport these workers from their homes to their several places of employment in the morning, and return them again in the evening, has been the transportation problem which the war has thrown upon the passenger carrying facilities of the district, the Public Service Railway, the Pennsylvania Railroad's West Jersey & Seashore Line, the Philadelphia & Reading Railroad, and river ferries. Of these the Public Service Railway with its network of electric lines connecting together the widely-separated parts of the community is by far the most important. The ferries, of course, are of service only to those living in Philadelphia, and the railroads are able only to transport passenger masses from one point to another, thus leaving still unsolved the problem of distributing the passengers to their homes.

The problem which has confronted the Public Service Railway has been a most difficult one. The successful handling of heavy rush-hour traffic is a hard problem with any railway, and the difficulty is greatly increased when passenger masses in one corner of the community which the electric railway serves are suddenly added to the previous rush-hour traffic. The electric railway soon found that its own facilities were inadequate to handle the new traffic. For one thing, a carhouse fire early this spring destroyed eighteen of its cars. The fact that on this division of the Public Service Railway the rails are laid to a 5-ft. gage, whereas the northern lines of the company are laid to the standard gage of 4 ft. 8½ in., made the interchange of equipment between the divisions impossible.

Possibly the greatest difficulty of all, however, has been that of securing crews for the operation of such cars as were available. As on other electric railways in the war industry regions, a large number of the platform men early left the railway service to go into war industry work. To fill the ranks thus depleted, the company employed a number of women conductors. These have done their work satisfactorily enough, but since the opening of a large munitions works employing women, the railway finds women as hard to obtain as men. As a result of these conditions, the electric railway was unable to give good service and get the shipyard employees to their work on time.

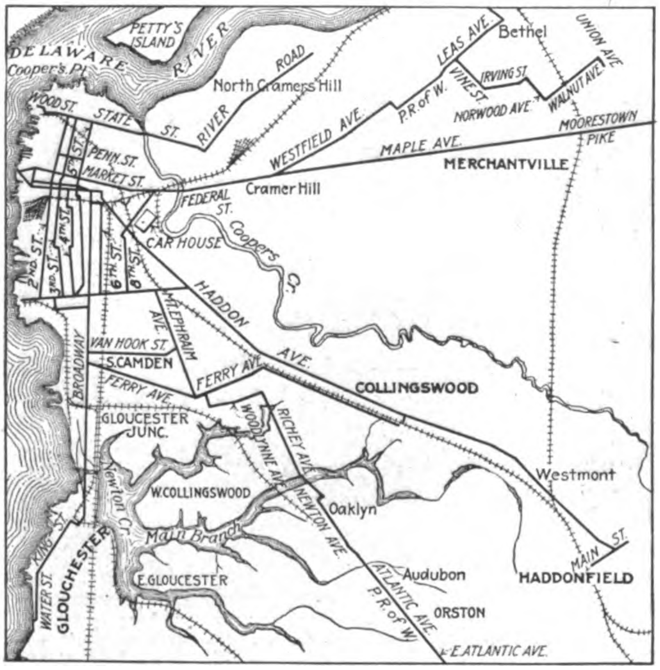

PETTY'S ISLAND
DELAWARE RIVER
Cooper's Pt.
North Cramers Hill
RIVER ROAD
Bethel
UNION AVE
LEAS AVE
IRVING ST.
P.R. of W.
VINE ST.
NORWOOD AVE
WALNUT AVE
WOOD ST.
STATE ST.
RIVER
WESTFIELD AVE
MAPLE AVE
MOORESTOWN PIKE
MERCHANTVILLE
PENN ST.
MARKET ST.
FEDERAL ST.
Cramer Hill
CAR HOUSE
Coopers Cr.
2ND ST.
3RD ST.
4TH ST.
5TH ST.
6TH ST.
8TH ST.
HADDON AVE.
EPHRAIM AVE
VAN HOOK ST.
S.CAMDEN
BROADWAY
FERRY AVE.
COLLINGSWOOD
GLOUCESTER JUNC.
WOODLYNNE AVE.
RICHEY AVE.
Westmont
W.COLLINGSWOOD
Newton Cr.
NEWTON AVE.
Oaklyn
Main Branch
KING ST.
E.GLOUCESTER
GLOUCESTER
WATER ST.
Audubon
ATLANTIC AVE.
P.R. of W.
ORSTON
HADDONFIELD
MAIN ST.
E.ATLANTIC AVE.

FIG. 1—THE CAMDEN LINES OF THE PUBLIC SERVICE RAILWAY

With unsatisfactory service on the railroads and inadequate service on the trolley lines, the transportation conditions in Camden vicinity were at a low ebb, when early in April the Emergency Fleet Corporation organized its transportation division under the supervision of A. Merritt Taylor, director of transportation. Relief campaigns were at once inaugurated by this organization. One measure was that of staggering the hours at which the men went to work. At that time the employees of the New York Shipbuilding Corporation started work at 7.15 a.m., those of the Pusey & Jones Company at 7.30 a.m., and those employed at the Emergency Fleet Corporation's housing development at 7 a.m. These hours were so staggered as to put one hour between the time when the shipbuilding employees started work.

With the present arrangement, the employees of the Pusey & Jones Company start work at 6.45 a.m., and those of the New York Shipbuilding Corporation at 7.45 a.m. Owing to the fact that the shipyard employees may work eight, nine or ten hours, there is some natural diversity in the afternoon quitting time. As it happens to work out, the majority of the men in the New York Shipbuilding yard work eight hours a day, while the majority of those in the Pusey & Jones yard work ten hours a day.

THE SHIPYARDS FURNISH PLATFORM MEN

To remedy the crew labor situation, arrangements were made with the shipbuilding companies who agreed not to solicit trainmen for their work and also to discharge any trainmen who secured work at their plant without a release signed by the local manager or the electric railway company. It was impressed on the railway employees that in their specialized service they were quite as much in war service as if doing shipbuilding or other war industry work. To take care of the problem of supplying extra crews for the rush-hour periods, each shipbuilding company appointed a transportation man whose duty it was to study this phase of his company's work. Among other things, he selected employees who had had railway experience and were willing to serve as trainmen during the rush-hour period. These men, after being given a brief training on the cars they were to handle, were assigned to extra runs for rush-hour service. At present, twenty-six crews, fifty-two men in all, or practically enough to handle the shipbuilding rush-hour service, are so employed. These men have been assigned special quarters in the car-storage yard, an old car being used for the purpose. They report at the carhouse sufficiently early in the morning to take their cars out for the morning rush hour, and to gather their passengers and deliver them at the shipyard by the time the yard starts work. The cars are then returned to the carhouse. In the evening, the men leave the shipyards sufficiently early to get their cars to the shipyard gates by quitting time.

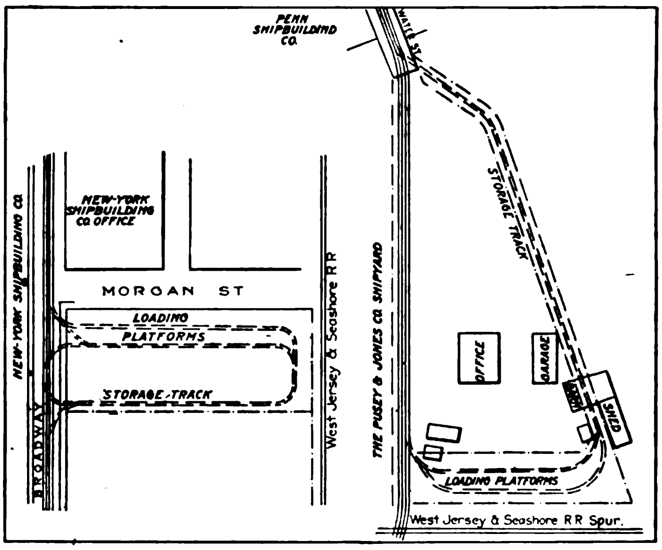

PENN SHIPBUILDING CO.
WATER ST.
NEW-YORK SHIPBUILDING CO. OFFICE
NEW-YORK SHIPBUILDING CO.
BROADWAY
MORGAN ST
LOADING PLATFORMS
STORAGE-TRACK
West Jersey & Seashore R.R.
THE PUSEY & JONES CO. SHIPYARD
STORAGE TRACK
OFFICE
GARAGE
SHED
LOADING PLATFORMS
West Jersey & Seashore R.R. Spur.

Fig. 2 Fig. 3

FIG. 2—PLAN OF THE PREPAYMENT STATION TRACKS AT THE NEW YORK SHIPBUILDING YARD. FIG. 3—TERMINAL AND STORAGE TRACKS AT THE PUSEY & JONES SHIPYARD

These measures afforded temporary relief, but, as noted in the ELECTRIC RAILWAY JOURNAL for Aug 3, 1918, page 186, a number of new additions to existing facilities were planned to take care of increases in the traffic. At present, the Public Service Railway is carrying about 40 per cent of the employees of the shipyards, the railways and ferries 20 per cent, and the remaining 40 per cent live within walking distance of the yards. With the new extensions in service, the traffic on the trolley lines will probably increase somewhat.

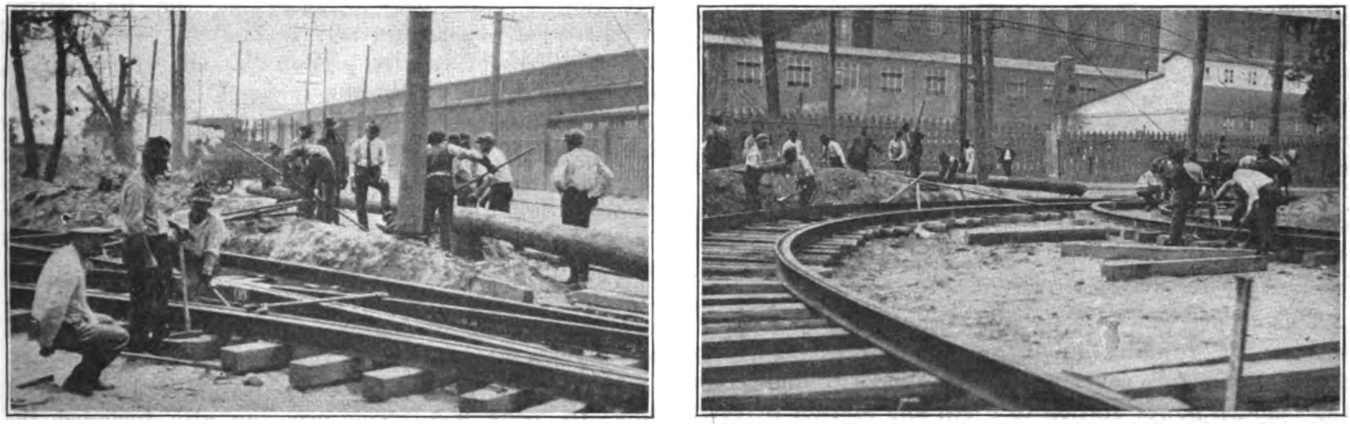
THE NEW FACILITIES WILL COST $1,240,000

The improvement of electric railway facilities in the Camden district is more in the way of a lot of odds and ends than the construction of a single piece of new work, yet these are estimated to cost $1,240,780. In brief, they are as follows: Prepayment loading loops in front of the shipyards on the Broadway line of the electric railway; a one-track connecting curve at Broadway and Van Hook Avenue; a one-track connection at Kaigns Avenue and Eighth Street and at Fifth and Arch Streets; a double-track connecting curve at Kaigns Avenue and Broadway; a new addition to the carhouse at Newton Avenue; eight car-storage tracks at this carhouse and a connecting track connecting these additions at the back of the carhouse to the Haddon Avenue line; thirty-three new cars and reinforcement of the feeder system and of the power generation and conversion apparatus.

The connecting curves mentioned above will permit the routing of through cars direct from the shipyards to the outlying towns of Haddon Heights, Haddonfield, Merchantville and Cramers Hill. The operation of these through cars will save a great deal of time, as by routing them over the new routes made available by the connecting curves, they can avoid the more congested parts of the city. The connecting curve at Fifth and Arch Streets will permit the operation of trippers from the shipyards along Broadway to Federal Street and around the loop thus formed at Fifth and Arch Streets.

CARS ARE STORED IN THE PREPAYMENT LOOPS

The new prepayment loading loops at the shipyard will not only speed up the car loading, but each of them will also provide storage for thirty cars. It is estimated that they will save one hour of platform time in the morning and one and a half hours in the evening, as the men in the morning will simply park their cars on the storage tracks of the loop and will be able to get to their morning's work almost as quickly as the men they have hauled, while in the evening they will be required to leave the shipyard only a few minutes before the regular quitting time.



FIGS. 4 AND 5—TRACK AND OVERHEAD GANGS AT WORK ON THE PREPAYMENT LOOPS

These men are paid at the shipyard wage rate, the difference between this rate and the railway platform rate being absorbed by the Emergency Fleet Corporation. When the new facilities are in complete operation about sixty-six additional men will be secured from the shipyards.

Plans of these loading stations are illustrated in Figs. 2 and 3. In each case the loading platforms have been placed along the double-track portions of the loops. These stations are on property belonging to the shipbuilding companies. In operation, the station at the Pusey & Jones yard will be entered at the double-track end and the cars after unloading will go to the farther end of the loop for storage. The loop surrounds the office buildings of the shipbuilding company, and considerable fill was necessary at the south end of the loop to bring the grade up to street level.

Extra connecting curves have been placed in the New York Shipbuilding yard loop to permit the loop operation of cars to an extension which it is proposed to run to the New York Ship Village already alluded to. The site of the New York Shipbuilding yard loop was practically level and only a little grading was necessary. The tangent track of both loops is laid with 67½-lb. T-rail, known as Russian rail. This name comes from the fact that the rail is some of that ordered by the Imperial government of Russia and had not been delivered at the time the Imperial government was overthrown. While of T cross-section, this rail has a smaller head than the standard A.S.C.E. rail of similar weight would have. It stands 5.04 in. in height.

The curves on these loops are laid with 80-lb. A.S.C.E standard rail. Chestnut ties, 6 in. x 8 in. x 8 ft., are used, these being laid on cinder and sand ballast. The special work is of 7-in. 132-lb. Lorain No. 443 rail. Both loading loops are fully inclosed in stockades, and suitable gates have been provided so that the stockades may be closed while the cars are stored.

The new cars conform in general design to the class 2600 Public Service Railway cars which were described at some length in the ELECTRIC RAILWAY JOURNAL for Jan. 15, 1916, page 115. In order to permit of train operation on curves of 30-ft. radius, they are one window shorter than the Newark car described in the article referred to. The new cars are 34 ft. over the vestibules and weigh approximately 42,500 lb. They are equipped with longitudinal seats, Tomlinson automatic couplers, air and electric, and two Westinghouse 307-CV-4 motors mounted on the Standard Motor Truck Company's maximum traction O-45 trucks. H-L control is used. The cars have a seating capacity of forty-six and are arranged for rear-end loading and front-end and rear-end unloading. Other dimensions and a list of accessory equipment were published in the ELECTRIC RAILWAY JOURNAL for June 22, 1918, page 1217.

As in most of the other shipyard transportation projects, the reinforcement required for the overhead system seems all out of proportion to the increase in track facilities. This, of course, is because of the very large increase in number of cars operating on a given piece of track. To illustrate from the particular problem in hand during the rush-hour period, eighty-two cars will be in service on Broadway when the contemplated extensions are complete and all of the new cars ordered are received.

The only overhead contact line being built in connection with the improvement is that necessary for the connecting curves, the car storage tracks, and the terminal loops. For these loops the usual span-wire construction has been employed. As to the magnitude of feeder reinforcement, the following excerpt from the bill of materials probably conveys the best idea:

10,300 ft. of 1,000,000-circ.mil paper-insulated lead-covered cable.
600 ft. of 1,000,000-circ.mil rubber-insulated lead-covered cable.
600 ft. of 1,000,000-circ.-mil submarine cable.
18,000 ft. of 500,000-circ.mil triple braid weatherproof cable.
7,000 ft. of 1,000,000-circ.mil triple braid weatherproof cable.

This copper was distributed as follows: To reinforce the copper running to the heart of the city, two 1,000,000-circ.mil cables were run underground from the Camden power station to Fifth and Market Streets, submarine cable being used for crossing Coopers Creek. From Fifth and Market Streets the line to Broadway has been reinforced with a 1,000,000-circ.mil triple-braid weatherproof copper feeder and from Third Street to Broadway on Federal Avenue with a 500,000-circ.mil feeder. On the north end of Broadway an additional 1,000,000-circ.mil cable has been run from the Atlantic Avenue substation to Broadway with a 500,000-circ.mil cable along Broadway between Federal Street and Ferry Avenue. Running to another section of trolley from this same substation, 1,000,000-circ.mil cable has been run underground from the Atlantic substation to Broadway and connects there with the existing aerial feeders and an additional 500,000-circ.mil cable which has been run along Broadway to Van Hook Avenue. In addition to these large reinforcements of existing positive feeders the copper between the tracks and the busbars of three substations has also been augmented. In each substation two 1,000,000-circ.mil cables run from the track structure to the substation buses.

These improvements are being financed by the Emergency Fleet Corporation, under the general terms of an agreement which was described in the article already referred to. All of the work is being done after plans made by the Public Service Railway in co-operation with the transportation experts of the Emergency Fleet Corporation. The actual construction of the loading loop tracks was done by the shipbuilding companies.

State Commissions Jealous of Powers

Convention of Regulators Wants Full Intra-State Control—Committee Favors Zone Fares for Electric Railways

THE approach of peace having made permissible more free discussion of administration policies, the attention of the National Association of Railway and Utilities Commissioners has been turned to the subject of federal control of railroads and other utilities. At the annual convention held last week in Washington, D. C., beginning on Nov. 12, the association went on record with a resolution to the effect that consideration ought to be given by the President and Congress to legislation defining the future status of such governmentally controlled enterprises, and that any plan for the future should safeguard the powers of the local commissions responsible to the people of the states with respect to matters essentially intra-state in character.

The association resolved further that suitable action should be taken by the President or the Director-General of Railroads to recognize the unimpaired authority of the states over intra-state rates, service and facilities of carrier properties under federal control. In any event, however, it was said to be the duty of each state commission to maintain and exercise its constitutional and statutory authority as the public interest demands, taking into account the present status of the enterprises, the responsibilities of the treasury and the desirability of achieving results by friendly co-operation wherever possible.

A preliminary report of the convention, with particular reference to addresses, the work of the special war-service committee and the election of new officers, was published in the ELECTRIC RAILWAY JOURNAL of Nov. 16, page 893. The program also included the reports of various standing committees on railroad, public utility and general topics. These were received into the record, according to the association's custom, without any vote on the question of indorsement by the association.

ZONE SYSTEM MOST PRACTICAL

Among the committee reports of particular interest to electric railway operators was the one on public utility rates, signed by E. F. Morgan, West Virginia, chairman; R. C. Bacon, Vermont; H. H. Corey, Oregon, and L. J. Williams, Colorado. On the subject of electric railway rates this report said:

"Among utilities most seriously affected by war conditions, because of increased cost of fuel, materials and labor, are the electric railways, where in many instances they are burdened with increased numbers of patrons due to war industries and additional increase due to the recent restriction in the use of gasoline for automobiles on Sunday.

"It is believed that when it is possible to do so the zone system offers the most practical method whereby increased income may be obtained.

"Where zones are already established, an increase in number of zones and a shortening of the zones, will usually yield the increased revenue desired.

"Where only a single zone prevails the establishment of one or more additional zones may be indicated. Before the changing or establishment of new zones is made careful preliminary studies of the traffic conditions should be made.

"Freight and express service could be profitably introduced in many cases.

"A rate per mile expressed in cents with a minimum charge for any passenger would appeal to all as being the most equitable, and a fair trial of such a method is recommended."

In regard to the rate of return the report continued:

"The commissions are called upon to regulate rates and service but not to operate the public utilities. The management was left by the Legislature to those whose money has been invested in the public service. The rate of return should be ample and frequently revised by the commission, and the efficiency of the management should not be lost sight of in these frequent rate adjustments.

"Experience with utility regulation shows that some broad-gaged plan must be devised in order to encourage the construction of new utilities in many communities not now served and to encourage present utilities to reach the maximum of efficiency in operations, which would result in a lower average price of its product.

"The right of the public to regulate and control the operation of public utilities is no longer questioned and there can be no valid objection to such regulation and control provided it is judiciously and equitably administered in the interests of all concerned."

STUDY OF PUBLIC OWNERSHIP TO BE CONTINUED

The committee on public ownership and operation deemed it inadvisable and impracticable to present any definitive report this year. In connection with federal operation of the railroads, however, it remarked that the results so far can hardly be successfully defended from the standpoint of economy or general public service. The committee summed up its opinion as follows:

"Public ownership and operation or public ownership or operation as among the federal government, the states and the municipalities, and the legality and wisdom of such, must eventually be considered with reference to each public utility. Legal objections may be removed by legislation or constitutional amendment. The wisdom of such a course is not so clear. Certainly we should not in exceptional times and in the light of insufficient data jump at a conclusion which will lead to the disturbance of long existing social and economic conditions.

"While it is impossible, therefore, at this time to present anything approaching or even suggesting specific conclusions or recommendations, it is believed that the subject is one which should be under the constant study of the association with a view ultimately, after the war shall be successfully ended and when the work of reconstruction begins, to present not only general conclusions but data upon which they are based."

The report of the committee on safety of operation of public utilities was devoted to a description of the methods followed by the Public Service Commission for the First District of New York. Another report dealt with valuation. The standing committees on public utility service, public utility accounts and statistics, capitalization and inter-corporate relations, and state and federal legislation did not present reports.

The progress of the federal valuation was described by Charles A. Prouty, director of public service and accounting of the Railroad Administration. He said that the field work will be completed as of the average date of Jan. 1, 1920, but that owing to the war and the resulting conditions another year will be required for the office work.

City Official on Mr. McCulloch's Paper

THE comments of a number of electric railway officials on public ownership of electric railways, as raised by the paper and resolution on the subject at the New York conference, have been published in recent issues of this paper. For this reason some comments from a public works official, Edward E. Wall, Water Commissioner, Department of Public Utilities, City of St. Louis, will be of interest. They are embodied in a letter written by him under date of Nov. 4 to Mr. McCulloch and are published with the permission of Mr. Wall. The letter follows:

I have just received a copy of your paper on "Public Ownership," which was submitted at the recent meeting of the American Electric Railway Association.

It is very apparent to me that this paper was written by a man who has had no actual experience in the administration of a public utility owned by the public. While I appreciate all the troubles that have accumulated and made the operation of a privately-owned public utility more and more difficult each year for several years past, I am not yet ready to say that public ownership is a cure for these evils.

Under the caption, "Service Question Solved," I note that you say a great many things may be done and are entirely possible. Theoretically, I am willing to agree with you, but practically the thing cannot be done. It is a good deal like the dreams which resulted in ancient time in the elaborate description of Plato's "Republic" or Sir Thomas More's "Utopia," and in later days Henry George's "Single Tax" or Edward Bellamy's "Looking Backward." All of the good things outlined by you, which might possibly come to pass if human nature could be changed somewhat, and everyone made to see that certain specific courses of action would eventually result in the greatest benefit to all, are no more likely to happen in fact than that the millennium will come in our lifetime.

I had to smile when I read this sentence in your paper: "Under public ownership, wages would be a simple matter to adjust." If the adjustment of wages were a mere matter of equity, your statement would undoubtedly be true; but the wages of municipal employees are established in most cases without much regard to the principles of equity. There are at least three parties who must be taken into consideration in regard to the establishment of wages—namely, the labor organization, the political organization and the public, the latter of which is supposed to be represented by the press but is not. Various civic organizations also claim to represent the public but reflect the opinions of only a limited number in one locality.

I cannot agree with you that the operation of the fire department, police organization and water systems owned and operated by so many municipalities are in any sense an unqualified success. It may be that in the course of time the people will become more alive to their own interests and will take a more active part in seeing that the various divisions of their governmental system are administered in the proper way; but it seems to me that they are very far from this desirable state to-day, and I would not be in favor of placing a greater responsibility upon them than they are now endeavoring to carry and are doing so with such poor success.

There is a great deal more that I could write you on this matter, and could readily go into a great deal more detail, but I could not refrain from writing something of what was in my mind after reading your very capable paper, which from your standpoint makes out a very good case in favor of public ownership.

Central Electric Holds Meeting

Association Begins Season with Conference at Indianapolis This Week—Safety and Freight Rates Discussed on First Day

According to program, the November meeting of the Central Electric Railway Association was held at Hotel Lincoln, Indianapolis, Ind., on Thursday, Nov. 21. The session began at 2.30 p.m. and there was a good attendance in spite of the fact that there was a new outbreak of Spanish influenza in Indianapolis. Following the requirements of the local health board, all those at the meeting wore gauze masks. During the morning the executive committee of the association held a meeting in the office of A. L. Neereamer, secretary of the association, at which routine business was transacted.

C. L. Wilcoxon, president Chicago, Lake Shore & South Bend Railway, was chairman of the meeting on Thursday afternoon, and after the delegates came to order, Secretary Neereamer read the minutes of the Cedar Point meeting. The proposed amendment to the constitution raising the dues of the supply members to $10 was then read. It had been suggested by the supply men and applies to the dues for 1919. The association then authorized the appointment of a committee on readjustment problems. Chairman Wilcoxon then announced the selection of Detroit by the executive committee for the annual meeting.

A latter from G. H. Kelsey, superintendent of power Union Traction Company of Indiana, was then read, suggesting the appointment of a committee on the generation, distribution and utilization of electric power. It was referred with approval to the committee on subjects. Resolutions on the death of E. B. Peck, formerly vice-president Indianapolis Traction & Terminal Company, and on the wife of R. A. Crume, general manager Dayton & Troy Electric Railway, were then passed. A nominating committee was then appointed.

Safety Presented in Allegory

After the conclusion of these matters R. N. Hemming, superintendent of transportation Fort Wayne & Northern Indiana Railway, with a lady assistant presented an allegory advocating the necessity of universal safety. The actors appeared in costume with various stage properties. The presentation was very effective and received hearty applause. After its completion, Mr. Hemming gave an address on "Preservation of Humanity," his purpose being to show the extent and effect of railway casualties and to suggest remedies, with the striking allegory just presented for a background. Thus, Mr. Hemming showed the value of music in impressing the necessity for accident reduction and demonstrated that publicity was also a great factor in the same cause. He pointed out that the public agitation in favor of precautionary measures in the case of the influenza epidemic had been due to publicity, and he urged that similar agitation was needed along safety lines.

The public, Mr. Hemming said, is tired of the expression "safety first," and he considered that the phrase he used as the title of his address—"Preservation of Humanity"—is preferable. After all, he said, the efforts of every soldier and of every industrial and other worker is for the preservation of humanity. The public is naturally reckless, and apparently legislation will be necessary to insure the maximum of safety.

The allegory which Mr. Hemming presented was shown for the first time at the meeting in Indianapolis. Later it will be staged in the local theater at Fort Wayne and before chambers of commerce and church clubs. It was very effective.

Proper Basis for Interurban Fares

A paper on this subject, abstracted in this issue, prepared by A. Swartz, vice-president Toledo & Western Railroad, was then read by W. S. Roger, general traffic manager Detroit United Railway, in the absence of the author.

The discussion on this paper centered on the extent to which an increase in interurban rates is desirable in competition with steam railroad rates. Charles A. Laney, traffic manager Northern Ohio Traction & Light Company, said that the Public Utilities Commission of Ohio had ruled that freight rates on electric railways might be higher than those on steam railroads if necessary. Chairman Wilcoxon said that his road had charged interstate rates which were higher than steam railroad rates with satisfactory results. Charles L. Henry, president Indianapolis & Cincinnati Traction Company, agreed with Mr. Swartz in the principle that electric freight service was intrinsically worth more than steam service but said that the practical question was the point beyond which an increase in rates does not produce increased income. In general, he thought that lower than the steam railroad rates were often preferable. The future was problematical, and railways must feel their way step by step. He considered that commissions are inclined to consider railway problems constructively.

Good Service Controlling Factor in Rate Increases

William K. Morely, vice-president Grand Rapids, Grand Haven & Muskegon Railway, said that in one case with which he was acquainted increased steam rates did not increase the neighboring interurban electric railway business. A. W. Brady, president Union Traction Company of Indiana, said that this was unusual. He said that a differential in favor of the interurbans was advisable. The crucial question in his opinion is the point beyond which an increase in rates does not pay. Mr. Wilcoxon reiterated his opinion that good service is a great factor and that higher rates will be profitable.

A report of the proceedings of Nov. 22 will appear in next week's issue of this paper.

The Proper Basis for Interurban Passenger Rates*

Rates Should Be Based on Cost and Service—Electric Rates Should Be Higher Than Steam Rates

By A. Swartz
Vice-President, Toledo & Western Railroad

A PROPER or suitable basis is one which may be said "to suit" both the railway and the public. In these days of ever-increasing costs it is hardly possible to name a rate that will meet our needs and still please the public. My personal belief as to a proper fare is the "service at cost" idea, including, of course. a fair return of the capital invested. On this basis it should not be such a hard matter to determine a proper rate charge per mile. It is necessary only to determine the cost per mile and make due allowance for depreciation and return on the investment. Localities can be treated separately if need be, and it would be just, as to-day there are steam roads in the West that charge to exceed 3 cents per mile.

Laws have been passed in years gone by, controlling the fixing of rates and prohibiting monopolies, as well as prohibiting monopolistic control of parallel lines, thus requiring competition. It hardly befits me to criticise our federal government, but in cases of dire necessity such as exist to-day the laws mentioned have been thrown to the wind. Why? Simply to bring about the maximum of efficiency, and railroad men have been taught to do many things much differently than before.

The government has recognized the necessity for higher rates. It has required pooling of equipment; it has dismissed traffic solicitors, thereby ostensibly destroying competition; it has required all shipments of freight between large cities to be transported on specific roads, and it has done away with differential rates due to inferior accommodations. Is it not possible that these things in a great measure are what a good many railroad officers would like to have done, if they were perfectly frank about it?

Let us suppose two roads between the same terminals; one a direct line; the other a circuitous line. The direct line must of necessity attract the traffic between terminals. According to the intermediate traffic we have a resultant revenue for each road. The short line probably has the best net revenue. The longer line was originally built to accommodate intervening territory rather than the terminals. At the original rates it is presumed a fair profit on capital invested was possible from the resultant revenue. Conditions such as exist to-day will reduce the net results and finally produce a deficit on the longer road, while on the shorter road the results are less but may still show a margin of profit.

ELECTRIC RATES SHOULD BE HIGHER THAN STEAM

The situation mentioned is just what is staring us in the face to-day. The reason for it however, is somewhat different. We have charged (as a whole) less than the steam roads for the same service, due to the false conception that we can operate more cheaply. However, based on handling the same volume of business, we would necessarily require a greater capital expenditure for equipment and facilities than we have made. Eventually, when this point is reached, we can handle the business no cheaper, if as cheap. Therefore our rates should surely be no less than the steam roads' and probably more.

Why not a higher rate than steam roads? There are few lines of such great length that we can expect the long-haul traffic. Therefore on short-haul traffic we necessarily should be more attractive, due to cleanliness of travel and much more frequent service.

Service should be paid for at its proper value. It is much easier to remember that a train runs regularly every one, two or three hours than at unfrequent intervals. We provide a service that permits a farmer running into town and back again in time to do a day's work. We also provide a service that permits salesmen making a half dozen towns per day. Compare this with steam road service that requires lengthy lay-overs and high livery bills. I have no doubt that each of you can name wholesale concerns who have reduced the number of salesmen in this territory due to the advent of interurban roads. Therefore the public has been much benefited and should be willing to pay a higher rate for our service. The same thing holds good in the express or less-than-carload freight service provided by the interurban roads. Due to more frequent and quicker delivery, the small merchant in small towns is not required to carry such a large stock on hand.

CONCERTED ACTION DESIRABLE

Since our last meetings at Dayton and Sandusky the predicament of interurban roads, I am sure, has grown worse instead of better, so that it behooves us to act in a concerted manner for further increases in rates than some of us have been fortunate to obtain. It is imperative that we work in absolute unison for the one result of getting out of our predicament. My guess is no better than that of anyone else, but let me advance the statement that fares on interurban roads should be 25 per cent, at least, higher than on steam roads.

In some way, it would seem that we should be able to make our controling governing bodies see this predicament and come to our assistance with higher rates, notwithstanding the fact that a recent ruling of a certain railroad commission was to the effect that interurban rates should be lower than steam roads'.

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*Abstract of paper presented at meeting of Central Electric Railway Association, Indianapolis, Nov. 21-22, 1918.

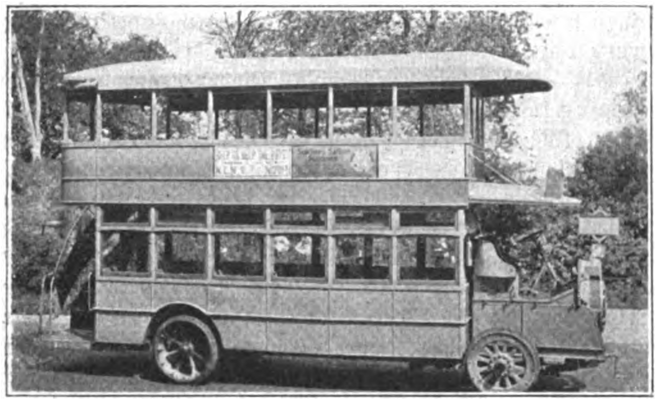
Traction Company Has Its Own Y. M. C. A.

The Virginia Railway & Power Company's Y. M. C. A., which was opened on Oct. 13, 1917, with a membership of 250, now has a membership of over 400. The association is open to white male employees of the company of good moral character, upon payment of a nominal fee of 25 cents per month. Owing to lack of rooming facilities for the men in the neighborhood of the carhouses, there is being constructed at this time a fifty-two-room dormitory, to be operated under the supervision of the Y. M. C. A. Owing to the absence of proper rooming facilities in the neighborhood, during the last six months the Y. M. C. A. has temporarily accommodated 4056 men with free sleeping quarters.

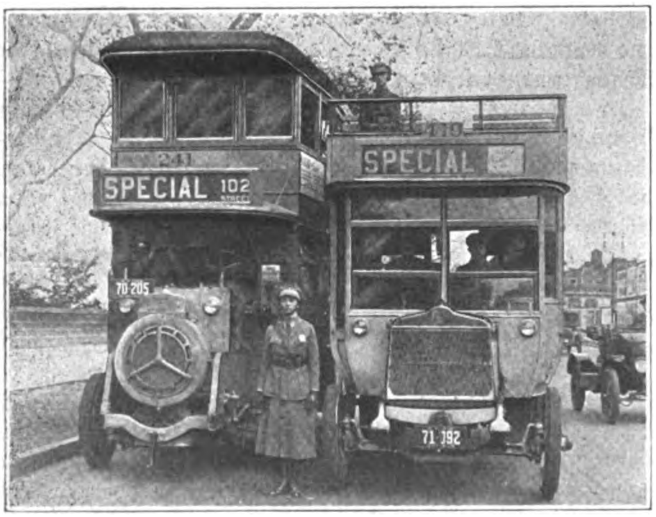
The Yankee Tram Makes Its Appearance

A New Type Bus in New York Has Roof Over the Outside Seats to Protect the Passengers Riding on Top

THE Fifth Avenue Coach Company of New York has recently remodeled one of its double-decked motor buses and added a roof over the top seats. Windows along the sides are provided with curtains which have large isinglass panels. This construction affords an effective protection from the weather and at the same time permits of an uninterrupted view outside and admits light to the interior. Glass windows are provided in front and rear. The bus as reconstructed weighs 11,000 lb., being but 360 lb. heavier than the standard buses without the top roof. The passenger capacity is fifty-one persons, twenty-two below and twenty-nine on top. This is an increase of seven passengers over the green buses used by the company. The inclosed top gives the bus an additional height of barely 1 ft. over the regulation coaches as the chassis is swung low to the street with a wide base. Other improvements consist of push buttons for signaling the driver to stop, installed in the risers between windows instead of along the rails as was done with the open buses, and the addition of an electric light at the rear of the upper deck. This location and arrangement of lighting was adopted because the light coming from the rear does not interfere with the observation of outside objects by the pasengers.



NEW BUS IN CENTRAL PARK



NEW AND OLD BUS SIDE BY SIDE

This first experimental bus is becoming very popular and it has been nicknamed the "Yankee Tram" by the public. Commercially it is an unqualified success as it increases the capacity of the bus during stormy weather when people do not wish to ride outside. A few minor changes from the first bus constructed have been decided upon and will be incorporated in several of the new buses which will be put in service in the next few months. These changes consist of shaping the ends of the roof so as to give a more pleasing appearance and vestibuling the front portion of the bus in order to protect the driver from the weather.

Data on Bearing Metal

WILLIAM H. KAVANAUGH, consulting engineer. Philadelphia, Pa., has made some mechanical tests of the bearing metal produced by the Cosmic Metal Company of the same city. Mr. Kavanaugh subjected the metal to tension, compression, cross bending, or transverse, and hardness tests, in the mechanical engineering laboratory of the University of Pennsylvania. The hardness tests were made with a Shore scleroscope, the tension test on an Olsen 30,000-lb machine, and the compression and cross-bending tests on a Riehlé 30,000-lb. machine. A Berry strain gage was used for measuring the elongation in the tension test, and an ordinary lever deflectometer was used for measuring the deformations and deflections in the compression and cross-bending tests. The tests were made in the presenece of two witnesses besides the observer. The results of these tests are given above.

TABLE I.—CROSS-BENDING TEST OF BEARING METAL

Specimen number		1	2
Specimen cast		On end	On side
Length of span, inches		12	12
Load applied		At center	At center
Dimensions of cross-section	Inches	1.010	1.035
	Depth	0.905	0.960
Breaking load, lb		980	1,170
Maximum fiber stress under breaking load, pounds per square inch		21,360	22,110
Scleroscope hardness		9	14

TABLE II—TENSION TESTS OF BEARING METAL

Specimen number		1	2	3
Diameter, inches	Original	0.546	0.545	0.552
	Final	0.506	0.510	0.510
Length, inches	Original	2.00	2.00	2.00
	Final	2.34	2.36	2.29
Area, square inches	Original	0.234	0.233	0.239
	Final	0.201	0.204	0.204
Ultimate strength, lb	Total	4,980	4,750	4,795
	Per square inch	21,280	20,390	20,060
Elongation	Inches	0.34	0.36	0.29
	Per cent	17.0	18.0	14.5
Reduction in area, per cent		14.12	12.45	14.65
Scleroscope hardness		9	9	9

TABLE III—COMPRESSION TESTS OF BEARING METAL

Specimen number		1	2	
Length, inches		1.5	1.5	1.
Diameter, inches		0.768	0.770	0.75
Compression area, square inches		0.463	0.466	0.44
Crushing load, pounds	Total	29,050	28,710	26,94
	Per sq.in	62,740	61,610	60,81
Scleroscope hardness:		13.5	11	1

More than 75 per cent of the cars of the International Railway, Buffalo, N. Y., have been equipped with steel wheels, and E. G. Connette, president of the company, expects to have all cars equipped with these wheels by Jan. 1, 1919. Last winter 60 per cent of the company's cars had cast-iron wheels. The steel wheels cost $33.25 as against $15.25 paid four year ago.

Hydraulic Car Lift Gives Increased Output to Shops

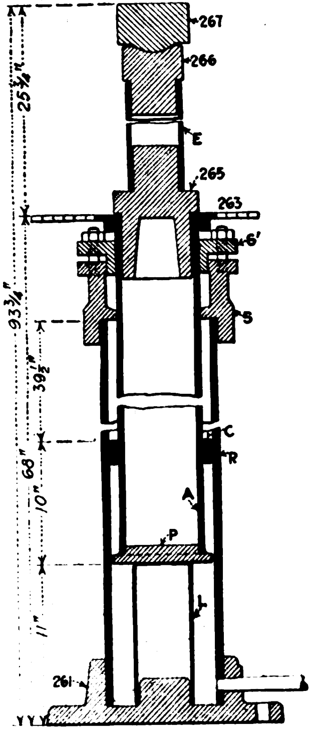
Additional Safety Is Provided and Time Is Saved by Using the Hydraulic Lift for Raising Cars

By Homer MacNutt
Superintendent of Motive Power San Diego (Cal.) Electric Railway Company

IN JUNE, 1917, one of the car shop tracks of the San Diego (Cal.) Electric Railway was equipped with a pair of hydraulic car lifting jacks of the type shown in the accompanying illustration. This installation was somewhat in the nature of an experiment to determine the practicability of this construction. The lift has proved highly efficient and it has been decided to install this equipment on all of the shop tracks. At present four pair are in operation and in the near future we will double this number, which will make it possible to raise both ends of the car at one time.

The pump used in this installation is of the plunger type manufactured by the Deane Steam Pump Company of Holyoke, Mass. It is a 1¾-in. x 4-in. triple-plunger type designed for operation under a maximum pressure of 700 lb. per square inch. This capacity is sufficient to take care of all the hydraulic lifts which we expect to install. With the present installation, however, we require but 300 lb. per square inch. The pump is belt driven from the shop line shaft and is started from convenient points in the shop by means of an electro-pneumatic belt shifter. Control push buttons are provided for this purpose at convenient points. The oil piping is so arranged that control of the lift is effected by means of two ¾-in. globe valves which avoid the necessity of having special valves made for the purpose.

As shown in the accompanying drawing, Fig. 3, this belt-shifting device consists of a cylinder operated by a rotary valve which is actuated by two solenoids 1 and 2. The power for energizing the solenoids comes from a twelve-cell dry battery. Push buttons are installed on posts over the control valve for energizing the relay through which the cylinder attached to the shifter is operated. When the operator wishes to raise a car he presses the button which actuates the belt shifter and starts the pump. This gives pressure to the jacks at once. To supply the pressure for raising the car the operator merely opens a standard ¾-in. Lunkenheimer globe valve installed between the pump pressure line and the inlet at the base of the cylinder. When the car has been raised to the desired height the valve is closed and the jack will remain indefinitely at the height set. To provide for negligence or in case the operator should be called away, the travel of the car hoist is automatically limited to a few inches above the height ordinarily required for car horses. This feature is obtained by the simple expedient of placing a collar on the plunger which permits the pressure to continue indefinitely without harm. A relief valve on the pump takes care of any undue rise in pressure.



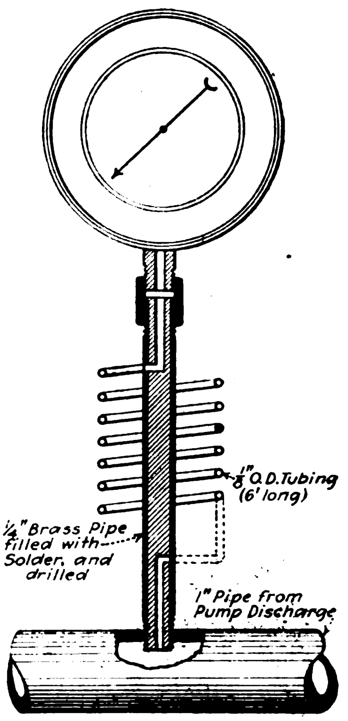

⅛" O.D. Tubing (6' long)
¼" Brass Pipe filled with Solder, and drilled
1" Pipe from Pump Discharge

FIG. 1—VERTICAL SECTION OF HYDRAULIC CAR HOIST USED AT SAN DIEGO. FIG. 2—METHOD OF SUPPORTING PRESSURE GAGE SO AS TO PREVENT FLUCTUATIONS IN PRESSURE INTERFERING WITH GAGE READINGS

To lower the car a valve is opened, allowing oil to flow from the cylinders into the discharge line leading to the sump. In order to prevent interference should it be desired to raise or lower two cars at the same time, a check valve is installed in the supply line. This prevents one man from lowering a car while another is in the act of raising one.

The construction of the lift may be followed by referring to Fig. 1. The collar *C* is welded to the plunger *A* and serves to limit the travel of the same. The member *L* is to limit the downward travel and is con-

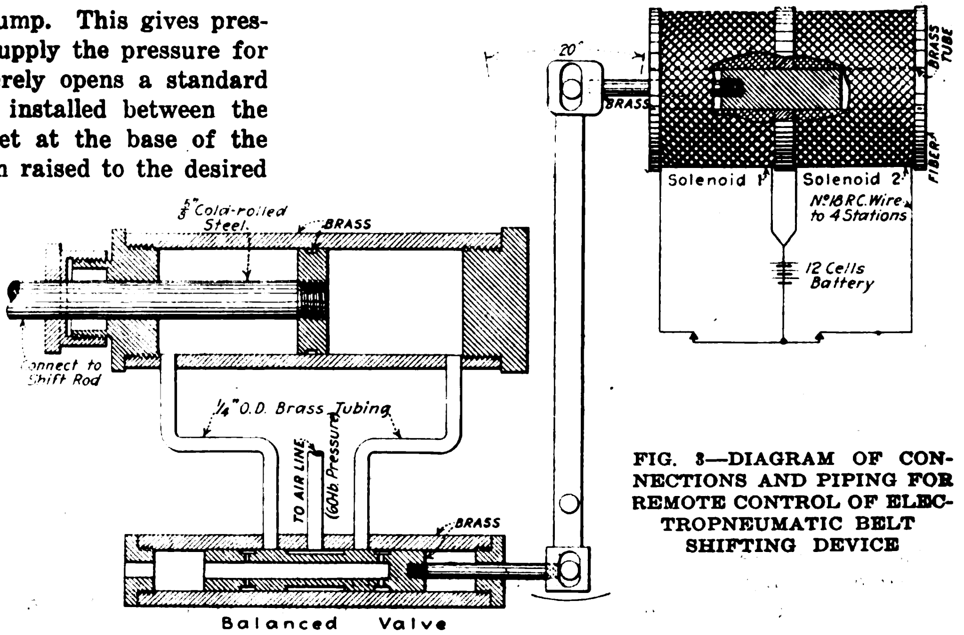


FIG. 3—DIAGRAM OF CONNECTIONS AND PIPING FOR REMOTE CONTROL OF ELECTROPNEUMATIC BELT SHIFTING DEVICE

structed of a standard 4-in. pipe. The plunger is made of hydraulic pipes and is machined from the collar *C* to the upper end. The plate *P* is welded to the pipe, closing the same against pressure and also this takes up the difference in diameters of the plunger and cylinder, acting as a guide. The cylinder is made of 8-in. extra heavy pipe. The casting No. 265 fits loosely into the upper end of the plunger and is removed when not in use. The castings No. 266 and 267 take care of the angle of the car body when one end only is being raised as is necessary with our present equipment. All connections are made with standard pipes, but it was considered advisable to use hydraulic fittings. In operation it was found that if the packing was tightened until there were no leaks the friction was so great that the plungers were likely to bind, causing unsatisfactory operation, especially when the car was being lowered. To take care of this leakage it was found necessary to install drip pans under the stuffing boxes. These pans are connected by ½-in. pipe to the sump and the packing may be left loose enough so that there is a slight leakage.

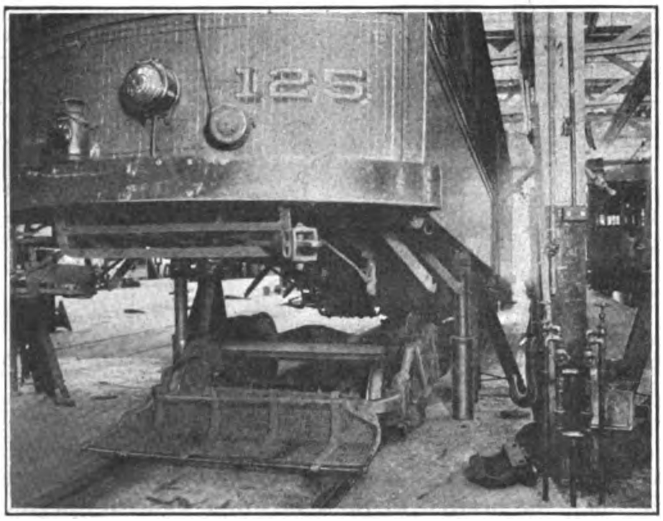


FIG. 4—ONE END OF THE CAR RAISED FREE FROM THE TRUCKS BY THE USE OF HYDRAULIC HOISTS

Oil is used rather than water in these lifts, the advantage being that the friction at the pump and plungers of the lift is reduced and also rusting of the piping is prevented. A pressure gage should be connected to the discharge line of the pump. In order to prevent the fluctuations in pressure caused by the action of the pump giving trouble in reading the gage, the connection should be made in the form of a coil about 1½ in. in diameter from copper tubing about ⅛ in. in diameter by 6 ft. long. A piece of solid bar brass about 4 in. long forms the connection between the gage and the pipe line. The coil of copper tubing is connected to the solid bar at either end. This construction is shown in Fig. 2, and due to its use we have found no trouble in reading the gage.

The difference in efficiency between a hand-operated hydraulic jack and that described is not merely the difference in time which can be saved by the power lift. By the use of this hoist the men are not tired out from their efforts in raising a car as with hand-operated jacks and are ready to take up their other duties of repairing parts on the trucks as soon as the car body is in position. There is also the advantage of safety, as this type of lift raises the car steadily without possibility of the car being dropped, as sometimes happens with the portable hand-operated jacks. Obviously there is very little maintenance connected with this type of equipment.

The cost of the first pair of jacks, including the cost of the pumps all installed ready for operation, was $694.91. The cost of the last three pair of jacks installed was $822.21 or $274.07 per pair. These costs include piping and foundations.

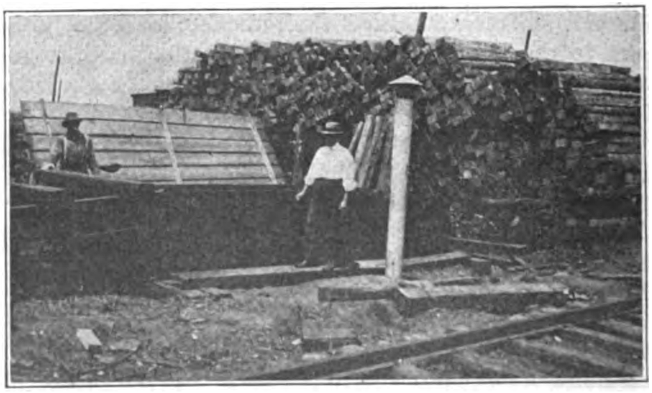
A Safety Wall-Type Switching Unit

A WALL-TYPE switching unit for the control of alternating current circuits up to 300 amp. and 2500 volts has recently been placed on the market by the General Electric Company. The unit consists of an industrial type oil circuit breaker with a space above which serves as a housing for disconnecting switch, current and potential transformers and also provides a location for either voltmeter or ammeter, or both.

Following safety-first lines the disconnecting switch is interlocked, mechanically, with the oil circuit breaker so that the switch cannot be opened when the breaker is closed, nor can the breaker be closed while the disconnecting switch is open. A key projecting through the front of the panel is used to operate the disconnecting switch. This key can be removed when the switch is open and carried by the operator, who then is assured that no one will close the switch while he is working on lines or apparatus on the circuit controlled by this unit. The interior of the switch compartment is inaccessible while the switch is closed and the oil tank cannot be removed while the disconnecting switch or oil circuit breaker is alive.

First Tie-Treating Plant in Missouri

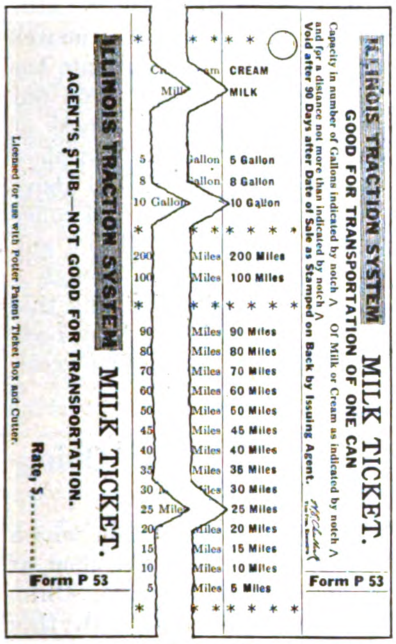
The photograph reproduced below shows an open-tank tie-treating plant in use in the operation of treating 10,000 ties for the East St. Louis & Suburban Railway. The tank is 10 ft. x 14 ft. in size and the plant is said to be the first tie-treating plant ever established in the State of Missouri. C-A wood preserver is being used. The plant is operated by Charles B. Kerry & Company, the contractor for the ties, and the ties under treatment are of well-seasoned Missouri oak.



OAK TIES UNDER TREATMENT FOR EAST ST. LOUIS & SUBURBAN RAILWAY

New Universal Type of Milk Ticket

THE Illinois Traction System is using a new form of milk ticket intended to overcome the difficulty of furnishing milk tickets from any road crossing stop to the destination of the milk shipment. Obviously it would be almost impossible to carry a supply of printed destination tickets covering all requirements. The new form of ticket is designated as the Potter "Universal" milk ticket and it is issued by means of the Potter ticket box cutter illustrated and described in the ELECTRIC RAILWAY JOURNAL for Feb. 9, 1918, page 286. The tickets are notched at three points to indicate (1) whether milk or cream is being carried, (2) the capacity in number of gallons and (3) the distance that the can is to be transported. The three adjustable points and cutting edge of the cutter enable tickets to be issued very rapidly with but one operation.



ILLINOIS TRACTION SYSTEM

MILK TICKET.

AGENT'S STUB.—NOT GOOD FOR TRANSPORTATION.

Rate, $..........

Licensed for use with Potter Patent Ticket Box and Cutter.

Form P 53

ILLINOIS TRACTION SYSTEM

MILK TICKET.

GOOD FOR TRANSPORTATION OF ONE CAN

Of Milk or Cream as indicated by notch ∧

Capacity in number of Gallons indicated by notch ∧

and for a distance not more than indicated by notch ∧

Void after 90 Days after Date of Sale as Stamped on Back by Issuing Agent.

Form P 53

FORM OF MILK TICKET USED BY THE I. T. S.

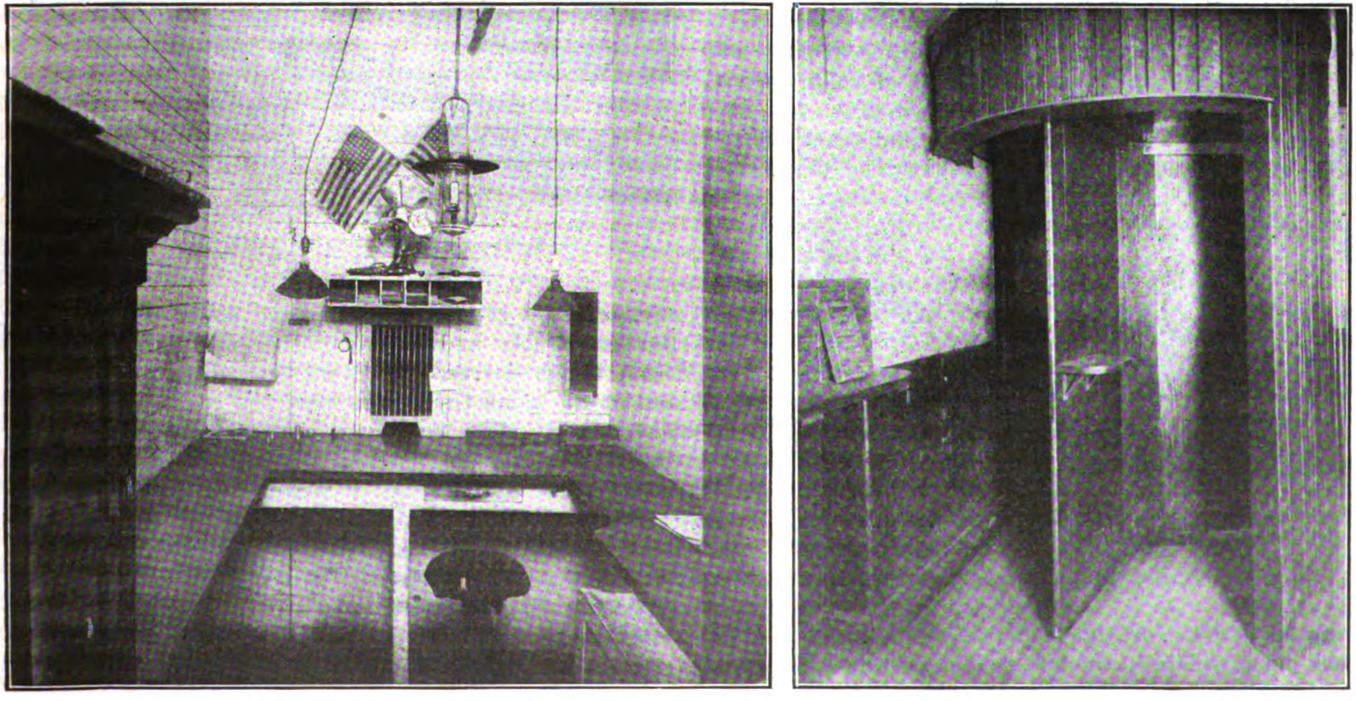
This scheme, the universal type milk ticket, with which the Illinois Traction System has had good success, provides a ticket which an agent can issue and which is good from any crossing or non-agency point. The rates from these points are, of course, different from those for station stops. This condition could not be taken care of readily by the use of card tickets with the destinations printed upon them.

Revolving Door Protects Receivers Against Hold-Ups

H. H. BROWN, superintendent Duluth division Duluth Street Railway, has adapted the principle of the revolving door to insure receivers against hold-ups while making the work of deposit easier for the conductor. Ordinarily, railway companies do not consider the necessity of guarding the receiver and his cash, but several near hold-ups satisfied the Duluth management that some form of protection was most desirable—hence, the revolving door which has been worked out in detail and patented by Mr. Brown.

Formerly when conductors made their deposits it was not uncommon for some one in a desperate hurry to break up the line, yell "Here's my cash" and then rush off regardless of the scattered change and the almost inevitable argument later about shortages.

Now every conductor is furnished with a horizontal tray containing five change grooves to enable him to stack up his returns according to denominations. He then enters the cell of the revolving door with his tray, paper money and report envelope in hand. As he swings around to the receiver's grilled window, the receiver actuates a treadle which in turn locks the door. As soon as the transaction has been completed—say thirty seconds—the treadle is actuated to permit the door to turn and let the conductor out. It is not possible for anyone outside to shoot at the receiver through the door because his window is not exposed as the conductor passes out. A mirror also enables him to see who is entering the cell. Should it be a stranger, he would naturally be trapped. The conductors are also pleased with this scheme as it insures the orderly and correct reception and checking of their returns.



AT LEFT, RECEIVER'S CAGE WITH LOCKING TREADLE BELOW; AT RIGHT, CLOSE UP VIEW OF REVOLVING DOOR—NOTE THE CHANGE TRAY AT LEFT

Remodeling Center Bearings At a Saving of $27 Per Car

Denver Uses Old Type of Bolster Plates Remodeled at $3 Per Car to Give Semi-Roller Bearing Service

MANY of the cars of the Denver (Col.) Tramway have Brill 27-G trucks with 4-ft. wheelbase and these were initially equipped with the regular Brill center bearing. Some years ago, however, a large per cent of the rolling stock was equipped with ball-bearing center plates which gave excellent service, but of course eventually showed wear. It recently became necessary to renew some of the center bearings and it was found that new ball-bearing equipment would cost at least $30 per car. The company was not in a position to make this outlay.

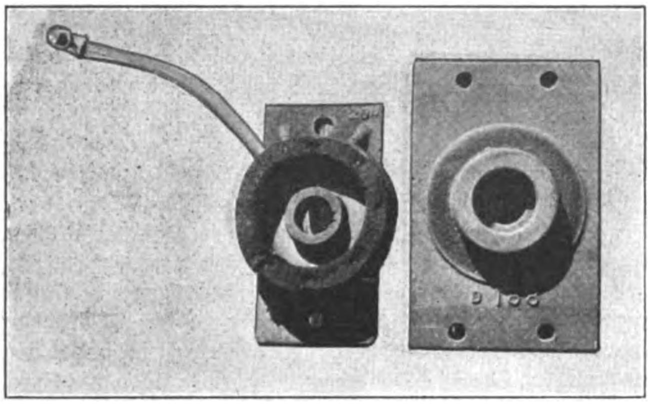


FIG. 1. CENTER BEARING BOLSTER PLATE AS REMODELED AT DENVER

When the cars were equipped with ball-bearing center plates, there was still on hand a large supply of the old center bearings and these had been kept in stock. In fulfillment of the old adage, "necessity is the mother of invention," a method was devised whereby the old type of center bearings could be remodeled to give a semi-roller bearing service. Slightly different sizes and designs are used on the various types of rolling stock, but the general idea is the same.

Fig. 1 shows a photo of the body and truck bolster plates after remodeling and Fig. 2 shows the drawing as originally made for this same set. Referring to the truck bolster plate in the latter, four ½-in. holes, 45 deg. apart and half-way between the top holes, are bored through the wall. Wooden wedges are driven into the four top holes and thick felt is tacked around the top as shown in Fig. 1. A brass center ring is placed in the groove of the truck plate, the rings being cast in a sleeve and cut off in the lathe. A hole is bored through the wall and a ½-in. pipe with an elbow, as indicated in Fig. 1, is screwed into this hole.

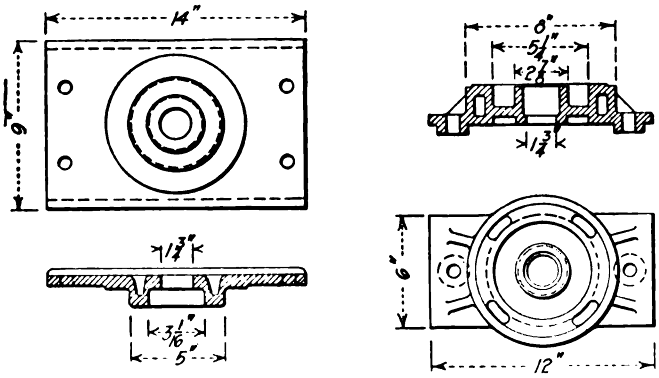
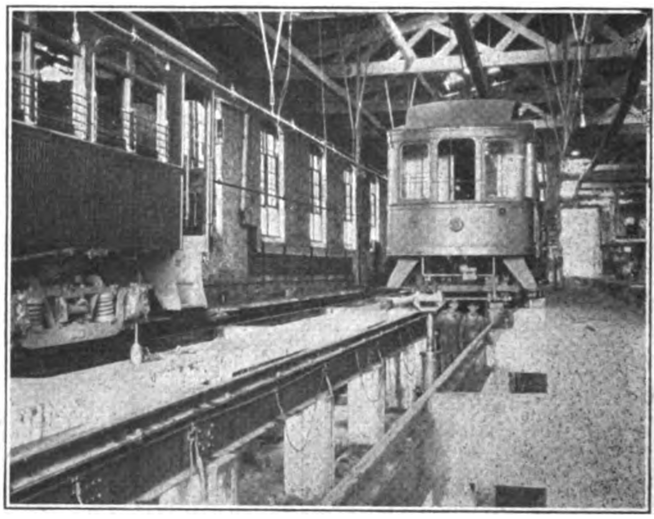


FIG. 2 DESIGN OF ORIGINAL BOLSTER PLATE

The nailing pieces for the felt are made wedge shape so as not to fill up the chamber, and when oil is poured into the pipe it fills the chamber and flows out into the groove both above and below the brass ring. The felt is nailed on to take up approximately the thickness of the rings so that when the body bolster plate is in place the bearing on the ring is such that, with the oil above and below, the result is a close approximation to a roller bearing. Oil of a mixture of 1 gal. of coal oil to 4 gal. of oil is poured into the pipe once a month through a trap in the car floor. The total cost of remodeling this center bearing has been $3 per car and they have been in use long enough to show that they are giving excellent service.

Open Pit Construction in Fremont, Ohio, Repair Shop

The particular form of open pit construction which has been found very satisfactory in the repair shop of the Lake Shore Electric Railway at Fremont, Ohio, is shown in the accompanying photograph. In this construction the rails are mounted on 12-in. I-beams supported on concrete posts, space about 5 ft. apart. Between tracks and at every other post is a concrete beam which serves to prevent spreading of the rail and at the same time to support the concrete runway. The runway does not come clear up to the outside of the rails, but an open space about 2 ft. wide is left on each side of the track to permit workmen to reach the outside of the track without stooping. This type of open pit construction also makes it easy to enter the pits when the tracks are occupied by cars and also makes adjustments to the outside of trucks more easy to carry out, than with closed pits.


VIEW IN GENERAL REPAIR SHOP, LAKE SHORE ELECTRIC RAILWAY, FREMONT, OHIO

Incidentally, this picture shows a telescopic pit jack in extended position, which was in the local machine shop of the company.

LETTERS TO THE EDITORS

Cleveland Plan Better than Municipal Ownership

CLEVELAND RAILWAY COMPANY

CLEVELAND, OHIO, Nov. 18, 1918.

To the Editors:

Municipal ownership and operation may be ideal; municipal control of service, involving no risk of financial loss to the municipality, combined with private ownership and operation at the cost of the required service, including a fair return on investment, is more practicable just now. This is the Cleveland plan. The right reserved to the city in the company's franchise to dictate and regulate the service guarantees to the public as good service as the public wants at the price that it is willing to pay. There should be no fixed maximum or minimum rate of fare; the rate should be the cost of the desired service.

Private owners are more likely to maintain the property in the good operating condition that is necessary for good service and less likely to build unprofitable extensions than a body of public servants such as a city council would be. There should be a check, of course, as there is in the Cleveland franchise, on expenditures for maintenance of and additions to the property, but there is very little likelihood of such over-expenditures under private ownership. The Cleveland franchise seems to me, in these respects, to combine the advantages claimed for municipal ownership with many of those claimed for private ownership.

Private operation means experienced and efficient direction and management—management that *must earn* the fair return on investment, that seeks no political favors, either for itself or the company, and grants none. Municipal operation *may* mean operation by politicians without experience in street railroading and without the responsibility that a manager feels to his stockholders by reason of their closer relation to him and watchfulness of him. But the Cleveland plan provides for checks of operation and operating expenses by both the municipality and the company.

As president of the company, responsible for the management of the railroad, I have tried to maintain and operate it as economically as possible, realizing and appreciating the obligations of the company not alone to its stockholders but to its patrons—an obligation to the latter to furnish satisfactory service and to the former to earn the cost of that service. I admit that the management has been closely, honestly and efficiently watched and aided by each of the three city street railroad commissioners who have served since the Tayler grant went into effect on March 1, 1910. A different management and a different, or indifferent, commissioner might have produced better, or worse, results.

I have frequently expressed in public a willingness to sell the street railway system to the city. The city has a right to buy it at a fixed price. It was hoped that a return of 6 per cent upon the company's capital stock would keep the market price of the stock at par. It was the purpose of the framers of the ordinance that the stock should not be permitted to reach a price very much above par, and it was thought that the provision for purchase by the city would hold the market value of the stock down to or below the purchase price. I shall place no obstacle in the way of municipal ownership here, if the people of the city shall ever wish to purchase the railroad.

The Tayler plan is not perfect. Modifications advantageous to both parties are possible. None should be expected in the sole interest of the company. For illustration, provisions for the better assurance of the return on investment could be made, to the advantage of both city and company. And it has more than once been suggested that a provision for a higher return upon investment as a reward for more economical operation and reduced fares would encourage efficiency on the part of the management to the advantage of both the stockholders and the car riders.

JOHN J. STANLEY, President.

Car Not an A. E. R. E. A. Standard

CHICAGO SURFACE LINES

CHICAGO, ILL., Nov. 16, 1918.

To the Editors:

I desire to correct an erroneous impression which seems to be prevalent relative to the plans and specifications for the cars that were approved for government use by the sub-committee of the American Electric Railway Association War Board, that was appointed to consider this problem. In your issue of Oct. 26, you refer to the cars as "The First Universal Car," but unfortunately through error, the plans were marked as a "Standard Car" and the impression seems to have gone forth that the American Electric Railway Association War Board had approved these cars as a standard, whereas the car designs and specifications were passed and approved—as "plans and specifications for a car to be purchased by the United States Bureau of Industrial Housing & Transportation for use as outlined in the letter from Otto M. Eidlitz, director of that bureau, dated Aug. 19, 1918, and addressed to the American Electric Railway Association War Board," as follows:

> This bureau proposes ordering fifty cars for such future distribution as may be found necessary, these cars to be placed in cities where war activities will require additional equipment. It is thought your association could promptly prepare specifications for a car which would meet the operating conditions of almost any city using standard-gage tracks. If your association cares to take this matter under consideration, we will appreciate it if you will communicate with Gardner F. Wells, manager of the transportation division of this bureau.

As chairman of the committee on standards of the American Electric Railway Engineering Association and as a member of the sub-committee of the war board having this matter under consideration, I desire to take this opportunity of clearing up the misunderstanding relative to the plans and specifications of the cars passed. In the deliberations of the sub-committee it was distinctly understood that the plans and specifications submitted were for cars to be used in cities under conditions where extreme density of traffic would not be encountered.

Please give this subject the publicity it deserves, as it is not desirable to have the impression go forth that cars having the approval of the association have been passed as standards, when the necessary steps for this procedure have not been taken. H. H. ADAMS,

Chairman Committee on Standards, A. E. R. E. A.

Committee on Reconstruction, American Electric Railway Association

PRESIDENT PARDEE has appointed the association committee on reconstruction authorized by the resolution presented at the conference, Nov. 1. The committee consists of seven members, as follows:

P. H. Gadsden, Charleston, S. C., chairman; P. J. Kealy, Kansas City; H. H. Crowell, Grand Rapids; E. W. Wakelee, Newark, N. J.; Walter A. Draper, Cincinnati; C. L. Henry, Indianapolis, and H. G. Bradlee, Boston.

According to the resolution the committee will "make a study of reconstruction problems, particularly those relating to local franchises, and report their recommendations at an early date."

Rewards for Efficient Car Operation

WHEN the energy-saving campaign of the Connecticut Company was begun some months ago, a plan of awarding prizes to efficient motormen was developed. Great care was used in working out this prize award system, and as a basic principle, it was felt that better results would be obtained by an arrangement which permitted a large percentage of the men to participate in the awards, rather than by offering a few high prizes, as these latter would be apt to be worn by the same few men each time, with consequent discouragement to the rest of the men. This plan has worked well, and as finally developed results in about 60 per cent of the men participating in the benefits.

The checking device used is the Arthur "power-saving recorder," which indicates both the duration of the "power-on" period in minutes and the number of stops and slow-downs. In rating the men the following procedure is used:

The "power-on" period and the number of stops and slow-downs for a month are totalized for each man. Each of these totals is divided by the number of hours the man has operated his car. This gives two indices of efficiency; one based upon his operation of the controller, and the other upon his operation of the brakes. These are averaged to give the man's monthly index—more weight being given to the "power-on" period than to the number of stops and slow-downs. This "weighing" of the indices is done because reduction in the power-on period is considered more important than reduction in the number of stops and slow-downs.

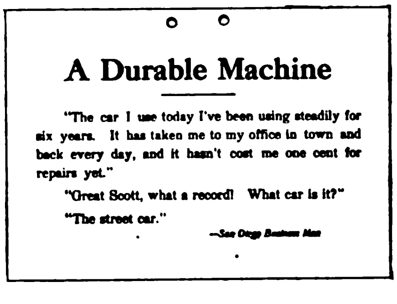
The men's individual figures are then totalized and averaged for each route, which sets a "bogie" or standard for the route. The list of performances of all men on the route, together with the bogie, is posted on the bulletin board in the carhouse, a line being drawn across the list at the average record.

All men who make records above the average receive prizes which are paid quarterly. The number of men on each route runs from twelve to fifteen, of whom of course one-half are above the average, or say six to seven men. Due to the spirit of friendly rivalry which is developed, however, the same men do not always appear in the list above the average line, so that in practice about 60 per cent of the men participate in the awards.

Further, once a month each man finds in his pay envelope a slip containing the records of the actual "power-on" periods per hour of all the men on his own route. This record is signed by the division superintendent. Each man, therefore, knows at all times "how many minutes to the hour" he is running with the power on, and also exactly how each other man on the same route is doing. The savings so far realized have been very encouraging. Particulars of these savings were given in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 12, page 657.

Anti-Auto Pro-Railway Advertising at San Diego

DURING the last year the San Diego (Cal.) Electric has issued some effective appeals to the user of the private automobile. A few of these are reproduced. "Save Your Automobile for Pleasure Trips" was printed as a postcard for every automobile owner in San Diego. The dodgers, "A Durable Machine" and "Gasoline Superseded," were hung from a cord or tacked up in stores and other public places. The company has also published newspaper advertisements featuring the necessity of curtailing the use of gasoline as a war measure.



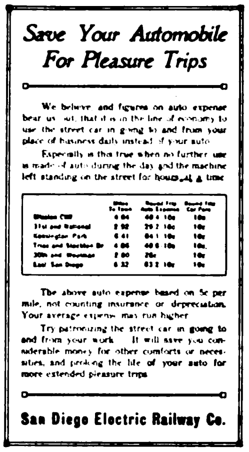
A Durable Machine

"The car I use today I've been using steadily for six years. It has taken me to my office in town and back every day, and it hasn't cost me one cent for repairs yet."

"Great Scott, what a record! What car is it?"

"The street car."

—San Diego Business Man



Save Your Automobile For Pleasure Trips

We believe, and figures on auto expense bear us out, that it is in the line of economy to use the street car in going to and from your place of business daily instead of your auto.

Especially is this true when no further use is made of auto during the day and the machine left standing on the street for hours at a time.

The above auto expense based on 5c per mile, not counting insurance or depreciation. Your average expense may run higher.

Try patronizing the street car in going to and from your work. It will save you considerable money for other comforts or necessities, and prolong the life of your auto for more extended pleasure trips.

San Diego Electric Railway Co.

HINTS TO THE
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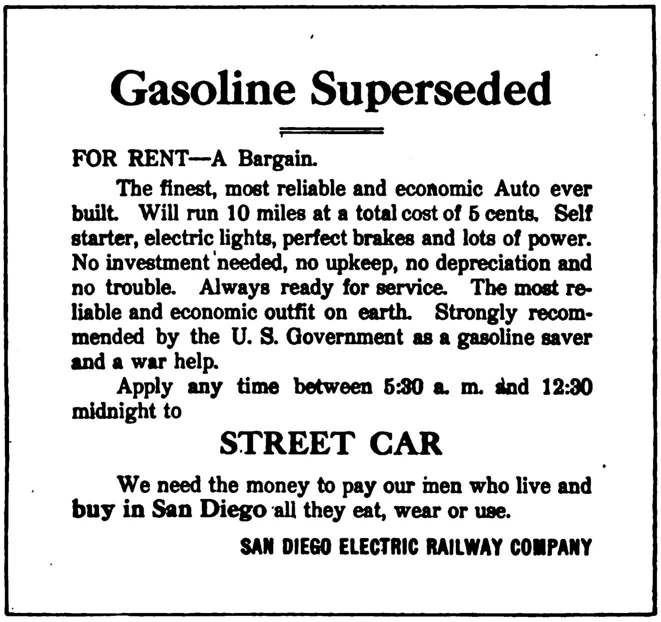


Gasoline Superseded

FOR RENT—A Bargain.

The finest, most reliable and economic Auto ever built. Will run 10 miles at a total cost of 5 cents. Self starter, electric lights, perfect brakes and lots of power. No investment needed, no upkeep, no depreciation and no trouble. Always ready for service. The most reliable and economic outfit on earth. Strongly recommended by the U. S. Government as a gasoline saver and a war help.

Apply any time between 5:30 a. m. and 12:30 midnight to

STREET CAR

We need the money to pay our men who live and buy in San Diego all they eat, wear or use.

SAN DIEGO ELECTRIC RAILWAY COMPANY

The railway is a lively advertiser of its service through hotel cards and folders. Moreover, as the incoming visitor to San Diego leaves the railway station, a large painted billboard gives him the names of all the hotels and the route number of the cars which serve them.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Bonded Debt a Problem

This Matter Now Up for Consideration in Seattle Municipal Ownership Negotiations

Negotiations are progressing for completion of the purchase by the city of Seattle of the railway properties of the Puget Sound Traction, Light & Power Company. Complications which have arisen in connection with the transfer are being worked out.

The company has outstanding bonds and mortgages against its Puget Sound properties, including its railway system in Seattle, aggregating $27,000,000. One-half of this is a mortgage debt on the railway system, and the other half bonds and mortgages on all the company's interests, including the Snoqualmie Falls and White River power plant. The entire amount, however, operates as a lien on the electric railway properties.

The company secured permission last summer from the Capital Issues Committee to issue refunding bonds to the extent of $15,000,000 to take up outstanding indebtedness. These bonds have three years to run and bear 7 per cent interest. Under this authorization the company issued and sold $13,500,000 of bonds, which operate as a lien on the Seattle railway properties. It has been suggested that an agreement be entered into whereby the city shall place $15,000,000 of bonds in escrow, with an agreement that when the company pays off the $13,500,000 of bonded debt, the bonds voted by the city shall be turned over to the company. The sum of $13,500,000 in mortgage indebtedness would still be outstanding. The problem that confronts the city and traction officials is how to handle this part of the traction company's debts. No further steps can be taken until these questions are settled, making it possible to prepare and pass an ordinance covering the transaction.

The street railway employees' union in Seattle has asked the City Council to guarantee the union scale of 50, 55 and 60 cents an hour, pending the negotiations for the purchase of the railway system. The request has been referred to the finance committee.

Cincinnati Plans Improvements

C. W. Culkins, Street Railway Director of Cincinnati, Ohio, has outlined a number of improvements which the Cincinnati Traction Company is expected to make, following the removal of limitations as to expenditure of money for building and improving railroads and the expected increase in man power due to the release of many young men from military service.

Among other things under consideration is the construction of an outside belt line connecting the East End, Hyde Park, Oakley, Norwood, Winton Place and the Spring Grove Avenue district. This would give needed relief to those points.

Work on the extension of the Warsaw Avenue, North Norwood, Sixth Street and McMicken-Main lines will be begun soon. New track will be laid on other lines, on which work was held up by war restrictions. Improvements are also to be made in the transmission system which will insure additional power on some of the longer lines.

Substitution of light cars with larger seating capacity is another improvement which Mr. Culkins hopes to see made soon. Plans for such a car are now under consideration. It is probable that about 150 of the present double-truck cars will be remodeled into prepayment cars.

Fly to Commission Hearing

Capt. William J. Lewis and Lieut. Ralph Schenck flew from Chanute Field, Rantoul, Ill., to Springfield, Ill., to testify before the Public Service Commission of Illinois in connection with the hearing on the application of the Illinois Central Railroad to cross the tracks of the Kankakee & Urbana Traction Company at grade.

Forfeiture of Franchises Recommended

Mayor Thompson and a minority group of Aldermen of Chicago, Ill., opened battle on the traction companies of Chicago at the reconvening of the City Council on Nov. 18. The Mayor submitted a message recommending the forfeiture of the franchises of the Chicago Surface Lines because the service requirements of the 1907 ordinance had not been complied with. Several Aldermen presented resolutions intended to prevent the elevated lines from obtaining an increase in fares from the State Utilities Commission, and for the formation of a committee to design a municipal ownership ordinance and new traction program. All these matters were referred to the local transportation committee.

Electrification of all steam road lines within the city limits is asked in a resolution presented by Alderman Nance, who stated that this ought to be part of the after-war reconstruction work. There has been much discussion of this subject lately, especially with reference to the Illinois Central terminals.

A Three-Mile Municipal Line

One Car and Two Crews on Massachusetts Road Saved from the Scrap Heap

Massachusets has a 3-mile municipal electric railway. It is the A. B. C. Railway and operates from Attleboro to Briggs Corner, from which places it accordingly got its name. The present road was formerly part of the Bristol County Street Railway. This was explained very briefly in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 716.

Things did not go well with the old Bristol County property. Finally service had to be abandoned and the road was sold for junk. That left Briggs Corner in a sad plight. With its only means of communication for most of the slender population gone, the town began to fade and fade rapidly.

At this juncture Mayor Sweet of Attleboro and the Municipal Council decided to reclaim the section of the line in question. The property cost the city $18,000, but notes were negotiated for $22,500, thus leaving $4,500 for the restoration of the line. This work was completed and the road opened under municipal auspices on Sept. 1 under the direction of Harry J. Goodale, superintendent of public works of Attleboro.

There is one car with two car crews, which alternate in service. The solitary unit of rolling stock is leased from the Interstate Consolidated Street Railway, which furnishes the crews and current for $1.67 an hour during the time the car is in service. This period extends from 6.05 a.m. until 10.35 p.m. Operating expenses including interest on investment are figured at $30 a day. For the first few weeks the daily average of receipts is reported to have been $34.50. The road is thus facing the winter with a paper profit of $4.50 a day. But without the road Briggs Corner would undoubtedly have died and with that would have gone nearly the last vestige of value so far as property taxation was concerned.

Just as fate seemed about to lay its heavy hand on Briggs Corner the solution was found of preserving a semblance of its former self to the place by having the municipality take over and keep the railway in operation. To make this possible an act authorizing the purchase of the road by the city was passed in the closing hour of the Legislature. The section of the road between Attleboro and Briggs Corner is the only part of the old Bristol County Street Railway that has been saved from the maw of the second-hand man, the rest of the road having been dismantled.

Oakland Wage Question Up Again

The question of wages has again come up on the San Francisco-Oakland Terminal Railways, Oakland, Cal., and the matter will go before the War Labor Board by mutual agreement.

The wage question on this property has several interesting angles that make it worthy of review. As a result of the submission to a board of arbitration, of the demands of the union, an award was made last November, resulting in an increase in wages to be effective until Nov. 1, 1918. On May 17, 1918, however, the company made a voluntary material increase in the wages of the carmen.

Again on Aug. 21, 1918, not only was the back pay, amounting to $58,679, paid to the carmen, but a further increase was voluntarily granted, bringing the scale of wages up to the same rates as fixed by the War Labor Board for cities in which street railways are operated under similar conditions.

On Aug. 26, 1918, a new demand was made upon the company by the carmen for a further increase in pay and a shortening of hours. This demand was for $5 a day and eight hours' work with time and a half for any time beyond eight hours and double time for work on "days off." If this demand had been granted it would have resulted in a flat rate of 62½ cents an hour for traction carmen, without reference to their seniority of service, which principle has always obtained in the operation of street railways.

A demand also was made on behalf of the Key Division motormen and conductors for a rate which would be equivalent to 83⅓ cents an hour for eight hours' work.

The company found itself unable to accede to these large increases which would add to the payroll something in excess of $350,000 a year, or approximately $1,000 a day, and so advised the men.

As stated previously, both parties to the controversy have agreed that the public service and national situation required that the properties should continue to be operated without interruption by strike or otherwise and an agreement was accordingly reached for the submission of the issues involved to the adjudication of the War Labor Board at Washington.

Progress Slow in Brooklyn Inquiry

Most of the recent testimony in the inquiry into the responsibility for the recent wreck on the Brighton Beach line of the Brooklyn Rapid Transit Company has had to do with the plan of organization and operation of the subsidiaries of the company. A really startling lack of knowledge on the part of those conducting the inquiry was shown with respect to the matter of intercorporate relations. In consequence the proceeding has been long drawn out.

At the resumption John B. Talbot, trainmaster of the West End and Sea Beach lines, testified that Thomas F. Blewett was his immediate superior, and that J. J. Dempsey, vice-president of the Brooklyn Rapid Transit Company, was Mr. Blewitt's superior. On Nov. 1, the day of the accident, they were short twelve men out of about the usual number of thirty. Mr. Talbot admitted he had put on as an emergency motorman Walter Davis, a special policeman. He said he did not know about him personally, but Mr. Blewett had told him in case of need he could use Davis; also Simons, a crew dispatcher, and Marino, another dispatcher. Mr. Blewett told him, he said, that Simons and Marino had been instructed either by McCann or by Miller, instructing motormen.

The witness said that Davis had been a special policeman for two years; that he saw him working school trains, but never knew him to take out passenger trains and never saw his certificate of qualification. He never saw Simons' certificate either, but saw Simons operating trains around the yard, and he ran a passenger train two or three times. These three men, the witness said, were ordered on the night of Oct. 31 to make trips with instructing motormen. Davis made one trip. Mr. Talbot said that it took twenty-one days for a man to qualify as a motorman.

Nine New Wage Awards

Wage increases for employees of nine street railway and interurban systems were granted in awards announced on Nov. 21 by the War Labor Board. The advances are for the duration of the war and in each case the board recommended that the companies be permitted to raise the fares.

The companies affected are the Detroit United Railway, the Empire State Railroad and the Syracuse Suburban Railway, Syracuse, N. Y.; the Lewistown, Augusta & Waterville Railway, the Cumberland County Power & Light Company, Portland, Me.; the East St. Louis, Columbia & Waterloo Railway, the Auburn & Syracuse Electric Railroad, the Cincinnati Traction Company and the Denver Tramway.

Motormen and conductors on the Empire State Railroad's city lines received wages ranging from 38 to 42 cents an hour, while the wages of those on the interurban lines were fixed at from 41 to 45 cents an hour. Other employees get proportionate increases. Provision was made that women shall receive equal pay for equal work. This award is retroactive to last Aug. 12 and the company has until next Feb. 1 to make payments of back pay.

The award in the case of the Detroit United Railway affected only car inspectors, controller men, pitmen and pitmen helpers, who get a flat increase of 20 per cent or more in order to bring the pay of all such adult employees to a flat minimum rate of 42½ cents an hour.

Trainmen on the city lines of the Auburn and Syracuse Railroad receive wages of from 38 to 42 cents an hour, those in passenger service on interurban lines get 44 cents an hour and those in freight service 47 cents.

The board fixed the wages of trainmen employed by the Cincinnati Traction Company at 43 to 48 cents an hour.

Motormen and conductors of the Denver Tramway Company get wage rates of from 43 to 48 cents an hour.

News Notes

Would Hurry Transit Work.—Hope is expressed by the Public Service Commission for the First District of New York, that, inasmuch as hostilities have ceased, it will be possible to go ahead with much rapid transit work, delayed on account of the war. Consultations have been held with government officials in Washington for the purpose of speeding up this work.

Mr. Cameron Pleads Not Guilty.—Bruce Cameron, superintendent of transportation of the United Railways, St. Louis, Mo., was arraigned in Circuit Judge Calhoun's court on Nov. 12 in connection with the disappearance of the referendum petitions asking for a vote on the franchise settlement ordinance, since rejected by the company. He pleaded not guilty and his case was continued until Jan. 6.

Employees Back From War Will Be Used.—Street cars in Evansville, Ind., may be operated in some cases by crippled soldiers, according to an announcement made by the Evansville Public Utilities Company. Superintendent Parker states that the company is holding open all of the places of men who have entered military service. All these men will be taken back after the war, regardless of their condition.

Nashville Adopts Labor Board Scale.—The Nashville Railway & Light Company, Nashville, Tenn., has posted bulletins announcing that its trainmen will be paid for their services according to the scale of compensation fixed by the War Labor Board for the Memphis (Tenn.) Street Railway. The new rate provides that these employees shall receive 36 cents an hour for the first three months they work; 38 cents for the next nine months, and 40 cents after the first year.

Toledo Paper Pays Fine.—The Toledo *News-Bee* has paid a fine of $7,500 imposed upon it and $200 assessed against its editor, N. D. Cochran, by Federal Judge Killits for contempt of court. The charge was based upon publications relative to the street railway suit in Federal Court in 1914, growing out of the attempted enforcement of the Schreiber 3-cent fare ordinance. The suit was begun in that year and was carried through all the courts to the United States Supreme Court, where Judge Killits was sustained.

Terminal Election on Jan. 6.—Jan. 6, 1919, has been set as the date for the special election on the ordinance for the new depot at the Public Square in Cleveland, Ohio. The City Council may have to act again on this ordinance, however, as it was necessary for the city engineer to make some changes in the measure relating to boundaries. The ordinance will probably be hurried through, since the prospects for lifting the ban on building opens the way to the construction of the depot as soon as it can be financed.

Method of Bus Purchase Upheld.—The State Supreme Court of California has reversed the decision of Superior Judge George Crothers and confirmed the right of the Board of Public Works of San Francisco, Cal., to purchase automobile buses as feeders for the Municipal Railroad. The opinion holds that the Board of Public Works may purchase equipment for a public utility under an ordinance of the Board of Supervisors. According to the court, the Supervisors may provide a scheme for the acquisition of such equipment, and the Board of Public Works is not required to follow the charter provisions for the purchase of ordinary supplies.

Wheeling Franchise Negotiations.—A meeting of the officials of the Wheeling (W. Va.) Traction Company and a committee of the Bellaire Council was held on Nov. 7 to discuss the injunction which it had been alleged would be filed to restrain the company from operating cars in Bellaire. The old franchise expired in May, and the city is making an effort to collect $25 per day since May 23, or, in all, approximately $3,800, which the company refuses to pay. The town wants to grant a five-year franchise with a 5-cent fare, an annual tax of $300 per mile of track and an eight-minute schedule. The company has made a counter proposition, asking for a twenty-five-year franchise and other considerations.

Demand for Transit Inquiry in Norfolk.—At a recent meeting of the special traction committee of the Chamber of Commerce of Norfolk, Va., resolutions were adopted calling upon the City Council for a report on conditions at the power plant of the Virginia Railway & Power Company. The resolution calls upon the City Council to employ immediately an expert to report on the present physical condition of the several properties of the Virginia Railway & Power Company located in Norfolk, together with cause and responsibility for the breakdown in such properties as are now partially or totally inoperative. The Chamber of Commerce wants to know whether this condition is due to natural deterioration, failure to make the necessary replacement and repairs when required, or to causes beyond the company's control as a result of war conditions.

Winnipeg Organizes Influenza Relief.—Winnipeg has suffered severely from the ravages of Spanish influenza, and the staff of the Winnipeg (Man.) Electric Railway has not escaped. As soon as cases of the disease appeared in the city the medical officer of the railway began to inoculate the employees. While this has had a very beneficial effect, at one time nearly 50 per cent of the office staff were suffering. Early in November, A. W. McLimont, the general manager, established a relief committee, upon which each of the sixteen departments in the whole organization is represented. This committee investigates each case of influenza in the home of the employee and reports back to Mr. McLimont, with recommendations as to the nature of relief which should be given. The various cases receive the personal consideration of Mr. McLimont, and either financial or other relief is immediately extended.

Insists Upon Action.—The Public Service Commission for the First District has sent a letter to the Board of Estimate & Apportionment insisting upon action on the Ashland Place agreement affecting the Brooklyn Rapid Transit System, which was on the calendar of the first meeting of the present Board of Estimate last January, and is still unacted upon. Failure to act on this agreement by the board was charged by Commissioner Travis H. Whitney as the reason for the blocking of the efforts of the commission to eliminate wooden cars in Brooklyn. The commission has always been deeply concerned to secure modern steel cars to be operated on the rapid transit lines, but without reconstruction of certain portions of the lines such cars could not be operated. Approval of the Board of Estimate is necessary to further the reconstruction plans.

Wants Indictments Dismissed.—The Court of Errors and Appeals of New Jersey on Nov. 19 heard a motion to dismiss the writs of error in the appeal from the Supreme Court's decision quashing indictments found in the Mercer County Court against officers and directors of the Trenton & Mercer County Traction Corporation, Trenton, N. J. The motion to dismiss was denied pending argument on the main case. Counsel for the railway officials seek to have the court dismiss four writs of error brought by the State to review four orders of the Supreme Court each quashing an indictment found by the Mercer County Grand Jury and brought into the Supreme Court by certiorari. Each indictment charged the officers and directors of the railways now merged into the Trenton & Mercer County Traction Corporation with the commission of a public nuisance by erecting and maintaining poles and wires upon certain of the streets of Trenton. The indictments were quashed by the Supreme Court on the ground that no indictable nuisance was charged.

A New West Side Plan.—Comptroller Charles L. Craig of New York City, who as counsel for the West End Association fought the Mitchel administration's west side improvement plan, has submitted to the Board of Estimate a plan of his own for the improvement of freight terminal transportation and waterfront conditions on the west side of Manhattan. The plan provides for a six-track underground freight railroad, to be owned and controlled by the city, extending from Fifty-ninth Street to a point near Canal Street, with unit terminals at various locations, transfer bridges for car floats and providing means of access to the New Jersey railroads. The underground railroad and its terminal facilities, according to the comptroller, will provide for the business of all railroads handling merchandise traffic originating in or consigned to Manhattan Borough. The West Side plan in its entirety contemplated the removal of the lines of the New York Central Railroad along the Hudson River waterfront from the surface and the placing of them overhead or underground for operation by electricity.

Programs of Meetings

Central Electric Railway Accountants' Association

The members of the Central Electric Railway Accountants' Association will meet at Fort Wayne on Dec. 13 and 14. The program for the meeting will be announced later.

Joint Meeting British Educational Mission and S. P. E. E.

A joint meeting of the British Educational Mission to the United States and the Society for the Promotion of Engineering Education will be held at the Massachusetts Institute of Technology, Cambridge, Mass., on Dec. 6-7. The topics which are to be discussed are as follows:

"The Organization of Engineering Education in Great Britain and the United States."

The discussion will be led by a member of the mission representing Great Britain and Charles S. Howe, president of the Case School of Applied Science, representing the United States.

"The Effect of the War on Engineering Education in Great Britain and the United States."

The discussion will be led by a member of the mission representing Great Britain and Dr. C. R. Mann of the Massachusetts Institute of Technology, Boston, representing the United States.

"The Liberal Element in Engineering Education."

The discussion will be led by a member of the mission representing Great Britain and Prof. George F. Swain of Harvard University, representing the United States.

Financial and Corporate

$6,000,000 Additional Notes

Interborough Company Plans to Take Advantage of Investment Market by Increasing Recent Issue

The Interborough Rapid Transit Company, New York, N. Y., has arranged, through J. P. Morgan & Company, to issue additional three-year convertible 7 per cent notes to the amount of about $6,000,000. This sum represents, approximately, the balance of the issue of $39,700,000 authorized some time ago, $33,400,000 of which have been issued. Regarding the new issue, Morgan & Company have made the following announcement:

ALLOTMENTS CURTAILED

"In response to the notice sent out by J. P. Morgan & Company for the syndicate managers that the subscription books in the Interborough Rapid Transit Company's 7 per cent notes would be closed on Nov. 11, instead of Dec. 1, the date originally set for the closing of the syndicate, applications for notes were received in large volume, and, in alloting the unsold balance of the notes, it has been possible for the syndicate managers to allot only 15 per cent of the applications in amounts below $50,000 and 10 per cent of the applications in amounts of $50,000 and over.

"In order to take advantage of this demand, and to permit the allotment of a larger percentage of notes than would otherwise be available, the Interborough Rapid Transit Company has arranged to issue an amount of approximately $6,000,000 to cover the cost of work which has been deferred because of its possible competition with the government in its war work.

"At the time of issuing the $33,400,000 of notes, early in September, President Shonts of the Interborough Company stated that, except for work to cost about $6,000,000, which was to be deferred until after the war, the proceeds of that note issue would be sufficient to complete the company's contribution to the cost of the Interborough new rapid transit system. The proceeds of the $6,000,000 now offered are designed to complete the company's share of the work.

SEPARATE INDENTURE FOR NEW ISSUE

"These notes are not issued under the same indenture as that securing the notes previously offered for public subscription, which limited such issues to $33,400,000, but will be secured by another indenture with identical terms as to maturity, interest rates, character of security, and conversion privileges. The notes of the supplemental issue, which will be known as Series B, will be delivered, principally, to some of the large corporate subscribers, who except for this issue would have been unable to obtain the 10 per cent which has now been allotted to subscribers of $50,000.

"It is understood that the company has agreed with the Capital Issues Committee that none of the proceeds of this $6,000,000 of notes will be used for construction purposes until such expenditures are approved by the committee. In the meantime the proceeds of the notes will be invested in United States certificates of indebtedness or similar obligations."

Financial Restrictions to Continue

Restrictions will be continued by the Capital Issues Committee on the floating of securities for building, road construction, and development enterprises not absolutely essential.

In view of the necessity of another war loan in the spring, the Treasury, with which the Capital Issues Committee is affiliated, holds that the securities market still must be left open largely for government securities. Consequently business interests will have to demonstrate that their projects are needed or advisable in the light of the national situation before the Capital Issues Committee will approve stock or bond issues.

Projects financed without floating of securities also will be affected through the committee's extensive organization of Federal Reserve district and local committees of bankers and business men instructed to use their influence against capital propositions not compatible with national interest.

The extent to which the committee will relax restrictions in the future has not yet been determined.

Abandonment Hearing Put Off

The hearing which was to have been held in Spokane, Wash., on Oct. 23 by the State Public Service Commission to consider complaints against the local railways has been postponed indefinitely because of the influenza.

The most important matter set for hearing was the question whether the commission or the city has jurisdiction in the matter of the abandonment of certain lines in Spokane by the Washington Water Power Company.

The Washington Water Power Company suspended service on several of its less profitable lines a month or so ago as a war economy, and early in October the City Council ordered the company to resume service. The company claims the matter falls under the jurisdiction of the State Public Service Commission and asked for a hearing. The city claims it is purely a franchise provision over which the commission has no jurisdiction.

Security Holders Organize

Director of Toronto Railway Asks Security Holders of Ontario to Favor Service-at-Cost Plan

In view of the increasing difficulty of financing electric railways in Ontario and of giving the public adequate service, and also in view of the expiring franchises bringing the whole subject of urban transportation before the public for immediate action, it has been decided to form an association to be known as the Association of Holders of Public Utility Securities.

PUBLICITY CAMPAIGN PLANNED

The principal object of the new association is to interest all bond and stockholders in a campaign of publicity as to the actual conditions prevailing in the public utility field and to promote a plan to meet the emergency. The secretary of the association is Herman H. Pitts, Ottawa, a director of the Toronto Railway. He has addressed all the shareholders of the Toronto Railway and other electric railways in Ontario in part as follows:

"The co-operative scheme or as it is usually called, service-at-cost, has proved to have in it the remedy. It is fair and equitable to all parties. It gives all the advantages of public ownership while eliminating all the defects. It guarantees to shareholders a fixed rate of interest, provides for necessary improvements and extensions and offers efficient management.

"Under separate wrapper will be found a number of copies of a brief summary of the plan. Your assistance would be appreciated in securing as many as possible of the officials of your financial institutions, business men, and all persons holding shares or bonds of any public utility, as members of this association, and as indorsing the service-at-cost plan as set forth in the summary sent you. It is therefore suggested that if you approve of the policy you sign yourself and have other holders of public utility securities sign the inclosed list of membership. This is done for the purpose of grouping the holders of such securities whose moral support and personal sympathy and propaganda are of paramount usefulness in an educational campaign of such magnitude and importance. When signed, please return the lists to me."

PLEDGES ARE ASKED

The form those who are addressed are asked to sign is headed as follows:

"We the undersigned, are in full sympathy with the Association of Holders of Public Utility Securities, more especially with its object of promoting service at cost, through a wide educational campaign, whereby the public may be impressed with the advantages of this system or of any other modern and progressive policy of cooperation between the public utility owners and the public they serve. It is understood that no financial obligation in any way attaches to my membership in this association."

Republic Returns for 1917

Large Growth in Business Was More Than Counterbalanced by Higher Costs of Operation

The combined comparative income statement of the Republic Railway & Light Company, Youngstown, Ohio, and its subsidiaries for the calendar years 1917 and 1916 follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	$4,889,915	100.0	$3,987,616	100.0
Operating expenses, depreciation and taxes*	3,341,183	68.3	2,327,406	58.3
Net earnings	$1,548,732	31.7	$1,660,210	41.7
Other income	67,205	1.4	20,965	0.5
Gross income	$1,615,938	33.1	$1,681,175	42.2
Interest and subsidiary company dividends	1,004,427	20.6	827,569	20.8
Net income	$611,511	12.5	$853,606	21.4
Dividends on preferred stock	311,484	6.4	311,484	7.8
Balance	$300,027	6.1	$542,122	13.6

*Includes charge of $49,867 for depreciation of equipment.

The gross earnings of all the companies during 1917 gained $902,299 or 22.63 per cent, but the operatng expenses, depreciation and taxes rose $1,013.776 or 43.56 per cent. As a result the net earnings decreased $111,477 or 6.71 per cent. Interest and subsidiary company dividends rose $176,857 or 21.37 per cent, and the balance after the payment of preferred dividends on the holding company stock showed a loss of $242,094 or 44.65 per cent.

The gross revenue for the year from the railway department increased 10.9 per cent, and that from the electric, light and power department 32.7 per cent. In 1917 the railway department furnished 56.38 per cent of the gross as compared to 60.86 per cent in 1916.

During the year $2,390,226 was expended upon acquisitions, extensions and betterments. The company has abandoned plans for further immediate extensions owing to abnormal costs and difficulties in financing.

The number of passengers carried in 1917 was 59,923,605 as compared to 53,448,848 in the year preceding, while the car-miles totaled 7,652,866 and 7,575,616 respectively.

Trenton Tax Decision Reversed

In an opinion filed by the New Jersey Court of Errors, on Nov. 18, the Supreme Court's decision, which sustained the taxes for 1915 levied against the Trenton & Mercer County Traction Corporation by the city of Trenton and certain townships.

The Mercer County tax board increased the assessment on the property of the company in 1915 by adding 20 per cent to the valuation of the preceding year. This led to an increase from $815,000 to $1,598,500 in Trenton for 1915 and proportionate increases in the assessments in the townships.

Justice Swayze in his opinion said that the Supreme Court failed to make an independent determination of facts there was a legal basis for the result reached by the County Tax Board whether that result was right in fact. This error made it necessary to reverse the judgment and remit the record to the Supreme Court.

The opinion also said that the tax board took a valuation of its own expert and added 20 per cent indifferently and contented itself with finding that to real and personal property as well as to land, the value of which was a site value and not subject to depreciation by wear, and added the same percentage to property in Trenton as it did in suburban and agricultural communities. This uniformity of percentage, the opinion said, challenged attention to any evidence in its support and the higher court found none.

1917 Taxes in Virginia

The sum of $81425 was assessed upon electric railways in Virginia for 1917, according to a compilation made by the State Corporation Commission. This tax total, shown in detail in the accompanying table, was based mostly upon $9,184,098 of real and tangible personal property and $5,647,747 of gross receipts from transportation.

TAXES ASSESSED IN VIRGINIA FOR YEAR ENDED JUNE 30, 1917

Name of Company	Value of Real and Tangible Personal Property (Except Money)	Tax on Value (1 Mill)	Gross Receipts from Transportation in Virginia	Tax on Gross Transportation Receipts at 1¼ per Cent.	* Total Tax
Appalachian Power Company	$11,779	$11	12.576	$157	$169
Blue Ridge Light & Power Company	35,460	35	15,764	†177	213
Bristol Traction Company	12 495	12	5.887	†66	78
Charlottesville & Albermarle Railway	137.280	137	45.175	564	703
Danville Traction & Power Company	168.209	168	136.037	1,700	1,937
Hopewell & City Point Railway	15,270	15	9,758	121	139
Lynchburg Traction & Light Company	474.631	474	248.363	3,104	3,579
Mill Mountain Incline, Inc	13,950	13	4,140	51	66
Newport News & Hampton Railway, Gas & Electric Company	996,207	996	448,641	5,608	6,880
Norfolk City & Suburban Railway	27,337	27	8,024	‡90	117
Norfolk & Ocean View Railway	16,135	16	45,342	566	582
Norfolk Railway & Light Company	662,895	662	......	..	662
Petersburg & Appomattox Railway	118,400	118	162,271	2,028	2.175
Radford Water Power Company	24.527	24	12.644	158	182
Richmond & Chesapeake Bay Railway	309,320	309	58.919	‡662	991
Richmond & Rappahannock River Railway	159.477	159	63.258	790	950
Roanoke Railway & Electric Company	563.114	563	339.902	4.248	4.811
Tazewell Street Railway	8,410	8	8.573	107	121
Virginia Railway & Power Company	3,874,195	3,874	188.544	39.856	44.970
Washington & Old Dominion Railway	943,157	943	417,390	5,217	6,198
Washington Utilities Company	...	......	......	...	32
Washington-Virginia Railway	611,850	611	416.531	5.206	5.861
Total	$9.184.098	$9,184	$5,647,747	$70,486	$81.425

* Total tax includes tax of 2 mills on money on hand and on deposit; the aggregate for all companies was $877.657, and the tax $1,755

‡ Assessed with franchise tax of 1¼ per cent on account of operating expenses being in excess of gross earnings.

Tacoma's Results Poor

After Three Months on a Seven-Cent Fare There Is a Deficit of $75,145

A financial report prepared by Louis H. Bean, manager of the Tacoma Railway & Power Company, Tacoma, Wash., to the citizens' committee of twenty-five business men, shows that the railway problem is still unsolved. The report covers the first three months of operation under the 7-cent fare, and the increased wages of carmen.

The 7-cent fare became effective on July 8. The month of August shows the largest gross earnings. Since then the cessation of park and Sunday outing traffic has cut earnings. The order that became effective on Oct. 13, closing all public places, on account of the influenza scare, caused a decrease of $2,664 in earnings for the ensuing week, while the closing of schools clipped the sum of $2,236 off the second week. The company asserts that service has been steadily increased, and that for the week of Oct. 14-20, an average of 112.3 cars were operated daily, as compared with 72.5 for the week preceding the beginning of 7-cent fares.

The statement shows that in June, before fares were advanced, the gross earnings were $100,510. Operating expenses were $83,085, leaving a balance of $27,434, which taxes and interest charges reduced to a deficit of $14,968.

In July, the gross earnings jumped to $135,149, but as operating expenses increased to $113,107, a balance of $22,041 remained, which taxes, etc., reduced to a deficit of $20,705.

The month of September shows a deficit of $28,143. The net result of operating three months under 7-cent fares, with the new wage scale, is a deficit of $75,145.

The committee of business men is expected to resume conferences, with an effort to find a permanent solution of the traffic problem in Tacoma.

Tax Liability Decisions

Decisions have been handed down by Common Pleas Court No. 3 in the suits brought by underlying companies against the Philadelphia (Pa.) Rapid Transit Company to determine the liability for the payment of war and excess profit taxes. In ten cases the court found in favor of the plaintiff subsidiary companies and in three cases for the defendant Philadelphia Rapid Transit Company. It is expected that appeal will be taken by both sides to the higher courts. The suits have been referred to previously in the ELECTRIC RAILWAY JOURNAL, the most recent reference being in the issue of Nov. 9.

Financial News Notes

New Third Avenue Directors.—At the annual meeting of the Third Avenue Railway, New York, N. Y., William A. Day was chosen a member of the board of directors to take the place of the former president, Edward A. Maher, who retired from the company some time ago.

Empire United Receiver Discharged.—Justice Leonard C. Crouch in the United States Supreme Court has signed an order discharging H. S. Holden as receiver of the Empire United Railways, Syracuse, N. Y., sold some time ago under foreclosure and reorganized.

Rails Being Removed.—The work of removing the rails of the Woodstock-Sycamore Traction Company, Sycamore, Ill., is under way. The road extends from Sycamore to Genoa and Marengo, a distance of 25 miles. The rails and ties were sold as junk under foreclosure recently to the Hyman-Michaels Company, Chicago, Ill.

Municipal Road Redeems Bonds.—Bond interest and redemption of bonds of the San Francisco (Cal.) Municipal Railway, amounting to $222,000, was recommended paid by the finance committee of the Board of supervisors of San Francisco on Nov. 8 out of accumulated earnings. Of this sum $100,000 is for the redemption of bonds issued for building the road and $122,000 is for interest on bonds still outstanding.

Asks Instructions About Abandonment.—Wallace Donham, receiver for the Bay State Street Railway, Boston, Mass., has asked the Federal District Court for instructions regarding the proposed discontinuance of certain lines which he declared were not paying operating expenses. In some instances, the receiver said, it might be possible to operate cars at certain hours of the day without loss. The lines mentioned are in districts of Lynn, Salem, Danvers, Peabody, Beverly, Lowell, Lawrence, Haverhill, Brockton, Bridgewater and Fall River.

Receiver for New Hampshire Road.—Russell Jarvis has been appointed receiver for the Claremont Railway & Lighting Company, Claremont, N. H. A committee of local manufacturers is said to have offered to buy the outstanding bonds of the company, at 50 cents on the dollar. The company gave notice some weeks ago that it would discontinue business, but was prevented from doing so by injunction proceedings and the application for the appointment of a receiver.

Denver Valuation $36,118,361.—The inventory which has been made of the property of the Denver (Col.) Tramway shows that to reproduce the railway now at prices prevailing on Jan. 1, 1918, would cost $36,118,361. The company explains the work in part as follows: "The valuation is based primarily upon an inventory of the entire system and upon the cost of reproducing from nothing the present network of city and interurban lines with all the equipment, money and experimenting necessary to give transportation service to the people of Denver. Since Dec. 3, 1917, it has taken an aggregate of 131 men, most of them expert engineers, to locate, list and value all this property. Since May, 1918, a staff of seventeen expert appraisers and engineers from the Public Utility Commission has been at work checking all the data gathered by the tramway in its inventory and preparing their own version of it."

Additional Puget Sound Notes Offered.—A syndicate, of which Lee, Higginson & Company, Boston, Mass.; Harris, Forbes & Company and Estabrook & Company, New York, N. Y., are members, is offering for subscription at 98½ and interest, to yield about 7.65 per cent, $1,841,000 of additional Puget Sound Traction, Light & Power 7 per cent sinking fund mortgage gold notes. The notes are dated June 1, 1918, and are due June 1, 1921. They are in coupon form of the denominations of $1,000 and $500 each. It is explained in the statement advertising the notes that the present issue is offered in accordance with the terms of the mortgage indenture to reimburse the company's treasury for additions and extensions made recently to the property. The total authorized note issue is $15,000,000. Of this sum an amount has already been used sufficient to refund $10,057,000 of 6 per cent mortgage bonds of the company maturing on Feb. 1, 1919.

Electric Railway Monthly Earnings

CUMBERLAND COUNTY POWER & LIGHT COMPANY,
PORTLAND, ME.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$299,726	$192,083	$107,643	$71,242	$36,401
1m., Sept., '17	281,195	159,490	121,705	70,230	51,475
12m., Sept., '18	3,176,543	2,226,215	950,328	853,284	97,044
12m., Sept., '17	3,049,224	2,001,371	1,047,853	814,815	233,038

EAST ST. LOUIS & SUBURBAN COMPANY,
EAST ST. LOUIS, ILL.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$385,033	*‡‡$332,031	$53,002	$67,031	†$14,029
1m., Sept., '17	320,857	*218,882	101,975	65,495	36,480
12m., Sept., '18	4,046,013	*‡‡3,065,325	980,688	808,047	172,641
12m., Sept., '17	3,543,807	*2,303,744	1,240,063	773,360	466,703

GRAND RAPIDS (MICH.) RAILWAY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$113,480	*$92,340	$21,140	$19,403	$1,737
1m., Sept., '17	114,773	*73,920	40,853	18,219	22,634
12m., Sept., '18	1,278,801	*978,818	299,983	232,021	67,962
12m., Sept., '17	1,308,439	*872,905	435,534	212,329	223,205

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$3,176,577	*$2,431,998	$744,579	$1,429,407	†§‡$93,587
1m., Sept., '17	3,073,470	*1,810,984	1,262,486	1,070,000	§‡455,207
3m., Sept., '18	9,435,624	*6,694,668	2,740,956	4,198,557	§‡123,680
3m., Sept., '17	8,909,808	*5,202,030	3,707,778	3,203,754	§‡1,356,191

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY,
LEWISTON, ME.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$91,827	*$70,320	$21,507	$19,822	$1,685
1m., Sept., '17	86,834	*57,184	29,650	15,538	14,112
12m., Sept., '18	882,797	*767,379	115,418	214,962	†99,544
12m., Sept., '17	883,572	*652,173	231,399	185,869	45,530

REPUBLIC RAILWAY & LIGHT COMPANY, YOUNGSTOWN, OHIO

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$443,863	*$321,642	$122,221	$100,021	‡$29,685
1m., Sept., '17	426,250	*280,674	145,576	87,100	‡63,948
12m., Sept., '18	5,570,222	*4,002,465	1,567,757	1,155,984	‡529,186
12m., Sept., '17	4,536,528	*2,944,934	1,591,594	957,608	‡683,362

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$103,477	*$70,838	$32,639	$25,493	$7,146
1m., Aug., '17	86,570	*57,580	28,990	24,369	4,621
12m., Aug., '18	1,108,248	*749,061	359,187	298,176	61,011
12m., Aug., '17	914,212	*605,435	308,777	287,627	21,150

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$89,567	*$53,344	$36,223	$5,095	$31,128
1m., Aug., '17	79,321	*48,306	31,015	4,652	26,363
12m., Aug., '18	1,022,090	*595,473	426,613	61,858	364,755
12m., Aug., '17	1,006,862	*551,913	454,949	52,482	402,467

PORTLAND RAILWAY, LIGHT & POWER COMPANY,
PORTLAND, ORE.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$672,791	*††$476,485	$196,306	$188,133	$8,173
1m., Sept., '17	501,149	*299,150	201,999	177,545	24,454
12m., Sept., '18	7,303,001	*††4,644,192	2,658,809	2,191,381	467,428
12m., Sept., '17	5,833,067	*3,197,453	2,635,614	2,165,120	470,494

*Includes taxes. ‡‡$21.110 included for depreciation. †Deficit. ‡Includes non-operating income. ††For the month, $20,184 and for twelve months, $340,609 included for depreciation. §Includes accruals under rapid transit contract with city payable from future earnings.

Traffic and Transportation

Action Expected Soon

Recent Developments Indicate that New York City Is Preparing to Act in Fare Cases

On motion of Comptroller Charles L. Craig the Board of Estimate & Apportionment of New York City on Nov. 14 discharged its franchise committee from further consideration of the various applications from street railways for permission to charge an increased fare.

No explanation of the comptroller's motion was offered, and no debate followed Mr. Craig's motion to dismiss.

PREPARED FOR ACTION

This action by the board clears the decks at once of further committee consideration of all the applications from surface operating companies that have been made direct to the board or have been referred by the Public Service Commission for action, and is regarded as leaving the way open for immediate treatment of the transit situation.

In his consideration of a remedy for the problems confronting the surface railways the Mayor, it is said, is being advised by a Boston lawyer, Grenville McFarlane, who is associated with William Randolph Hearst in the promulgation of the latter's public ownership principles.

According to the New York *Sun*, investigation of the transit problems of the city made following Mayor Hylan's instructions to Corporation Counsel Burr has established the following facts, based upon statements by city officials, officers of the Interborough Rapid Transit Company and New York Railways and members of the Public Service Commission:

1. That the New York Railways, operating the surface lines in Manhattan, must derive an additional revenue through an increased fare or go into the hands of a receiver.
2. That whatever increase of fare may be allowed the surface lines must also be allowed the subway and elevated systems unless one is to suffer at the expense of the other and the public be seriously inconvenienced.
3. That unless an increased fare is allowed to the rapid transit lines the city will face a deficit in returns under the dual contracts that should be applied to payment of interest on its investment, and this deficit will have to be made up through taxation.

It is reported that the Mayor has been advised of the willingness of the New York Railways to agree to the appointment of a controlling body in return for permission to charge an increased fare. The road has further agreed that the city may safeguard itself in the matter of control of any surplus revenue that may accrue after operating costs have been paid and a fair return on the stockholders' investments provided for. The disposition of this surplus, provided any appears, the New York Railways has agreed to leave for future consideration.

In replying to a request of the Brooklyn Board of Real Estate Brokers that the railways of the city be allowed to raise their fares, Comptroller Craig asserted on Nov. 18 that the city had no intention of granting such applications, as an increase over the present 5-cent fare "would inure to the benefit of the transit companies and not to the city of New York." This reply attracted considerable notice because it seemed to be at variance with the general impression that the city was about to proceed with the fare matter.

The Board of Real Estate Brokers said it seemed reasonable that a slight increase in fares would be fair and just to real estate interests and promote the safety of the public.

Dallas Pleased With Beeler Reports

The reports of John A. Beeler, traffic expert, have been favorably received by the City Commission of Dallas, by whom he was retained, and it is likely that they will be adopted as a whole. Some of the recommendations will be put into effect by the enactment of city ordinances, while others will be carried out by the Dallas Railway through instructions from the supervisor of public utilities. Mayor Lawther has issued the following statement:

"I am very much pleased with Mr. Beeler's recommendations for better electric railway service for Dallas. By adopting the recommendations made by Mr. Beeler, the Dallas Railway will be able to give the public one-sixth more service. Frequent service on schedule time is what the public desires, and what they are entitled to have.

"In addition to greatly increased service, Mr. Beeler makes many other recommendations, which, when put into operation, will mean much for the safety and convenience of the street-car-riding public. I will not take space to comment upon all of these in detail. I feel certain that the city administration will have the hearty co-operation of both the public and local railway in putting Mr. Beeler's recommendation into operation.

"Our city will indeed be most fortunate in getting this greatly improved service without an increase in fare, when we consider that the fares have been raised in most of the other large cities in the United States."

Columbus Inquiry Begun

City Has Started Careful Investigation Upon Which to Base New Rate of Fare

The City Council of Columbus, Ohio, is getting under way its search for information upon which to base a rate of fare for the Columbus Railway, Power & Light Company that will meet present conditions. At a special meeting on Nov. 15 W. J. Bieneman, president of the State Public Service Utility, Audit & Investigating Company, Charleston, W. Va., presented figures which indicate that a 7-cent fare will be necessary if the company is to pay operating expenses and come out even.

2,832,410 NO-FARE PASSENGERS

During the months of September and October 2,832,410 passengers rode without paying fares. They were the conscientious objectors to the 5-cent fare which the company adopted some time ago, because it could not operate further on the eight-for-a-quarter rate. Mr. Bieneman says that between $1,800 and $1,900 more revenue daily is needed to balance the expense account.

Actual operating costs for October, as he reported them, were as follows: Operation, $156,275; taxes $12,557; depreciation, $55,600; interest on unfunded debt, $425; interest on funded debt, $28,600; amortization, $2,500; total, $285,883. Operating revenue for the month amounted to $156,166. In October, 1917, operating expenses were $133,126, while the operating revenue was $188,726.

Mr. Bieneman submitted figures showing that if each passenger had paid 3⅛ cents, which is the rate of fare allowed by the franchise, instead of 5 cents, the rate the company adopted, with the great number paying nothing, the revenue would have been less than it was under present unsatisfactory conditions. This offsets the claim of some members of the Council to the effect that the old rate of fare would have produced more revenue than the 5-cent rate, as handled during the months it has been in use.

ACTION IN SUBURBAN CASE

Prosecuting Attorney Duncan and his assistant, John A. Summers, have advised patrons that the company is within its rights when it demands a 5-cent fare to points beyond the city limits, such as Bexley, Camp Chase and Linden Heights. Franchises granted the company by the Franklin County Commissioners at different times permit the charge of 5 cents, the attorneys said.

Recently the company adopted a system of transfers for these places and all who refuse to pay a 5-cent fare are compelled to leave the cars at the city limits. People boarding the cars outside the limits for points inside the city, are also compelled to pay a 5-cent fare at the city line or leave the cars.

Six Cents on Chicago Elevated

Increase in Fare Is to Continue in Effect Until Dec. 1, 1919, Unless Conditions Change

Authority to put into effect a 6-cent fare was granted to the Elevated Railroads of Chicago on Nov. 19 by the State Public Utilities Commission. The increase was scheduled to go into effect on Nov. 21. The higher fare is to continue until Dec. 1, 1919, unless further investigation shows that the rate should be changed.

COMPANY WANTED SEVEN-CENT FARE

The company had asked for a 7-cent fare, and President Britton I. Budd still insists that this amount will be necessary to meet expenses. About 600,000 persons are hauled daily, and it is expected that a 6-cent fare will increase the revenue about $1,200,000 annually. This will not be sufficient, according to the company's figures, to pay all charges.

The petition for an increase in fare from 5 cents to 7 cents was filed with the commission on Aug. 30, as outlined in the ELECTRIC RAILWAY JOURNAL for Sept. 7, page 436. The hearings were held in Chicago on Sept. 23, Oct. 7, 8 and 9. The Chicago & Oak Park line, included in the system of the Chicago Elevated Railways, has been in the hands of a receiver since 1911. It has never paid any dividends. In the last five years the other three lines included in the system known as the Chicago Elevated Railways, have paid dividends on preferred and common stock of a general average of 3.18 per cent. The valuation of the property of the elevated railways as of June 30, 1916, based on the cost reproduction new less depreciation was $70,943,020. In referring to this valuation the commission said:

"Since this fair value is the amount upon which a public utility may properly expect a reasonable return it is easily seen that usually its determination is of prime importance in fixing rates. In the present proceeding, however, the greatly increased expense forced upon the petitioners by the recent large wage awards and rising costs of materials renders the value of the property of secondary importance and makes possible the fixing of temporary rates that are proper until the commission may by suitable future investigations make a final determination of the issues involved in the case."

WAGES UP $1,409,376

The increase in wages effective on Aug. 1 added $1,409,376 to the annual platform expenses of the company. The total extra requirement imposed by extra costs for labor and materials was estimated by the company at $2,853,000. Due to an estimated loss in traffic of about 4 per cent the company figured that a 7-cent fare was necessary. In referring to the wage increase the commission said:

"For the transportation services furnished by the petitioners they may properly expect a reasonable price in excess of its cost and if such cost be increased by causes beyond their control then the roads are entitled to a correspondingly increased selling price. The action of the National War Labor Board placed upon the petitioners a greatly increased financial burden which they have no means of carrying unless they receive correspondingly greater prices for transportation—the only commodity they have to sell—just as does a merchant dealing in other wares who raises his prices when his costs are advanced. The action of the National War Labor Board in thus increasing wages is the direct cause of the higher rates of fare upon the petitioner's lines hereinafter authorized."

EMERGENCY ACTION NECESSARY

The commission further states:

"To make such investigations as would enable the commission fully to consider all possible discriminations would require considerable time and would impose upon the petitioners an unreasonable hardship, hence in this case the commission will place in effect such temporary rates as will provide reasonable immediate relief and reserve to itself the right to make such additional investigations later as shall enable it to determine rates of fare, transfer regulations or other changes necessary to remove as completely as practicable any discriminations that may exist in the present arrangements."

CITY ACTS TO PREVENT INCREASE

In closing the case the commission said:

"This commission expressly retains jurisdiction in this case and reserves to itself the right upon complaint or upon its own motion further to investigate the rates authorized by this order, make findings and issue such additional orders in regard to rates for elevated railroad service furnished in Chicago as may be justified by facts determined at subsequent hearings."

The commission has ordered the company to file a monthly report showing the effect of the advanced rate.

The company has supplied itself with $100,000 in pennies and as soon as possible will install rapid change-making machines in all stations.

As soon as the decision was made public the States Attorney announced that steps would be taken to enjoin the collection of the higher fare. He asserts that the State commission has no authority to change a rate fixed by franchise contract. A special meeting of the City Council also was called. In the meantime the management of the Chicago Surface Lines is said to be ready to file its petition for relief. The city has been asked to join in this application. It is not thought likely that the commission will make any distinction between the elevated railways and the surface lines, as a higher rate on one system would drive considerable business to the other and thus offset the effect of an advance.

Commission Has Rate Power

New Jersey's Highest Court Holds that Utility Commission Can Abrogate Rates Fixed by Franchise

The Court of Errors and Appeals of New Jersey on Nov. 18 upheld the power of the Board of Public Utility Commissioners to abrogate franchise agreements in the fixing of rates on the ground that the State is supreme in such matters.

HAS BEARING ON RAILWAY CASES

The ruling is regarded as bearing directly on the Trenton 6-cent fare case and the Public Service Railway's 7-cent fare as it established a precedent by the highest court in the State which must be followed when such cases are finally decided by the State courts.

The decision was rendered in the cases of the Collingswood Sewerage Company against the borough of Collingswood and in the Burlington Sewerage Company against Burlington. The court stood seven to three on the matter. Chancellor Walker and Justice White and Judge Taylor voted against the decision, which affirmed the Supreme Court's ruling reversing the Utility Board's refusal to grant rate increases to the sewerage companies in face of maximum rate franchises. The Supreme Court held that the Utility Board has the power to fix rates, even setting aside franchise agreements on the ground that the power of the State in such matters is supreme. The Court of Errors now sustains the Supreme Court's view on the same ground.

The members of the Court of Errors who upheld the Supreme Court's decision were Chief Justice Gummere, Justices Kalisch, Parker, Bergen, Black, Heppenheimer and Judge Williams. Justices Swayze, Minturn and Trenchard did not vote in the Court of Errors because they sat in the Collingswood case in the Supreme Court and rendered the opinion in the case there.

TRENTON CASE NOW ON APPEAL

In the Trenton 6-cent fare case now pending the Board of Utility Commissioners abrogated the city's agreement with the company requiring the sale of six tickets for a quarter. The commission's right to do this was attacked by the city. The Supreme Court has upheld the commission's power to do this and an appeal has now been taken to the Court of Errors on the point of franchise abrogation.

In the Court of Errors' opinion of Nov. 18 it was stated:

"To hold that by delegating the rate-fixing power to its creature, it (the State) had deprived itself of the right thereafter to modify the rate would be tantamount to declaring that the creature is greater than the creator."

It was pointed out that it would be strange if the State could not revoke the authority it has granted to municipalities and cancel conditions which it had permitted them to impose.

San Diego Survey Completed

Special Adviser to Railway Submits Facts on Which Commission Will Be Asked to Act

A comprehentive financial and traffic survey of the San Diego (Cal.) Electric Railway has just been completed by E. J. Burns, public utility adviser of the company, and copies have been submitted to the City Attorney and the Chamber of Commerce in order that the general public might have the opportunity of becoming familiar with the affairs of this important public utility.

NO SPECIFIC ADVANCE ASKED

On May 25, last, the company requested the State Railroad Commission to make an investigation of the rates, charges, rules, regulations and practice of the company with a view of advising the company on what action to take. The survey was made for the purpose of assisting the commission in this investigation and also for the purpose of acquainting the public with the history and financial difficulties experienced by the company in conducting its transportation business. No request was made for a specific advance in rates. In this respect the company's appeal is said to differ from that of any other similar case before the commission.

In a communication to W. Clayton, vice-president and managing director of the company, which accompanied the survey, Mr. Burns writes:

"The investigation reveals no evidence to indicate that the financial structure of the San Diego Electric Railway is weak, but the utility's financial difficulties are due to an inadequate operating income. This condition is not the result of the war, but dates back to the year 1892, when the company began operation. In other words, the universal 5-cent fare now in existence has never been adequate for this community.

"A solution of the company's financial difficulties might possibly be found in the words of Commissioner Loveland, in the Pacific Electric Railway's application No. 3791, for permission to increase passenger fares, C. R. C. petition No. 5731, dated Sept. 4, 1918:

"'As the expense of operation grows without corresponding increase in gross revenue, a continual increase in fares cannot be avoided unless assistance is rendered by reduction of taxes and street maintenance charges assessed against transportation companies or by direct financial contributions. In other words, the costs must be paid either by the consumer direct through fares or by the people as a whole through taxation.'"

Seven-Cent Fare for Ithaca

Newly Organized Company Asked for Ten and Claims Right to Earn Return on Securities—Some Unusual Points Involved

The Public Service Commission of the Second District of New York has authorized the Ithaca Traction Corporation to increase its fares from 6 cents to 7 cents. The company asked to make the rate 10 cents. The decision of the commission is of unusual interest because of the expression by Commissioner Barhite in the opinion accompanying the order to the company to the effect that a policy that dividends must be the first concern in the management of a public service corporation is bound to produce disastrous results. The company has accepted the 7-cent fare, but has taken exception to parts of the opinion of the commission as regards return, for reasons set forth below.

The matter of increased fares in Ithaca came up first in 1917. On Dec. 1 of that year the Ithaca Traction Corporation, pursuant to an order of the Public Service Commission, increased its rate of fare from 5 cents to 6 cents. The increase in the cost of operation, however, demonstrated that a 6-cent fare was inadequate and a subsequent application was made for a further increase to a 10-cent cash fare with six tickets for 50 cents. It was in connection with this appeal that the order dated Nov. 14 was made authorizing the company to increase its fares from 6 cents to 7 cents with eight tickets for 50 cents.

COMMISSION STATES ITS POSITION

The Public Service Commission in granting this further increase, commented upon the fact that in certain years prior to the incorporation of the Ithaca Traction Corporation, dividends had been declared upon the capital stock of the Ithaca Street Railway, the predecessor corporation to the present Traction Corporation. In this connection Commissioner Barhite said:

"There is a limit beyond which trolley fares should not go; in fact, they cannot be advanced beyond a certain point without disastrous results to the company. In these times of heavy burdens the people should not be required to pay an excessive fare. If they are required to pay such fare the result will be detrimental to the corporation itself. It is practically conceded that dividends have been paid in the past when the money so used 'in ordinary prudence' should have been used for rehabilitation of the property.

"If the stockholders in the past have received money which ordinary business sagacity should have applied to maintaining the road properly, no complaint can be made if patrons are not required in these strenuous times to furnish money not alone to make repairs which could have been made in the past but also to pay dividends. In fact the adoption of such a course would be equivalent to a declaration that dividends must be the first concern in the management of a public service corporation."

The Traction Corporation proposes to put the increase of fare into effect at once, but has communicated to the Public Service Commission that it does not accept and is not bound by the reasoning of the commission referred to in its opinion, stating in substance that it is in no wise responsible for the declaration of payment of such dividends or for any course of conduct of those in control of the former Ithaca Street Railway. The Ithaca Traction Corporation is the successor to the Ithaca Street Railway through purchase under foreclosure of a mortgage made by the old Ithaca Street Railway. Following this purchase the properties of the new corporation were valued and all of its securities were issued upon the approval of the commission.

No dividends have ever been declared by the Ithaca Traction Corporation, and the hearing upon which this last increase to 7 cents was granted proceeded upon the express stipulation and understanding on the part of the Ithaca Traction Corporation that by the increased fare asked for the company sought for nothing other than revenue from which to pay interest upon its mortgage securities authorized and issued with approval of the commission.

Furthermore, the company set forth that under the laws of New York State and the rules governing the Public Service Commission, the company was entitled to a rate of return sufficient to yield reasonable compensation for the services rendered, and in fixing the rates, fares or charges to be demanded, exacted, charged or collected by the Traction Corporation, the Public Service Commission was required by statute to give "due regard among other things to a reasonable average return upon the value of the property actually used in the public service, and to the necessity of making reservation out of income for surplus and contingencies."

In order that there might be no misunderstanding the Ithaca Traction Corporation specifically stated that if the commission in ordering increased rates proceeded upon the theory that the Ithaca Traction Corporation was not entitled to the rights and privileges as outlined in the statute because a predecessor in title had paid dividends "when the money so used in ordinary prudence should have been used for rehabilitation of the property," the commission had proceeded upon an erroneous theory which was not binding upon the Traction Corporation and was repudiated by it. The company further said that the order granting the increase of fare was accepted upon the distinct understanding that this theory was not assented to, accepted or approved by the Traction Corporation.

Des Moines Asks Seven Cents

The Des Moines (Iowa) City Railway and the City Council are at odds. Following the granting of an increased wage to the railway men by the War Labor Board officials of the company announced that they would appeal to the Iowa Conciliation Board for the right to increase fares to 7 cents. Immediately upon the receipt of this announcement by the city officials the city attorney stated that any projected fare increase would be taken into the courts. Accordingly an injunction case has already been started to prevent the increase. The State Board of Conciliation has agreed to hear the appeal on Nov. 20.

Wages were increased by the War Labor Board to 41 cents an hour for the first three months employment, 44 cents for the next three months and 47 cents thereafter. According to E. G. Schmidt, president of the Des Moines City Railway, the increase will cost the company $200,000 annually.

The Board of Conciliation is a newly-organized body chosen by the Iowa League of Municipalities and the public utilities of the State to provide means for the amicable settlement of difficulties affecting the city and the utilities. The board is made up of five members, but as one of the members has recently removed from the State, the fifth member is to be chosen at a meeting in Des Moines during the week commencing Nov. 25.

The conciliation board grew out of a suggestion made by Judge Martin J. Wade, of the U. S. District Court for the Southern District of Iowa, who found his court docket congested with rate cases. At his suggestion, the League of Iowa Municipalities and representatives from public utility companies of Iowa held a meeting and formulated the plan under which the Des Moines case will now come up. It was decided that this Board of Conciliation serve as arbitrators holding informal hearings, with written arguments and witnesses only where the situation called for the same.

The board has already settled differences between the cities and their utilities in Grinnell, Audubon, Osceola and Chariton, as a result of which the citizens of those places will pay more for their water, power and light.

Dayton Companies Want More

The electric railways operating in Dayton, Ohio, on Nov. 13 petitioned the City Commission for authority to increase fares to 6 cents. The companies assert they cannot meet the advanced wages allowed the employees by the War Labor Board unless this is done. It is suggested that the city modify the franchises if an advance is allowed. This is regarded as opening the way to city control, so far as character of service is concerned.

J. E. Barlow, city manager, and W. S. McConnaughy, city attorney, were instructed to consult with Ross W. Harris, street railway expert, and prepare an ordinance that will afford the roads relief. City officials will insist that service must be improved if an increase in fare is granted. In addition to the local railways, the Dayton, Springfield & Xenia Southern Railway and the Cincinnati & Dayton Traction Company signed the communication to the City Commission.

Transportation News Notes

York Announces Seven-Cent Fare.—The York (Pa.) Railways recently filed notice of a 7-cent fare, effective on Nov. 20, at the office of the Public Service Commission.

Commutation Advance Suspended.—The Public Utilities Commission of Illinois has suspended to March 8, 1919, the proposed advance in commutation fares filed by the East St. Louis & Suburban Railway, East St. Louis, Ill.

Seven Cents in Salisbury.—The Corporation Commission of North Carolina has granted the petition of the Salisbury & Spencer Railway, Salisbury, N. C., for an increase of fare to 7 cents. Four tickets will be sold for 25 cents and seventeen for $1.

Asks Six Cents for Pueblo.—A straight fare of 6 cents, whether cash or a ticket is used, is asked by the Arkansas Valley Railway, Light & Power Company, Pueblo, Col., in a petition filed on Nov. 5 with the Public Utilities Commission of Colorado.

Wants Seven Cents in Lawrence.—The Kansas Electric Utilities Company, Lawrence, Kan., has filed an application with the Public Utilities Commission for an increase in passenger fares from 5 cents to 7 cents. Recently the City Commission of Lawrence approved such increase.

Wants Ten-Cent Fare Between Cities.—The Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill., included in the Illinois Traction System, has petitioned the Public Utilities Commission of Illinois for a 10-cent fare between Champaign and Urbana, the business centers of which are 2 miles apart.

Commission Calls for Schenectady Fare Briefs.—The Public Service Commission for the Second District of New York on Nov. 13 continued hearing testimony on the application of the Schenectady Railway for permission to increase its passenger fares, and at the conclusion directed the attorneys for both sides to file briefs.

Cincinnati Fare Attacked.—On Nov. 13 Attorney John C. Rogers, as a taxpayer, filed suit in the Superior Court at Cincinnati, Ohio, attacking the validity of the ordinance passed on Aug. 23 which provides for an increase in the rate of fare. The defendants are the city, the Cincinnati Street Railway and the Cincinnati Traction Company.

Ohio Road Asks Fare Increase.—The Cleveland, Painesville & Eastern Traction Company has asked the County Commissioners of Cuyahoga for authority to increase its basic rate of fare from 2 cents to 3 cents a mile and the minimum fare from 5 cents to 10 cents. Lake and Ashtabula Counties have already approved the proposed schedule.

Increase Denied in Yonkers.—The Yonkers (N. Y.) Railroad, included in the Third Avenue Railway System, New York City, has been denied the right of establishing zone systems by vote of the Aldermen. The system would create two 5-cent zones within and one outside the city limits.

A Fare Ultimatum.—The Sherbrooke Railway & Power Company, Sherbrooke, Que., has notified the City Council that in the event of the Council failing to agree to an increase in the railway fare, service will be discontinued after Nov. 30. As an alternative the company is willing to sell to the city at a price to be fixed by arbitration.

Fare Increase Voted Down.—The people of Spartansburg, S. C., on Nov. 12 were called on to vote on the petition of the Carolina Light, Power & Railways Company to increase its fare to 7 cents, and although only a few voters responded, the sentiment as reflected in the election was against the increase. The vote was 244 against to 84 for the increase.

Eight-Cent Fare Asked.—The Blue Hill Street Railway, Canton, Mass., and the Norfolk & Bristol Street Railway, with which the former line connects at Stoughton, have filed with the Massachusetts Public Service Commission notice of their intention to increase their rates from 7 cents to 8 cents and to make a corresponding increase in the commutation ticket rate.

Eight Cents Cash in Tucson.—An order was entered recently by the Corporation Commission of Arizona, authorizing the Tucson Rapid Transit Company to increase its rates as follows: For each single fare, 8 cents; for two tickets sold to one person at the same time, 15 cents; seven tickets sold to one person at the same time, 50 cents; fifteen tickets sold to one person at the same time $1.

Ohio Line Raises Fare.—The fares of the Columbus, Urbana & Western Electric Railway, Columbus, Ohio, have been slightly increased on its lines to Casparis and Fishingers Bridge, in accordance with schedules filed with the State commission. The round-trip fare to Fishingers Bridge has been raised from 25 to 30 cents, and the fare to Casparis from 15 to 20 cents. Through the use of books workmen will have the same fares as before.

Rhode Island Fare Appeal Hearing on Dec. 16.—The Rhode Island Supreme

Court on Dec. 16 will hear the appeal of the city of Cranston and other municipalities, from the decision of the Public Utilities Commission granting the Rhode Island Company's petition for an increased fare. Preliminary questions have all been settled at various hearings and the merits of the decision will come up before the court upon the date set.

Patrons Petition for Fare Increase.—Petitions, signed by 200 patrons, were filed with the Hamilton County Commissioners on Nov. 8, asking that the Interurban Railway & Terminal Company be allowed to increase its fares. The petitions stated that the income is not sufficient to pay the operating expenses and that it is necessary to the progress of the territory through which it passes that the road be kept in operation.

Wants Interstate Fare Increase.—The Washington Railway & Electric Company, Washington, D. C., and its affiliated lines have filed an application with the Interstate Commerce Commission asking authority to increase the fares on all their suburban lines in the Maryland jurisdiction. The matter has also been presented to the Public Utilities Commission of Maryland. The petition asks authority to increase the zone rate from 5 to 6 cents.

Trenton Men Want More.—The trainmen of the Trenton & Mercer County Traction Corporation, Trenton, N. J., petitioned the company on Nov. 18 for an increase in wages from 38 to 50 cents an hour, flat rate, and 60 cents an hour for overtime. Wages of the men have been increased three times this year, the last being July 1. The increase now asked for would total an additional $2,000 a month and the company is loath to ask for an additional increase in fare.

Princeton Fare Case Closed.—The application of the New Jersey & Pennsylvania Traction Company, Trenton, N. J., to increase its passenger and freight rates was heard before the Board of Public Utility Commissioners on Nov. 14. Counsel for the company and the town of Lawrenceville were directed to file briefs and the petition was taken under advisement. The railway seeks to increase its fare from 6 cents to 7 cents in each of the four zones between Trenton and Princeton.

New Connecticut Valley Tariff.—The Connecticut Valley Street Railway, Greenfield, Mass., recently filed a new tariff of fares with the Public Service Commission. Under the proposed schedule, the fare between Turners Falls and Main Street, Greenfield. will be 15 cents, and to the end of the line. 21 cents; from Turners Falls to Millers Falls, 21 cents; from Millers Falls to Lake Pleasant, 6 cents, and to Montague, 12 cents. Books of thirty coupons will be sold for 90 cents, and ninety-coupon books for $2.25.

2,000,000,000 Passengers a Year.—Travel on the street railroads of New York City, which includes elevated railroads and subways, has reached the enormous figure of 2,000,000,000 passengers a year, according to estimates prepared at the offices of the Public Service Commission for the First District. Between July 1, 1917, and June 30, 1918, 1,975,482,316 fares were collected, an increase of 56,670,087 over the previous year. If the rate of increase is maintained during 1918, the figures of traffic for 1918-1919 will be well in excess of 2,000,000,000.

Asks Increase in Interurban Fares.—The Oklahoma Railway, Oklahoma City, Okla., has applied to the Corporation Commission of that State for permission to advance interurban fares as follows: Between Oklahoma City and Edmond, 30 cents to 35 cents; between Oklahoma City and Guthrie, 60 cents to 75 cents; between Oklahoma City and Yukon, 30 cents to 35 cents; between Oklahoma City and El Reno, 60 cents to 70 cents; between Oklahoma City and Norman, 35 cents to 40 cents. A new schedule of advanced rates between intermediate points in conformity with this general increase also is asked.

Houston Votes Down Increase.—The Houston (Tex.) Electric Company was denied the privilege of charging 6 cents instead of 5 cents for fares in Houston by a vote of the people on Nov. 5. With returns complete from thirty precincts the vote stood 1883 for the ordinance permitting an increase in fares and 3027 against the ordinance. The City Council, after about six months' study of the question, passed the ordinance permitting the increase to 6 cents. A referendum petition was circulated and sufficient signatures of qualified voters were secured to force the ordinance to a referendum vote.

School Fares Increased.—Harrison B. Freeman, receiver of the Hartford & Springfield Street Railway, Warehouse Point, Conn., has found it necessary to raise the fares of school children from half fare to full fare. The company has been carrying such children for the various towns throughout the district for about 1½ cents a mile and in some instances even less than this. Mr. Freeman has also announced that he is trying to work out a general system of fares more nearly equitable to the company and its patrons than is the present system. He has asked suggestions from all persons interested.

Hearing on Eight-Cent Fare.—On Nov. 18 the Board of Public Utility Commissioners of New Jersey heard the application of the Jersey Central Traction Company for permission to charge a flat rate of 8 cents in each of the eight zones of its system. The company is now charging a straight fare of 6 cents in each of its operating zones, serving Matawan, Keyport, Perth Amboy, Atlantic Highlands, Red Bank and surrounding territory. The application was opposed by the authorities of all the municipalities through which the company operates. The commission has reserved decision in the matter.

Memphis Fare Ordinance Progressive.—The ordinance for a 6-cent fare on the Memphis (Tenn.) Street Railway has been passed on second reading and the City Commission has adopted a resolution calling on the board to arrange for a date for the 6-cent fare referendum. A referendum petition must bear the signatures of 500 voters in order to be submitted to the people. The increased fare ordinance provides that the railway shall be authorized to collect an additional cent above the regular 5-cent fare for the duration of the war or not more than two years thereafter. The City Commission, however, will reserve to itself the right to revoke the grants any time after peace is declared.

I. T. S. Adopts Steam Rates.—The Illinois Traction System, Peoria, Ill., announced that, effective on Nov. 15, passenger fares on its lines between points within the State of Illinois would be computed on the same basis as that now used by the steam railways. A 3-cent-per-mile fare accordingly prevails for both ticket and cash fares. Heretofore the company has maintained a 2-cent fare and 2½-cent cash fare on all of its lines. A reduction of 10 per cent is allowed on the purchase of round-trip tickets under the new tariff. Increased cost of production, which compelled the steam railways under government operation to raise passenger fares, is the reason assigned for the new Illinois Traction rates.

Orders Six-Cent Fare Restored.—The Public Service Commission has issued an order and report in the complaint of the borough of Ashland against the Schuykill Railway, directing that the company cease collecting more than 6 cents a zone in accordance with the commissioner's order of July 2. The company in the spring increased its fares to 7 cents, and the borough complained, with the result that the commission held the increase to be unfair and ordered a 6-cent fare. An application was then filed by the company for a rehearing and the commission was notified that the company was again charging in excess of a 6-cent fare. Pending the disposition of the motion for a new hearing the commission says "the company has no right to charge and collect either 7-cent or 8-cent zone fares."

Fare Appeal Again Rejected.—The City Commission of San Antonio, Tex., on Nov. 8 for the second time in two months denied the plea of the San Antonio Public Service Company for a 6-cent rate or the alternative of eliminating the universal transfer. The commission divided on the question by a vote of three to two. At the first hearing a unanimous vote was cast against the measure. The vote was taken after the company presented evidence that a demand had been made by trainmen for higher wages and that if the demand was voluntarily granted or the employees appealed to the War Labor

Board and obtained their demands, the company would operate at a loss under the present fare.

Board of Trade Favors Increase.—The Board of Trade of Winnipeg, Man., composed of 2000 representative and public-spirited citizens, has voted in favor of the Winnipeg Electric Railway being allowed to increase its fares. The vote of the members was taken by mail, owing to the "flu" ban prohibiting meetings in the city. Some time ago the executive of the Board of Trade considered it a matter of policy to declare itself on the application of the railway to the civic authorities for an increase in fares, and in a questionnaire asked the opinions of the members. The vote was 645 for and 49 against the increase being allowed. As noted briefly in the Nov. 9 issue, the company has been authorized to charge a straight 5-cent fare pending a full investigation.

Court Hearing on New Jersey Case on Nov. 25.—The Court of Errors has fixed Nov. 25 as the day for argument on the appeal from the Supreme Court's decision sustaining the 7-cent fare and 1-cent transfer order of the Board of Public Utilities Commissioners for the Public Service Railway. George L. Record appeared for F. X. O'Brien, of Jersey City, who carried the case to the Court of Errors, the highest court in the State. City Counsel Charles E. Bird, in the Trenton 6-cent fare case, filed a stipulation between counsel dealing with certain parts of the evidence in the case that is to go to the Court of Errors, an appeal having also been taken in this case to the higher court. Inasmuch as the Trenton case involves the same points of law, it is likely that they will be argued together. The decision of the New Jersey Supreme Court, from which the present action is an appeal, was reviewed briefly in the ELECTRIC RAILWAY JOURNAL for Oct. 26, page 760.

New York Interurbans Want More.—New rate schedules have been filed with the Public Service Commission for the Second District of New York by the Empire State Railroad Corporation and the Rochester & Syracuse Railroad, proposed as effective on Nov. 24, covering the joint passenger traffic between the two lines. The Rochester & Syracuse road proposes a rate of 3 cents a mile, minimum fare 5 cents, between all stations between the Rochester and the Syracuse city lines; commutation book, fifty single trips, 1½ cents per mile, minimum, $6 per book; mileage book, 300 miles, 2½ cents per mile. Chartered car rates are also advanced. All joint one-way fares between points on the two roads are increased and there is a corresponding increase in round-trip fares. The increase from Auburn to Weedsport is from 33 cents to 34 cents. Auburn to Rochester from $1.73 to $2.01. From Oswego to Rochester the increase is from $2.85 to $3.34, while the increase from Baldwinsville to Warner is from 35 cents to 40 cents.

Personal Mention

New Boston Officers

J. Henry Neal Made President and C. D. Emmons General Manager of the Boston Elevated Railway

At a meeting of the board of trustees of the Boston (Mass.) Elevated Railway on Nov. 23, Vice-President J. Henry Neal was elected president of the company, and Charles D. Emmons was elected general manager.

Mr. Neal has been acting as president of the company since the resignation of Matthew C. Brush. He has been connected with the road for thirty years. He began as a boy in the shops and worked up through various positions and departments to the rank of vice-president and general auditor. His work has brought him into contact with the activities of every department and branch of the service. He was closely associated with Mr. Brush, chairman of the board of the company and its former president, in all of his undertakings and is in close touch and complete harmony with the personnel of the entire organization.

Photo by Marceau, Boston

J. H. NEAL

Mr. Neal was born in Boston forty-six years ago. He is a certified public accountant, and besides the distinction which he enjoys in this field he is familiar with both the mechanical and electrical engineering problems which have had to be met in electric railway work. He has taken out a number of patents, not a few of which are for devices in use in the railway field. Perhaps the best known device of which he is the inventor is the Neal electric headlight. He has been active for many years in association work and has served as president of the New England Street Railway Club, president of the American Electric Railway Accountants' Association and on the executive committee of the American Electric Railway Association.

Mr. Emmons, who has been appointed general manager, has been second vice-president and general manager of the Boston & Worcester Street Railway. He is known as an able railway executive who has had a varied and extensive experience in the management and the operation of other companies where he has successfully demonstrated his capacity. By education he is a civil engineer, having received his degree from the University of Pittsburgh in 1892. He was in the engineering department of the Pennsylvania Railroad for nine years and entered the electric railway field in 1901 as superintendent of the Lafayette (Ind.) Street Railway. Later he was successively general manager of the Fort Wayne & Wabash Valley Traction Company of the Chicago, South Bend & Northern Indiana Railway and of the Southern Michigan Railway. He became connected with the Boston & Worcester Street Railway in 1916.

Miss Eva Denman has been appointed auditor of the Kankakee & Urbana Traction Company, Urbana, Ill., to succeed C. B. Murphy.

Wendell Williams has been elected vice-president of the Milford & Uxbridge Railway, Milford, Mass., to succeed J. A. Sperry.

H. Hogan has been appointed chief operator of power station of the Keokuk (Iowa) Electric Company, to succeed W. A. Gilbert.

R. B. Cook has been appointed secretary of the Western Ohio Railway, with headquarters at Cleveland, Ohio, to succeed L. B. Webster.

T. J. Head has been appointed purchasing agent of the Vicksburg Light & Traction Company, Vicksburg, Miss., to succeed J. D. Scott.

J. C. Chestnut has been appointed general manager of the Pittsburgh County Railway, McAlester, Okla., to succeed W. H. Vorce.

G. B. Garret has been appointed purchasing agent of the Toledo Railways & Light Company, Toledo, Ohio, to succeed W. H. Terrey.

Frank Lape has been appointed master mechanic of the Connecticut Valley Street Railway, Greenfield, Mass., to succeed C. J. Cameron.

Fred Frost has been appointed master mechanic of the Charles City Western Railway, Charles City, Iowa, to succeed E. A. Everhart.

J. E. Motsiff has been appointed superintendent of the Empire State Railroad Corporation, Syracuse, N. Y., to succeed W. H. Sheehan.

H. J. Bawerfind has been appointed treasurer of the Fort Wayne & Decatur Traction Company, Decatur, Ind., to succeed G. M. Leslie.

C. A. Scheuerman has been appointed auditor of the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., to succeed E. C. Wise.

Brig.-Gen. G. E. Tripp has resigned from the service, and returned to his duties as chairman of the board of the Westinghouse Electric & Manufacturing Company.

Parker Lewis has been appointed superintendent of the Bath division of the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., to succeed Fred Fuller, resigned.

J. W. Rahilly has taken a position as chief engineer of the power plant of the Illinois Traction System at Peoria, Ill. He has recently been engineer at the plant of the LaSalle (Ill.) Portland Cement Company.

Thomas W. Shelton, who resigned recently as general superintendent of the Kankakee & Urbana Traction Company, Urbana, Ill., has accepted the general superintendency of the Illinois Central Electric Railway, Canton, Ill.

Fred Fuller, for the last nine years superintendent of the Bath division of the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., has resigned to become manager of the Shaw Auto Company, Lewiston. Mr. Fuller was connected with the railway for twenty-five years.

William B. McKinley, president of the Illinois Traction System, Champaign, Ill., and Congressman from the Eighteenth Illinois District, was host to the editors of the newspapers in his Congressional District recently. The trip to and from St. Louis was made in *The Champaign*, Mr. McKinley's private car.

Hugh L. Scovell has resigned as electrical superintendent of the Alton, Granite & St. Louis Traction Company, Alton, Ill., to enter the service of the government. Mr. Scovell became connected with the company at Alton about fifteen years ago as a helper in the power house. Five years ago he was made electrical superintendent.

A. C. Van Driesen, secretary of the Toledo Railways & Light Company, Toledo, Ohio, has resigned to become assistant treasurer of all properties of Henry L. Doherty & Company in Toledo, in active charge of all financial matters of the company. Mr. Van Driesen's rise in the Toledo company has been rapid. He started as a ticket agent for the Beach road at the Casino and from chief clerk of the accounting department became secretary of the company about a year ago.

George A. Iler has been appointed to the position of superintendent of operation of the Georgia Railway & Power Company, Atlanta, Ga., succeeding E. P. Peck, who resigned to join the Bureau of Standards at Washington. Mr. Iler joined the company at Atlanta some years ago as chief operator at Tallulah Falls. Afterward he was made head of the repair department under Mr. Peck. Before becoming connected with the company he had had experience as electrician in the navy and as a mining electrician.

H. A. Nicholl general manager of the Union Traction Company of Indiana, Anderson, Ind., was recently appointed by the United States government manager of transportation of the Hampton Roads, Va., district. The position is a new one for the war period and Mr. Nicholl has been granted leave of absence by the Union Traction Company in order that he may assume the duties of the place. Mr. Nicholl will continue as general manager of the Union Traction Company and will be in Anderson from time to time.

ROY R. HADSELL

Roy R. Hadsell, who was recently appointed superintendent of the New York State Railways, Rochester, N. Y., to succeed E. E. Strong, resigned, entered electric railway work with the International Railway at Buffalo in 1900 as a conductor. He remained in the employ of that company in various capacities until 1903, at which time he left Buffalo to enter the employ of the Schenectady Railway as chief inspector. He remained with the Schenectady Railway until 1913, when he resigned to become superintendent of the Troy division of the United Traction Company at Troy, N. Y. He resigned from the United Traction Company in February, 1917, to become assistant superintendent of the New York State Railways at Rochester, N. Y.

H. L. Mitchell has been made vice-president and general manager of the Wheeling (W. Va.) Traction Company, which operates the Wheeling Traction Company, Pan Handle Traction Company, Steubenville & Wheeling Traction Company and the Steubenville, Wellsburg & Weirton Railway. Mr. Mitchell has grown up in the service of the West Penn properties, of which the Wheeling Traction System is a subsidiary.

V. S. Wright has been appointed general manager, purchasing agent and assistant to the treasurer of the Columbia Railway, Gas & Electric Company, Columbia, S. C. For twenty-one years up to last June Mr. Wright was connected with the Atlantic Coast Line Railway, serving finally as superintendent of terminals. He entered the service of the old Plant System in 1897 as flagman on the Savannah division. Three years later he was made a conductor and in 1905 general yardmaster at Savannah. In 1907 he was appointed superintendent of terminals at Rocky Mount, N. C., in which capacity he continued until appointed to the company at Columbia.

Obituary

Shirley Onderdonk, forty-six years old, a prominent tunnel builder and contractor, is dead. Mr. Onderdonk was general supervisor of the building of the tunnel from South Ferry to Brooklyn for the New York Subway and the "loop" tunnel at Battery Park. He assisted in building the Soulanges Canal, which connects the Great Lakes and the St. Lawrence River; the Jerome Park reservoir, and held contracts with the Grand Trunk Railroad.

Harry C. Ebeling, mechanical engineer at the Harvard Shops of the Cleveland (Ohio) Railway for nine years, died on Nov. 7 of pneumonia, following an attack of influenza. Mr. Ebeling was thirty years old. He was well known to many street railway officials, particularly those who had occasion to visit the shops of the Cleveland Railway. He was educated at the Case School of Applied Science. He is survived by his widow and one child.

John Clark, for many years connected with the Seattle (Wash.) Electric Company, which is now controlled by the Puget Sound Traction, Light & Power Company, in various capacities with the railway department, and who rounded out a term of usefulness as one of the company welfare agents two years ago, died in Seattle on Nov. 1, at the age of seventy-two years. At the time of his retirement Mr. Clark was the oldest of the company employees. He is survived by his widow, a son, and three daughters.

Donald I. Hayworth, construction engineer for the Wichita Railroad & Light Company, Wichita, Kan., included in the Illinois Traction System, is dead. He succumbed to an attack of influenza. Mr. Hayworth was thirty years old. He has been with the railway at Wichita since 1907, having had charge of important construction work with the company, and also being called to advise the city on engineering matters. He was born in Garden Plain. After graduating from the Wichita High School he attended the University of Kansas for two years, at the end of which time he entered the employ of the Wichita Railroad & Light Company. Mr. Hayworth is survived by his widow and two children.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Value of Supply Men's Service

Opportunity for Co-operation Between Salesman and Customers Never So Great as in These Times

A recent conference on sales methods as related to the electric railway executive brought out a number of points worth general consideration. In the present state of the equipment market service is a tremendous asset, both to the supply man and to the purchaser. Transportation companies are struggling against heavy odds and are obliged to economize to the limit in the purchase, storage and application of material. The utmost possible use must therefore be gotten out of equipment and accessories, and many practices must be temporarily approved that would not be sanctioned in ordinary times. The cordial co-operation of the sales representative in this work may seem like deliberately cutting down patronage when viewed from a restricted outlook, but in the long run it will pay liberal returns.

From service results the designer and the manufacturer receive invaluable data as to the fitness of their products for a particular installation, the opportunities for changing the amount of material or modifying its quality, and the possibilities of changing designs to permit output to be produced at a lower labor cost, with fewer processes, with shortened factory routine, or with substitute materials. Even though the present day gives comparatively little opportunity for a development work on the part of the designer, it does afford an extraordinary opportunity to study the behavior of supplies and equipment under conditions of stress.

At this conference it was made plain that the old days of basing sales on entertainment and influence are rapidly passing away. The busy railway executive whose duty it is to pass upon the ultimate necessity for material or equipment purchases prefers to assign a stated time for discussing the problem in hand, by appointment or otherwise, with each responsible bidder separately.

In view of the difficulties now experienced by many purchasers in securing deliveries, the sales representative finds himself in a position of unusual authority in many cases, compared with peace times. To many men in the trade, it is most unsatisfactory to be obliged to spend so much time in trying to hasten production, explain failures to complete orders on time, follow up shipment delays, and in general to act as a pacifier among customers. The relations between buyer and seller to-day in the electric railway field afford an opportunity for sympathetic co-operation which could never have been so quickly developed before the war, and which augur more than well for the future relationships of the consumer and the trade representative who strives to be of maximum service in these great and momentous years.

Electric Railway Market Quiet

Supply Men Feel that Lower Prices Are Necessary to Stimulate Purchasing

The market conditions at present for electric railway equipment are exceedingly quiet and for the time being at least there does not seem to be much probability of any immediate betterment. Stocks on hand are limited and orders few and scattered.

Public utilities are not at this time in the market for new supplies in any quantity, and although there is a disposition shown by some of the largest trolley lines, both here and in other cities, to shop around for future requirements, no actual buying except "hand to mouth" is going on to-day.

One of the largest producers of electric railway motors stated that as far as he knew there was no actual demand and in his opinion the outlook for the future was problematical. In this particular company 1918 railway sales are running about 80 per cent behind those of 1917.

The Housing Corporation and the Emergency Fleet Corporation have done some buying, but as far as can be learned this is now over and inquiries which they had in the market for rolling stock have been cancelled.

Prices are stationary. However, as a straw showing the way the wind blows, it was learned this week that a decision to advance the price of a well-known line of gears and pinions on Jan. 1 has been withdrawn.

Supply men, who have been interviewed, are generally of the opinion that electric railways will still hesitate to purchase at these high prices. Business can be stimulated, it is held, only by lower prices. In view of the fact that the roads have not purchased for so long because of high prices of materials and money it hardly seems logical to suppose that they will come into the market now when both commodities are so extremely high.

Standard T and Girder Rails Still Scarce

Possibility of Small Supply of Former After Jan. 1, But Girder Supply Still Uncertain

An investigation made this week by a representative of the ELECTRIC RAILWAY JOURNAL into the market for rails disclosed no change so far. For the time being the situation is entirely under the control of the War Industries Board. Producers of both standard T and girder rails are still working to capacity but on war contracts for sheet steel. This condition, it is understood, will continue until a large reserve supply is built up.

Some rail rolling is going on but the output is immediately allocated by the War Industries Board to France where enormous quantities are needed for rebuilding and constructing new lines for army communication purposes. Practically all the railroads of Belgium and France will have to be retracked and this work must be done immediately in order that the transportation of all kinds of supplies may be rushed through to the allied armies and for other purposes. Captain O. E. Dulieux of the French High Commission stated on Wednesday that immediate French requirements in the steel line, including rails, are 8,000,000 tons. The exports of rail from the port of New York for the month of September amounted to $892,944.

Electric traction systems have needed quantities of rail for some time. At no time in the history of the industry have cars been operated over rails in such a poor condition. Repairs and makeshifts have been made repeatedly. It has virtually been impossible for most roads to get new rails. Nor do the conditions reported this week seem such that any relief will be found at least before the first of the new year.

Unfilled orders from electric roads for rails extend as far back as 1916. The producers' order books are in the hands of the War Industries Board and if the local situation is serious enough to demand immediate attention then a sufficient shipment of rails to cover immediate requirements will be made.

In speaking to a representative of the ELECTRIC RAILWAY JOURNAL this week an official of one of the largest rail producers voiced the opinion that a small tonnage of standard T rails could be supplied for domestic needs after Jan. 1, but that the situation in girder rails was so uncertain that no idea could be given as to delivery date.

Westinghouse Air Brake Business

Unfilled Orders on Nov. 1 Approximated $11,000,000—Current Shipments Largest on Record

In view of the fact that the change in the fiscal year of the Westinghouse Air Brake Company has postponed until March the issue of the annual report and accompanying financial statements which have heretofore been made public in October, the company has thought it proper to advise stockholders in general terms of the present condition and future outlook of the company's business. This action, the company feels, seems especially pertinent since there is now more or less uncertainty as to the probable effect of the armistice upon the prospects of the larger manufacturing concerns.

Contrary, perhaps, to the general opinion, it is pointed out the company is not now engaged in the execution of any contract or contracts involving munitions or other products used directly or solely for war purposes. The brake equipments and draft-gear now being supplied for application to the cars and locomotives ordered by the United States Railroad Administration include a relatively small number originally intended for use on American lines in France, but the demand for additional locomotives and cars for use in the United States is so great and so insistent that even if the United States government should for any reason decide not to ship additional locomotives and cars to France, there is no doubt, the company feels, that the entire number of equipments on order will be required in the United States as promptly as they can be produced. Again, there is no doubt in the minds of the company's officers but that the assistance that the United States must lend in the rehabilitation of Belgium and France will continue the increasing demand for additional transportation facilities in this country, so that there is no reason to anticipate any reduction in the volume of brake business during 1919.

AIR-BRAKE SHIPMENTS LARGEST ON RECORD

Current monthly shipments of air-brake material and accessories exceed in value the shipments of any corresponding period in the history of the company, and the value of unfilled orders on Nov. 1, 1918, approximated $11.000,000.

The same statements apply with equal force to the signal business of the Union Switch & Signal Company, which promises to show unusually favorable figures for the fiscal year ending Dec. 31, 1918, with every prospect of their continuance through the year 1919. The war work of that company, it is stated, which has been handled with distinguished success and without any interference with normal activities, will bring the net earnings for the year 1918 much beyond any previously reported for a similar period. The Switch company's principal contract with the United States government is nearing completion, and the supplementary contracts on which work has been commenced can be cancelled without loss, if the government so elects.

And finally the report concludes with the statement that the business of the company's other subsidiary and associated companies, the National Brake & Electric Company of Milwaukee, the American Brake Company of St. Louis, and the Locomotive Stoker Company of Pittsburgh, has been and continues to be extremely satisfactory.

Work of Fuel Control to Continue

Only Such Activities as Become Unnecessary Under Armistice Conditions to Be Relinquished

The United States Fuel Administration, which will be terminated automatically upon proclamation of peace, will pursue its course with that end in view, relinquishing its various activities as they become unnecessary under armistice conditions, and continuing to function where its services still are required, it was announced on Tuesday in response to inquiries.

Reports of immediate and wholesale dissolution were said to be without foundation. Various subdivisions already are in process of winding up their duties. The mine track committee, and some other sections including several from the oil division, have been released at their request from further service, because the work which they undertook to do has been done.

Whatever machinery is necessary to the continuation of the full discharge of the duties of the administration will be retained until these duties are discharged or until the administration is relieved of them, and continuation of the larger activities of the administration through the winter was said to be the present prospect. The vigorous and careful supervision of anthracite coal was cited as an instance of the kind of work which still must be done.

The proper administration of the zoning system, under which millions of car-miles of haulage were saved and the supply of coal was correspondingly increased, was mentioned as another of the sort of duties which the administration cannot abandon forthwith, and which it will carry forward.

The United States Fuel Administration has not relaxed in any degree its vigorous dealing with mine operators who willfully ignore the regulations laid down for the careful preparation of coal to free it from impurities before placing it on the market for consumers.

Since the Fuel Administration placed the ban on "dirty" coal, a total of 119 mines have been shut down. Of this number twelve have received permission to resume.

Manufacturers May Solicit Business of Any Kind

Qualifications According to Which Producers Are Partially Released from their War Conservation Pledge

A report by the electrical and power equipment section of the War Industries Board dated Nov. 14 and just made public makes a complete statement of the situation as it now exists in regard to priorities and restrictions. This section has been handling stokers, boilers, piping and fittings, engines, compressors, motors, dynamos, supplies, etc.

Its statement says that producers are partially released from their pledges according to the following qualifications:

STATEMENT ISSUED BY BOARD

"(a) In accepting orders of the class heretofore forbidden under this voluntary agreement, such acceptances should be subject to prior delivery of what is essential to that part of our war program which will be carried out, and should also be accepted for secondary consideration as compared with demands incident to reconstruction, which will probably shortly commence to appear. It is due to this last possibility from the point of view of the Allies that the War Industries Board is still holding some measure of restriction on the curtailed industries, and, still further, we may hold some restraint until not only the demands for reconstruction from the Allies can be obtained, but until we can also coordinate the relations between dovetailed industries, if it should be found necessary.

"(b) Restrictions in output were placed upon certain branches and commodities. If the curtailment was 20 per cent, it is now released to 10 per cent; if it was 40 per cent, it is now released to 20 per cent. You are authorized, therefore, to accept orders even on the curtailed industries, though they may be of an entirely non-essential character, up to that basis.

DELIVERIES STILL RESTRICTED

"(c) Delivery, however, must for the present be restricted to such orders (1) as are covered by specific or automatic priorities; (2) as are authorized by circulars or permits as have heretofore been issued by the Priorities Division; (3) as may be authorized by circulars or permits issued hereafter by the Priorities Division, such as Circular No. 57 inclosed herewith; (4) or for purposes or firms embraced within Preference List No. 2.

"We suggest that it is perfectly proper for you to solicit business of any and all classes subject only to reservation that you are not as yet advised as to when production may be undertaken. It is expected that further suggestions or releases will be offered quickly. If so, we will undertake prompt advices, which is one of the purposes of this series of bulletins."

Franchises

Binghamton, N. Y.—The Binghamton Railway has asked the Fenton Town Board for a franchise to construct a line beginning at the northern line of the village of Port Dickinson, through Fenton to the Hires plant at Hiresville.

Lancaster, N. Y.—William B. Cutter, as receiver for the Buffalo & Depew Railway, has made application to the town board of Lancaster for permission to construct a single-track line in Ellicott Avenue, a distance of approximately 0.6 mile. This addition to the Buffalo & Depew Railway is authorized by the United States Housing Corporation of the Bureau of Industrial Housing and Transportation of the Federal Department of Labor. The government is financing the construction of the line. There is no objection to the proposed franchise on the part of the town authorities.

Track and Roadway

San Diego (Cal.) Electric Railway.—It is reported that work has been begun on the construction of an extension to the concrete shipbuilding plant. It is estimated that the cost of the extension will be about $57,000.

Valdosta (Ga.) Street Railway.—The extension of the Valdosta Street Railway along Forest Street to the new fair grounds has been completed and operation begun.

Kankakee & Urbana Traction Company, Urbana, Ill.—An order has been issued by the Illinois Public Utilities Commission authorizing the Illinois Central Railroad to cross at a grade the tracks of the Kankakee & Urbana Traction Company near Chanute Field, Rantoul, Ill., for its extension to Chanute Field.

New York Municipal Railway, Brooklyn, N. Y.—Travis H. Whitney, of the Public Service Commission, for the First District of New York, announced recently that, owing to the end of hostilities in Europe, much of the work on the dual rapid transit system, temporarily held up by the demand for war materials, may now go forward rapidly. The work thus released will amount to $25,000,000. In October, 1917, the Priorities Committee agreed to grant certificates for dual contract work except for the Westchester Avenue elevated line, in the Bronx, the Livonia Avenue elevated line in Brooklyn; the Nassau Street subway, in Manhattan; the Queensboro subway extension to Times Square, and for four car storage yards. It is now expected that this work will proceed without hindrance from the government.

Western New York & Pennsylvania Company, Olean, N. Y.—The Western New York & Pennsylvania Traction Company has filed a petition with the Public Service Commission for the Second District of New York, asking for a determination of how an additional main track, now under construction, shall cross a highway 12,790 ft. north of the Panama Station in Sherman Township, Chautauqua County. The company asks that the new track shall cross the highway overhead. There is now one main track across the highway at grade, and a siding, while not crossing the highway, projects into it a short distance at grade. It is proposed to change the present main track from grade to overhead. The petition also asks for a determination that public safety requires the track crossing should be an overhead one, the tracks carried on a bridge over the railroad and an adjacent creek. Immediate action will be taken upon the petition by the commission.

Cincinnati (Ohio) Traction Company.—Street Railroad Director C. W. Culkins of Cincinnati has outlined a number of improvements which the Cincinnati Traction Company is expected to make, following the removal of limitations as to expenditure of money for building and improving railroads and the expected increase in man power due to the release of many young men from military service. Among other things under consideration is the construction of an outside belt line connecting the East End, Hyde Park, Oakley, Norwood, Winton Place and the Spring Grove Avenue district. Work on the extension of the Warsaw Avenue, North Norwood, Sixth Street and McMicken-Main lines will be begun soon. New track will be laid on other lines on which work was held up by war restrictions. Improvements are also to be made in the transmission system which will insure additional power on some of the longer lines.

Cleveland (Ohio) Railway.—John J. Stanley, president of the Cleveland Railway, stated to the ELECTRIC RAILWAY JOUNRAL correspondent that the company is ready now to proceed with its program of improvement, which was made before the entrance of this country into the conflict and delayed by the government's policy of spending as little money as possible in that way while heavy drafts were being made for war funds. The company had the money to make the proposed improvements and part of it is now invested in Liberty Bonds. The plans contemplate largely improvements in tracks and the complete renewal of some of them. Some time ago work was resumed on the new tracks in East Cleveland and it is hoped to have them completed within a short time.

Dallas (Tex.) Railway.—Work on the Second Avenue extension of the Dallas Railway has been completed and operation of the line will be begun shortly.

Seattle (Wash.) Municipal Railway.—Work on the municipal elevated railway in Seattle is proceeding rapidly, and the city will shortly call for bids for the necessary construction work at each end of the road. Preliminary plans are now being prepared by Structural Engineer F. A. Rapp of the city engineer's staff, covering the construction of the elevated trestle on the west side of the west waterway, where it will turn south. At the point where the turn south starts, a trestle will continue 700 ft. west and then drop to the surface level of the Puget Sound Traction tracks on a 6 per cent grade. Bids on the trestle work west of the bridge will be called for by the city in a few weeks.

Tacoma (Wash.) Municipal Railway.—City Engineer Manley is completing plans for the double-tracking of the municipal tideflats car line, so that bids may be asked for next week. The work is estimated to cost $250,000 and will include two loading platform stations on Tenth and A Streets. To carry the increased trackage across the viaduct spanning the Milwaukee yards, two 52-ft. and five 42-ft. spans will be put in, and the easterly incline on the north side will be widened for another track. Over the Wapato waterway, two trusses about 600 ft. long will replace the bridge now spanning the creek.

Power Houses, Shops and Buildings

Montgomery Light & Traction Company, Montgomery, Ala.—It is reported that the Montgomery Light & Traction Company will build a new electric lighting plant at a cost of $250,000.

Shore Line Electric Railway, Norwich, Conn.—The Shore Line Electric Railway has petitioned the War Department for permission to erect a high-tension electric transmission line across Winthrop Cove and the railroad bridge.

Winona Interurban Railway, Warsaw, Ind.—New coal-handling devices are being placed in the main power station of the Winona Interurban Railway at Winona Lake, Ind., which will deliver coal into stoker hoppers.

Atlantic Coast Electric Railway, Asbury Park, N. J.—Improvements have recently been completed by the Atlantic Coast Electric Railway in the boiler equipment at its plant to increase the capacity. It is understood that a quantity of new electrical equipment will also be installed.

Toronto & York Radial Railway, Toronto, Ont.—The construction of a small carhouse for its Scarboro division is contemplated by the Toronto & York Radial Railway.

Pennsylvania Railroad, Philadelphia, Pa.—Plans are being made by the Pennsylvania Railroad to enlarge its shops at Altoona and Juniata, for which authorization has been received from the United States Railroad Administration. The plans provide for additional electric and steam power for both the Altoona and Juniata shops, and new equipment to be purchased will include turbines, rotaries, transformers, switches and transmission lines. New stokers will be installed under the present boilers at the Altoona machine shop. An extension, 240 ft., will be built to the Juniata erecting shop, and other changes will be made to increase the output of locomotives. The cost of the work is estimated at $2,000,000.

Virginia Railway & Power Company, Richmond, Va.—A new battery of boilers has been ordered by the Virginia Railway & Power Company for its Reeves Street power plant and it is expected that they will be delivered by Jan. 1. When they have been installed the capacity of the plant will be increased more than 30 per cent.

Rolling Stock

Grays Harbor Railway & Light Company, Aberdeen, Wash., has recently received and put into operation six new Birney safety cars.

Cincinnati (Ohio) Traction Company will probably remodel about 150 of the present double-truck cars into prepayment cars with increased seating capacity. C. W. Culkins, street railway director, Cincinnati, hopes to see lighter cars with larger seating capacity put in service. Plans for such a car are now under consideration.

Newport News & Hampton Railway, Gas & Electric Company, Hampton, Va., furnishes the following equipment memorandum on the ten cars which were mentioned in this section of the ELECTRIC RAILWAY JOURNAL for Oct. 19.

Number of cars ordered	10
Name of road	Newport News & Hampton Railway, Gas & Electric Co.
Date order was placed	Oct. 15
Date of delivery	March, 1919
Builder of car body	J. G. Brill Co.
Type of car	Semi-convertible
Seating capacity	52
Weight:	
Car body	21,000 lb.
Trucks	12,000 lb.
Equipment	11,000 lb.
Total	44,000 lb.
Bolster centers, length	21 ft. 6 in.
Length over all	46 ft. 0 in.
Truck, wheelbase	4 ft. 6 in.
Width over all	8 ft. 5 in.
Height, rail to trolley base	11 ft. 9 in.
Body	Semi-steel
Interior trim	Cherry
Headlining	Agasote
Roof	Monitor
Air brakes	Westinghouse S. M. E.
Bumpers	Brill
Car signal system	Faraday
Center and side bearings	Hartmans center bearings, Perry side bearings
Control	P. C.
Couplers	Tomlinson
Curtain fixtures	Curtain Supply Co.
Curtain material	Pantasote
Designation signs	Hunter
Door-operating mechanism	Brill
Fenders or wheelguards	H. B. lifeguards
Gear and pinions	G. E. heat treated
Hand brakes	Ackley
Heater equipment	Consolidated
Headlights	Golden Glow
Journal boxes	Brill
Lightning arresters	Westinghouse K3
Motors	Quad. G. E. 247, outside hung
Registers	Ohmer
Sanders	Ohio Brass
Sash fixtures	Brill
Seats	Brill
Seating material	Cherry slat seats
Slack adjuster	American
Step treads	Universal
Trolley catchers or retrievers	Ohio Brass catcher
Trolley base	Ohio Brass
Trolley wheels or shoes	Kalamazoo wheels
Trucks	Brill 76 E
Wheels	33 in. cast iron

Trade Notes

C. R. Horrell, who was formerly with Electric Appliance Company at Chicago, has been made assistant sales manager of the Sangamo Electric Company, Springfield, Ill.

J. W. Weinland, formerly district engineer at Chicago for the Liberty Steel Products Company, has been appointed assistant to the president of the company and will be located at the general offices in the Woolworth Building, New York City. S. W. Midgley, formerly in charge of railroad sales at Chicago, has been appointed Chicago district manager of the company, with offices in the McCormick Building.

New Advertising Literature

Allis-Chalmers Manufacturing Company, Milwaukee, Wis.: Folder descriptive of type C engineers' valve for air brakes. This valve employs poppet valves in place of the metal-sliding seats with ground joints generally used. A number of advantages are claimed.

Austin Company, Cleveland, Ohio: Folder descriptive of standard wood buildings. So long as the steel shortage exists, the company explains that other equally serviceable building materials must be utilized, and it has prepared a series of ten designs for wood construction for manufacturing purposes and repair shops.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, November 30, 1918 *Number 22*

This Conference Should Help the Electric Railways

THE conference at Atlantic City next week of representatives of the nation's industries to consider reconstruction problems promises to be of as much interest to public utilities as to manufacturers. It is true that the reconstruction problems of the electric railways, at least superficially, are different from those of most manufacturers. Thus, the electric railways have no partially-filled government orders for material; they are not looking forward to export business; tariff questions do not affect them directly, and they are not worrying greatly about possible increases in the excess profits tax.

Nevertheless, electric railways are concerned with a number of the questions to be considered in any plans for the reconstruction or readjustment of our nation's industries as a result of the termination of the war—for example, the future of some of the war agencies which the government established during the war period, such as the War Industries Board, the War Labor Board and the Capital Issues Committee. Electric railways are also interested directly as well as indirectly in the conditions under which the labor market will be brought from a war to a peace basis as well as the conditions under which prices will be determined for steel, copper, coal and other like materials. For this reason, it is very important that any plans for reconstruction of our industries should include plans by which the electric railways of the country may be put on a fundamentally sound basis for operation and development, and we hope that the industry will be well represented at the Atlantic City convention.

Municipal Threats Constitute a Cost of Service

IT IS a lamentable state of mind for electric railway investors to be in—to desire security of principal and stability of income, and at the same time to be kept constantly aware of conditions which threaten both these requisites of a sound investment. The public, however, is in a worse state, for it does not sufficiently realize how much it is hurting itself by causing the existence of such conditions.

"Menace in itself is a cost of service." Thus the idea is succinctly phrased by the public service securities committee of the Investment Bankers Association of America, in an interim report noted elsewhere. The imposition of inequitable tax burdens, attacks by municipal demagogs, interference with business-like operation, reluctance of commissions to meet the rate situation squarely, a foolish effort on the part of cities to depreciate utility values—all these constitute a menace for which the investor requires the public to foot the bill.

How? First, because the only way the investor, in the presence of such risks, can be attracted to support even in a halting fashion the maintenance and development of a railway is through the payment of high rates on his loans. Second, because the payment of these high rates in itself is bound in time to restrict the utility service to the community if the public threats continue, for it will be increasingly difficult for the public to provide the receipts necessary to yield the large returns required on new investments.

Hence the more the public menaces railway prosperity, the more the public must pay for railway growth and the less likely the railway will be allowed to expand as it should. If the public wants to keep fares down and improve service, let it show an inclination to guard legitimate utility investments and prevent the imposition of unfair restrictions and burdens. A policy of fair dealing is the only one that pays in the end.

Putting the Safety Idea Into Tangible Form

THE men in attendance at the fall meeting of the Central Electric Railway Association at Indianapolis last week expressed themselves as greatly pleased by the graphic way in which R. N. Hemming, of Fort Wayne, Ind., put the idea of safety. In his accident-prevention work Mr. Hemming finds that the term "safety first" is pretty much played out and that there is need for new and striking methods if conviction as to the necessity for carefulness is to be maintained and intensified.

To apply this principle he adopted a number of ideas presented at the recent National Safety Congress and others developed in different parts of the country, producing the allegory of the "grim reaper," the premier appearance of which was made at the Indianapolis meeting as mentioned last week. In spite of the novelty of the performance it was given and witnessed in all seriousness due to the earnestness of the performers. It will soon be familiar to the general public served by the lines of the Fort Wayne & Northern Indiana Traction Company.

There is one important factor in the accident reduction movement, namely, that it is difficult to make the idea interesting unless those back of the movement are enthusiastic and are willing to exert constant effort to adapt themselves to the audiences which they desire to reach. No perfunctory work in this line will "get across." The statistics of accident casualties are startling enough, and it is easy to convince people that casualties can be reduced. But it is difficult to enlist the active personal co-operation of the individual in promoting his own and his neighbor's physical safety. Everybody seems willing, personally, to take a chance, many seem even to enjoy it. For this reason the best of talent must be employed. It is true also that electric railways are on the whole quite safely operated. They must, however, take a leading place in the movement because they occupy a conspicuous place in the community and because the inculcation of general carefulness will react favorably on their own casualty records.

Straight-to-the-Point Advice to the Interurbans

THE interurban electric railways of the United States have indeed, as Mr. Laney told the C. E. R. A. convention last week, been asleep at the switch as far as freight traffic is concerned. While there is doubtless ground for differences of opinion as to the extent to which motor trucks have already captured all the available business, no one can well dissent from the proposition that the interurban lines have seriously neglected the development of freight traffic. They taught the public the value of service, but they applied the lesson almost exclusively to passenger traffic.

In urging the railways to make up for past inaction, Mr. Laney made concrete suggestions of two general sorts. One set had to do with the electric lines; the other concerned the motor trucks. In the first instance, he advised the railways, for example, to stop consoling themselves with the belief that the motor trucks will not survive on account of the absence of return loads and the heavy operating expenses. This is sound commonsense. Motor-truck operators are not wasting time in saying that return loads cannot be secured—they are going after them with enthusiasm. As for the expenses, these are undoubtedly heavy, but electric railway officials, of all people, should know that in the early stages of any common carrier the experimenters are not deterred by poor results from trying to work out the proper line of development for their industry.

Furthermore, Mr. Laney suggested that the interurban railways put more life into their traffic departments, find out why motor-truck transportation makes an appeal in their territories and apply a consistent remedy. If motor people by an aggressive campaign are "selling" the idea of their service to the public, only one course lies open to the railways—they must employ similar methods. The merchant who merely condemns the other man for advertising is committing business suicide.

The second set of suggestions was based on the premise that the motor truck is to continue in existence. This is admitted. We have said repeatedly that the motor-truck industry has a field for real service in handling drayage and short-haul traffic and that such service need not and should not mean competition with electric lines. In justice to all parties, however, the motor trucks should be regulated so as to prevent rate discriminations and excessive road wear, and they should be required to contribute toward highway maintenance. An energetic, organized effort should be made to accomplish these ends. Destructive competition between public servants would be the height of folly in these days of national reconstruction.

Does Cold Weather Increase the Drag on the Power House?

WE HAVE ALWAYS thought that there was a relation between the energy consumption of the motors of a car and the weather, but our thought has been as much a happy guess resulting from qualitative observations as a scientific opinion based on actual figures. The article by M. B. Rosevear, published elsewhere in this issue, presents some interesting information regarding the matter.

From many years it has been standard steam railway practice to decrease, in winter time, the tonnage ratings of the locomotives by a certain percentage, the actual decrease depending on the locality. But in spite of several elaborate tests there has always been more or less dispute as to how much of this decrease is chargeable to lowered locomotive efficiency and how much to increased train resistance. At any rate, no good steam railway man would think of using "summer oil" in the winter time. Electric railway men who have had anything to do with the experimental determination of the train resistance of electric cars have also noted a decrease in the train resistance as the bearings warmed up, and, in some instances for certain equipments and conditions, this decrease has been determined with a fair degree of accuracy. Mr. Rosevear's article, however, is the first that has come to our attention of a "system" study of the question based on data accumulated through a long period of operation.

It is interesting to analyze a little further some of the data presented. For example, since the power-saving campaign of the Public Service Railway had not yet been started in 1917, let us compare the average energy consumption for the winter and summer condition of that year. The figures for the coldest and warmest months are 4.54 and 3.54 kw.-hr. per car-mile respectively. This gives as the difference in energy consumption for the two months 1 kw.-hr. per car-mile. If we take the average figure for heater input as 6.6 kw. and the schedule speed 9.3 miles per hour, and if we consider that only 30 per cent of the cars have electric heaters, the average energy consumption for the heaters is found to be 0.2 kw.-hr. per car-mile. Subtracting this from the 1 kw.-hr. per car-mile gives 0.8 kw.-hr. per car-mile for the increase in energy due to the increased train resistance. With the monthly car mileage of the system averaging, in round figures, 4,500,000, the average car-miles per hour are 6250 and the average increase in the power demand during the winter month over that of the summer month is 5000 kw.

In this analysis the increased energy consumption of the car lights in winter over that in summer has been neglected. A little consideration of the subject, however, shows that this increase, when expressed on a car-mileage basis, is so small as not to affect the results seriously. The increased train resistance in main part is probably due to two things, increased bearing friction and the effect of snow, ice, etc., on the rail. The influence of the latter effect, while very important at times, hardly seems to be the dominating factor, since even in the summer time the energy consumption is sensitive to temperature changes. At any rate, the increased power demand is rather startling. What does it tell us? If nothing more, it emphasizes that possibilities still unutilized lie in the fields of scientific lubrication and "frictionless" bearings.

Chicago Riders Are Now Paying Higher Fares

WITH a 6-cent fare in effect on the elevated roads and a petition pending for a 7-cent fare for the surface lines, the people of Chicago have suddenly been brought face to face with the consequences of their recent vote rejecting the proposed traction ordinance. They are not so sure now that the politicians and fanatics who persuaded them to vote against the measure were talking in the interest of the car patrons. The newspapers are pointing out that while fares might have been raised under the proposed franchise, the passenger would have received immensely better service for his money.

It appears that the average Chicagoan was not aware that in more than 300 cities street car rides now cost more than they did. It was a rude shock to him when, two weeks after election day, the announcement was made that the Public Utilities Commission of Illinois had authorized a 6-cent fare for the elevated roads and that further investigation might lead to a higher rate. It was still more distressing when the surface lines management filed its petition for a 7-cent fare. The politicians got busy with excuses and plans of reprisal. There was talk of injunction and mandamus and forfeiture of franchise. Meanwhile the patrons of the elevated lines were digging down into their jeans for that extra penny.

As we pointed out in a recent editorial, the people of Chicago have had their choice. They allowed the politicians to hoodwink them, and they have passed up an assurance of substantial benefits which would accrue through unified operation and the construction of rapid transit lines. If the ordinance were now in effect there would be a good prospect of lowering the fare through the economies of single management. The people would have gained control over all the traction lines. They would have had a voice in the regulation of fares and service. Now this is left to the members of the State commission.

Chicago is the largest city which has thus far been given relief in the way of a fare advance. True, the increase was not as much as the elevated management asked for, and if there is much diversion of traffic to the competitive system the extra fare will undoubtedly fall short of its purpose. There is encouragement, however, in the announcement that the State commission will make such further change in rates as circumstances may warrant. There is significance also in the statement that war conditions constituted the reason for the order for increased fare. These conditions apply to the surface lines in Chicago to at least the same degree, because both companies were hard hit by the wage awards of the War Labor Board. It is probably only a matter of weeks, therefore, until the commission will rule that a uniform rate shall be put in force throughout the city.

Another feature of the award which is causing comment is the fact that the Illinois commission does not feel itself bound by the fact that a 5-cent fare had previously been fixed by franchise agreement between the companies and the city. Interesting developments may arise from the Chicago situation. The people recently voted against paving the way for home rule. It remains to be seen whether the payment of a higher fare will cause them to change their minds if another opportunity is given for service at cost under a board of public trustees.

A Case Where Arithmetic Won't Solve the Problem

THE human element, after all, is a strange factor to reckon with. This is the conclusion one must reach after studying the exhibits filed in a recent rate hearing in support of the company's contention that a considerable loss in traffic must result from the establishment of a higher rate of fare. Another conclusion that is apt to develop is that experience alone will show the effect on riding of such an increase.

The futility of such estimates is clearly illustrated in the comparison of returns from two cities of practically the same population and served by the same electric railway management. The company in both these localities was permitted to charge 6 cents per ride, the previous rate in City A having been six tickets for a quarter and in City B seven tickets for a quarter. It was estimated in view of these different conditions that City A would have a theoretical increase in revenue of 30 per cent and City B about 35 per cent. As a matter of fact the revenue for the first two months showed an average increase of 25 per cent in City A and only 8 per cent in City B.

The reason was easily discovered. The town which made the poorer showing was one which had for some time sold reduced-rate tickets for workmen during certain hours. These were valid during the noon-day peak and the workmen were in the habit of going home for their lunches. Immediately the uniform rate was fixed at 6 cents per ride, this mid-day travel began to fall off, with the result that the company gained only about one-fourth of the amount which would have been added to its revenues if the same number of persons continued to ride at the new rate. In the other city there was only a slight reduction in traffic, showing that the people did not like the walking habit so much as to adopt it generally because of a slight increase in the carfare.

Looking over returns of this sort from various companies one is surprised to find such a wide variety of results. A company which has in sight a possible gain of 40 per cent in revenue from a 7-cent fare gets anywhere from 8 to 25 per cent. Other properties with a theoretical increase of 20 per cent from a 6-cent fare are benefited to the extent of 5 to 16 per cent.

Reports of this kind still have a value, however, as exhibits in rate cases. They show to what extent a fare may be raised without affecting the traffic too seriously. It must be taken for granted that any increase in the fare—be it only the fraction of a cent—will cause some patrons to cut out unnecessary riding. The rate finally determined upon should be a figure which is most likely to give a net return sufficient for the company to carry on its business. It would be a mistake for the utility to ask, or for the public authorities to allow a rate so high that business will be driven away forever. The people must not be forced into the walking habit, nor should encouragement be given to the jitneys for a revival of their competition.

Varied Program At C. E. R. A. Fall Meeting

Urgency of Need for Preparing to Handle More Freight and Express Business Emphasized in Discussion at Indianapolis, Nov. 21 and 22

As LAST week's issue of the ELECTRIC RAILWAY JOURNAL went to press 125 representatives of electric railways in the Middle West were meeting in Indianapolis, Ind., for the consideration of problems relating to the critical situation in which these railways find themselves. A telegraphic report of the Thursday session was given in the issue for Nov. 23. An abstract of the paper by A. Swartz, Toledo & Western Railroad, on "The Proper Basis for Interurban Fares" was also printed in that issue.

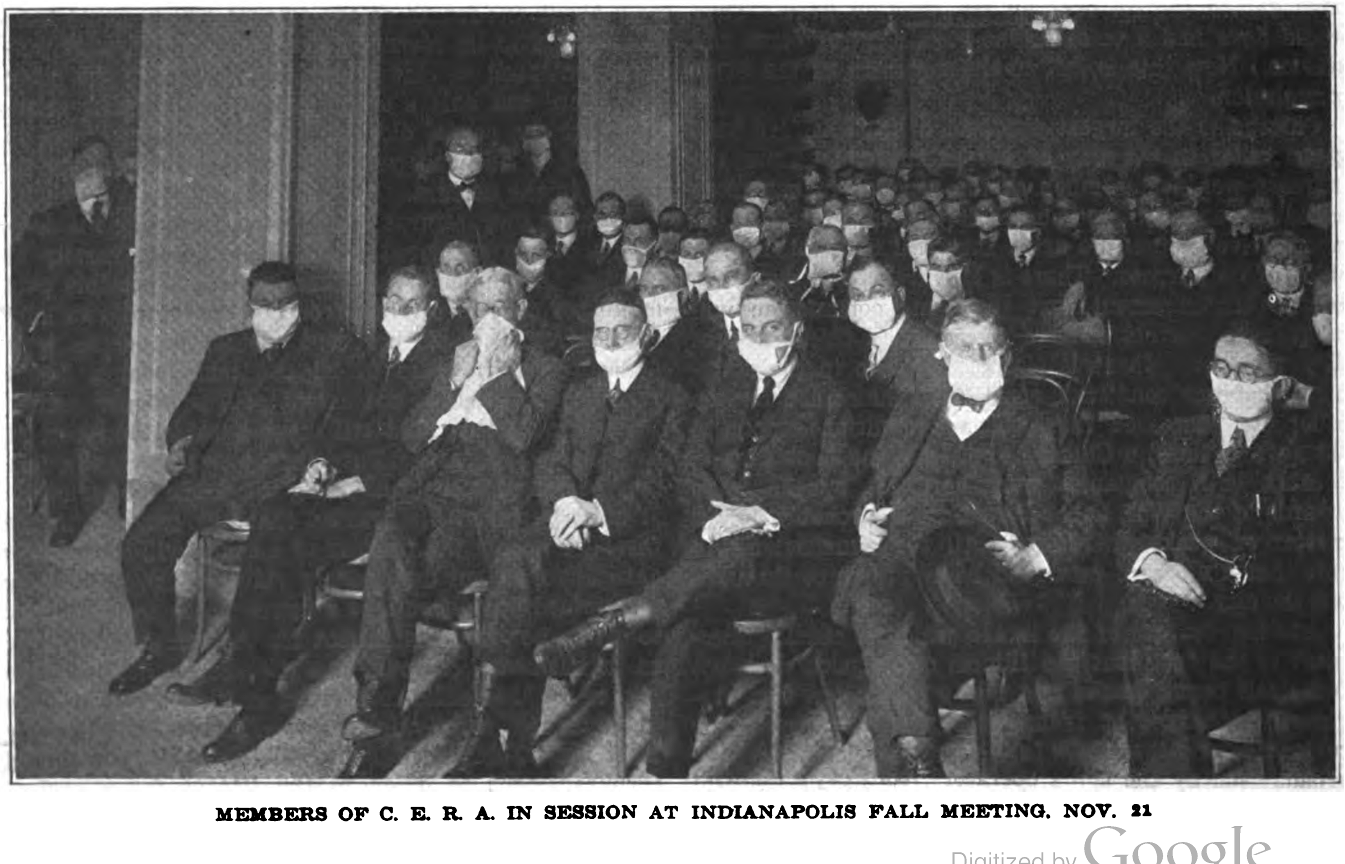
THE "GRIM REAPER" MAKES A HIT

As was mentioned briefly last week, a striking feature of the program on Thursday morning was an allegory of safety illustrated by the "grim reaper" and the "liberator." The appearance of these performers is shown in an accompanying illustration. The allegory was repeated in the evening before a large public audience in the local Keith Theater, when the railway men and guests were entertained by James H. Drew. The allegory was presented not only to impress on the men present the need for the preservation of humanity, serving thus as an introduction to R. N. Hemming's address on this subject, but to suggest the need for striking and original methods in safety campaigns.

THE LIBERATOR AND THE GRIM REAPER IN THE SAFETY ALLEGORY ARRANGED BY R. N. HEMMING

Mr. Hemming appears as the reaper, Miss Margaret Fry, of Fort Wayne, as the liberator.

In the allegory the "grim reaper," and grave-digger, appears at first alone and gloats over the rich harvest he is gathering. A bell tolled in the distance indicates some of his victims. "Taps" sounded on the trumpet also suggest to him the fact that the casualties of an accidental nature are more numerous than those of war. He goes on in this strain after the "liberator" arrives, but she finally vanquishes him when the world has been pledged to universal safety. The grim reaper then retires and the liberator tells at length what she, as universal safety, is doing for the world. The audience repeats a petition after the liberator in which life and strength to preserve mankind are prayed for.

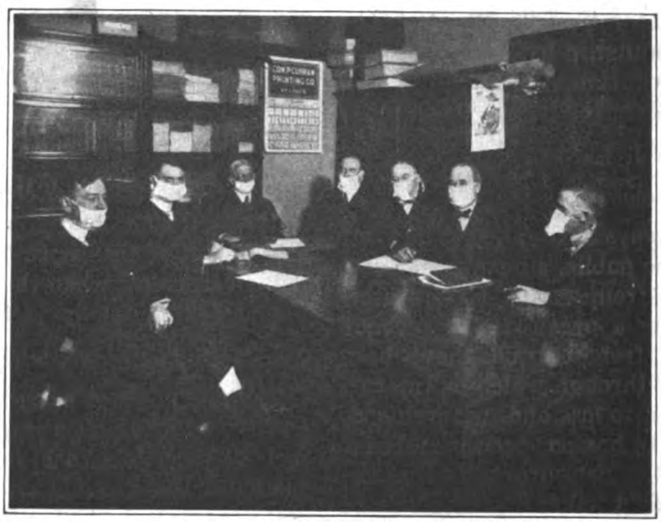


MEMBERS OF C. E. R. A. IN SESSION AT INDIANAPOLIS FALL MEETING, NOV. 21

Following the allegory Mr. Hemming gave a striking address on the ways in which the safety movement can best be furthered, as explained in last week's issue. The audience joined him in singing a song written by William Burgess, entitled "Safety Always," and sung to the tune of "Tramp, Tramp, Tramp."

TWO PAPERS READ AT FRIDAY'S SESSION

W. S. Rodger, Detroit United Railway, presided at the session on Friday morning. He announced that Charles L. Henry, Indianapolis & Cincinnati Traction Company, had been appointed chairman of the committee on readjustment problems, authorized at Thursday's session. The other members of the committee are A. C. Blinn, Northern Ohio Traction & Light Company, and Mr. Rodger. C. J. Laney, Union Traction Company of Indiana, then read the paper on "Interurban Freight and Motor-Truck Competition," which is abstracted elsewhere in this issue. The discussion on Mr. Laney's paper can be summarized by the statement that the motor truck is a serious competitor of the interurban. If, however, the latter will prepare itself to handle freight and express matter, and will go after the business, this business can be obtained at profitable rates. The discussion was opened by F. D. Norviel, Union Traction Company of Indiana, who introduced as exhibits a collection of newspaper clippings showing how the motor-truck owners are going after business. He also directed attention to a booklet issued by the National Automobile Chamber of Commerce, New York City, giving full information along this line. The topics covered in the booklet are: Services to be rendered, charges, sample cost sheet, survey of route, canvass of prospective customers, operating plans, advertising and general suggestions.



EXECUTIVE COMMITTEE C. E. R. A. IN SESSION AT INDIANAPOLIS NOV. 21

Mr. Norviel quoted from a well-known farm paper to show that the farmers realize the destructive effects of heavy trucking on fine roads. In Indiana the trucking business has not as yet been highly developed. The charges appear to be about 40 cents per mile for 1 ton, 60 cents for 2 tons and 70 cents for 3 tons, an average of about 50 cents per ton-mile. This corresponds to a rate of 9 cents on the interurbans. The speaker insisted that no other means of transportation in territory served by interurbans can approach them in efficiency and speed, hence duplication is a positive waste. The interurbans should make a strong effort to secure the business that rightfully belongs to them, carrying the fight "into the enemy's country" if necessary. The electric line buys its right-of-way, and pays for the construction and maintenance of the property and a just share of the taxes, while the taxpayers pay for the good roads used by the truck operators, who pay practically nothing toward their construction and maintenance.

Other contributors to the discussion on Mr. Laney's paper were Charles L. Henry; G. H. Kelsay and L. A Mitchell, both of the Union Traction Company of Indiana; A. B. Cole, Westinghouse Electric & Manufacturing Company; G. K. Jeffries, Terre Haute, Indianapolis & Eastern Traction Company; C. N. Wilcoxon, Chicago, Lake Shore & South Bend Railway. Mr. Henry advocated attention by the executive committee to the matter under discussion and pointed out that the abnormal conditions due to the war have favored the motor truck. The convenience of pick-up and delivery service and the lack of freight cars on steam roads have been factors. All that the electric lines want is their legitimate share of this business. Mr. Kelsay's point was that the farmers should be reached through their own mediums in an effort to show them the true economic condition involved in the competition under discussion. Mr. Mitchell suggested that the association should collate information on the cost of maintaining concrete and other roads in order that data may be available for use in publicity campaigns. Mr. Cole mentioned cases of excessive damage to roads by motor trucks and showed how inefficient their operation is in comparison with electric lines. As a typical illustration of what a railway can do, Mr. Jeffries explained how his company had built up a good business in handling live stock, for which the electric railway is well fitted. Mr. Wilcoxon put the whole matter "in a nutshell," in stating that electric railways must first get ready for the freight business and then, he feels sure, they can make money in handling it. He demonstrated this from the experience of his own company.

WHAT'S COMING AFTER THE WAR?

The second paper at the Friday session was read by the author, Harry Reid, Interstate Public Service Company. It is abstracted elsewhere. It was discussed principally by Arthur W. Brady, Union Traction Company of Indiana. He said that the point to impress upon all concerned with the welfare of electric railways is that, as shown by past experience in after-war periods the high level of prices will not immediately recede. The prevalence of an erroneous idea that immediately upon the conclusion of peace prices will be materially reduced, would be extremely unfortunate. Such emergency and temporary relief as has been granted must, therefore, be continued for some time.

OTHER ITEMS OF INTEREST

After adjournment of the meeting the executive committee held a second session and decided to appoint a committee on motor-truck competition. The personnel of the committee was not decided upon.

The executive committee announced that the annual meeting will be held at Detroit, Mich., on Feb. 27 and 28, 1919. A nominating committee, consisting of F. D. Carpenter, Western Ohio Railway; Charles L. Henry, Indianapolis & Cincinnati Traction Company; S. D. Hutchins, Westinghouse Traction Brake Company; W. H. Bloss, Ohio Brass Company, and W. S. Rodger, Detroit United Railway, was appointed.

The whole meeting was unique in that, due to the prevalence of Spanish influenza in Indianapolis, the attendants were required to wear gauze masks. The ELECTRIC RAILWAY JOURNAL therefore arranged to have both the executive committee and the Thursday gathering photographed with the result shown in the illustrations.

Interurbans Have Not Done Duty*

They Slumbered While Motor Trucks Went After the Freight—Real Salesmanship by Interurbans and Railway Reconstruction Are Among Essentials Now Needed

BY CHARLES J. LANEY
Traffic Manager Northern Ohio Traction & Light Company, Akron, Ohio

BECAUSE interurban railways have failed to do their duty to themselves and the public, a business of vast magnitude has slipped away from them. Every interurban line is to-day suffering a great loss in revenue because the possibilities of freight traffic have been overlooked. Every community through which an interurban line operates has been put to loss and inconvenience because an obvious public duty has not been performed.

Under the circumstances it is not surprising that the motor truck has entered the field, taken over the bulk of local freight business on the interurban lines and is now so intrenched that it will be difficult to dislodge it.

In a large sense the motor truck is not a competitor of the interurban. It is the other way round. We are turning our thoughts toward competing with the motor truck, which slipped in and captured the business while we slumbered.

WHY MOTOR TRUCK SERVICE WAS ESTABLISHED

Properly to diagnose the situation, we must first consider the causes. There are three good reasons for the establishment of motor-truck transporation.

1. *Failure of Interurban Lines to Establish Freight Service*

We taught the public the value of service, but we forgot to develop that service to the extent of public needs.

Motor-truck transportation had its start in territory served by interurban lines. These lines were built at a great cost. Rates were made very low and frequent service was established. Real estate developments in the suburbs were encouraged. Excursions were run at frequent intervals, and inter-community intercourse was encouraged in every possible way.

All this was done with the single idea of inducing people to ride. There was no thought of freight. We completely overlooked the fact that the farmer whom we induced to ride to the town would some day want to ship his produce and livestock to the same town; that he would welcome the service which would bring his clothing and groceries, his furniture and machinery to his farm. We were willing to sell him a ride, but we had no thought of carrying to him the things he needed in his daily life. The motor truck rolled in and solved his problem, because we had failed to do so. This service is expensive. It is inadequate. It can never be wholly satisfactory. But until the interurbans wake up, it will be accepted.

2. *Aggressive Sales Methods of Motor-Truck Manufacturers*

A traffic survey of motor trucks operating between two commercial centers of one of our states reveals the fact that motor trucks are being sold to individuals and companies on the installment plan, and the sales department of the manufacturer is guaranteeing the purchaser a certain amount of business with a particular truck. Automobile clubs and chambers of commerce have been influenced by the same source in an attempt to encourage local business men to divert their freight to certain truck owners.

Advertising, "Save a Freight Car for Uncle Sam," is appearing on all inter-city truck lines. This publicity makes it appear that it is a patriotic duty to use trucks as a means of transportation—the loss of man power to the government, when the interurbans are able to meet the condition, not being taken into consideration.

3. *Public Is Antagonistic to Utilities*

The campaign of hatred against public utilities which was inaugurated about twenty years ago has been a direct aid to motor-truck development. The justice or injustice of this attitude on the part of a great many people is immaterial. The fact that it exists is all that concerns us. The influence is great in encouraging truck transportation.

WHAT IS BEING ACCOMPLISHED BY MOTOR TRUCKS

A recent traffic check of the motor-truck business between two large commercial centers in one of our states shows that 340 tons of freight are being transported daily (including Sundays) by motor trucks. The trucks operated were of 1, 2, 3, 4 and 5-ton capacity. The average number of loaded trucks daily in one direction was forty and in the other direction forty-four, or eighty-four loaded trucks in both directions. The average load per truck was 4 tons. The average number of empty trucks operating (or those that did not have a return load) was nineteen in one direction and eleven in the other direction. Loaded trucks operating in both directions during the seven-day check numbered 592; empties, 213—or the empties were 26 per cent of the total in operation.

The schedule of rates which the truck companies attempt to maintain for the 35-mile haul is as follows: Under 1000-lb. shipment, 40 cents per hundredweight; from 1000 to 3000 lb., 35 cents per hundredweight, and over 3000 lb., 30 cents per hundredweight.

The service does not include pickup and delivery feature in both cities. Some of the companies maintain a central warehouse and only deliver to the consignee, and they pick up from the consignor when a full load obtains. The truck companies have no classification of commodities; nor are loss and damage claims collectible in most cases.

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*Abstract of paper presented at fall meeting Central Electric Railway Association, Indianapolis, Ind., on Nov. 21-22, 1918.

Motor-truck and motor-bus manufacturers have so efficiently spread the propaganda of carrying freight and passengers by motor methods that the public has been believing that it was a war measure to use their means of transportation. The fact is that it is an after-the-war consideration. When peace is finally adjusted there will be a vast number of unused and second-hand army trucks on the market, and the promotion of a gigantic truck transportation organization will be a factor in securing these trucks to flood the country with transportation means that will hinder the development of our resources. I have been advised that there is now a movement on foot to make motor-truck and motor-bus transportation a factor after the war, and auto manufacturers and rubber-tire industries are promoting an organization with that end in view.

Interurban lines, to a great extent, are at a standstill in making their freight service more attractive to the shippers. In the first place, they think that business in these abnormal times will come to them without solicitation, that they are getting the business that is due them and that any interruptions in the service can be blamed on war conditions. In the second place, they are increasing their passenger fares and cutting down their excellent service in order to increase their revenue and reduce their expenses—and the public is antagonistic. In the third place, trucks will not last long on account of the absence of return loads and the heavy expense the trucks are experiencing. The interurbans, when they first started to operate, did not know the cost per car-mile—so why blame the other fellow? When a truck operator ceases to exist other operators are ready to step in. The failure to meet these conditions is supporting the propaganda for motor-truck competition.

The Question of Road Destruction

Road destruction is the result of truck operation. The streets and country roads are being used without any cost whatever to the truck operators. There is not a road built that will stand the constant 5 and 6-ton truck traffic. The cost to the public to keep these roads in repair is enormous. The interurbans, where they parallel the country roads, are twice losers. As abutting property owners they are compelled to pay their proportion of the repairs and upkeep and, at the same time, are deprived of the business.

It is true that the farmer is probably at more expense for the upkeep of these roads than interurban lines, but truck propaganda concerning the advantages of a quick market for his produce is diverting the farmer's attention from present expenses to future possibilities.

Another factor is the attitude of the steam roads. The bitterness that existed against us when the steam roads were privately owned did not cease when the government took them over, and now it has developed into political propaganda.

During the past year we have been led to believe that interurban lines were a war necessity, and that on account of the congestion of the steam lines we could be of great aid transporting drafted men to the different cantonments and l.c.l. freight between commercial centers. We spent time and money preparing data without so much as "Thank you" for the efforts.

In a letter of Oct. 15 from Regional Director of Railroads A. H. Smith to the Federal Managers of Railroads of the Eastern region, he said:

> The railroads in this region have generally in effect tariffs on per ton per car basis for movement of freight from a point of origin to a destination within switching limits of the same city or between contiguous cities, which should be drayed. The enormous growth of traffic, particularly incident to war conditions, makes it imperatively necessary that railroad yards and motive power be relieved of this traffic. To accomplish this at once, please issue embargoes thereon . . . our idea being to eliminate this work as far as possible and, if necessary, have the business drayed under the direction of the Highways Transport Committee, Council of National Defense.

Here we see the effect of the propaganda which the motor-truck people have been feeding the public. Even these men who from training and experience should know the greater efficiency of electric transportation overlook it entirely.

Motor Trucks Should Be Regulated

A serious condition of motor-truck operation is that they are not recognized as a common carrier and are not under regulation. Too much leeway has been given this means of transportation. There are no laws governing them, so they are not disregarding any laws of commerce in rate discrimination. Truck companies contract for the transportation of factory products from one city to another and accept freight for a return load at "any old price." Interurban rates are governed by state authorities and, of course, do not get the business. The rate discrimination, the loss of fuel, the loss of man power to the government and the destruction of roads all require that motor-truck operation be controlled.

Moreover, road building on a large scale will be resumed early next spring and will arouse more active interest in truck transportation. The motor-truck manufacturers and sales managers will make the best possible use of this opportunity to spread their propaganda. It is our duty to ourselves and the public to see that the value of interurbans as freight carriers is made clear to the public at the same time. This will call for energetic organized effort.

Suggestions for the Wise

As a remedy for present ills I suggest to interurban lines the following:

Recognize your traffic department as one of the most important factors of your organization. It is your sales department. Organize that department so that your product, "service," can be made efficiently attractive to the public. Analyze the motor-truck operation in your territory, and apply a consistent remedy.

Influence your local authorities to have laws passed regulating the tonnage that trucks should be permitted to carry over the highways.

Motor trucks, where they operate for revenue, should be made common carriers and placed under the jurisdiction of the state commission.

For the maintenance of the highways over which the motor truck operates, a rental of a specified sum per ton-mile should be assessed.

Punch up your public relations department and have it snuggle up closer to the public. Tell the public the truth.

This is a period of reconstruction. Get busy!

The Interurban After the War*

Increase in Freight and Passenger Revenues and Careful Scrutiny of Operating Expenses Are the Only Means of Salvation

By Harry Reid

President Interstate Public Service Company, Louisville, Ky.

THE future, as we all know, is a mystery, and predictions are largely based upon what has transpired in the past. In our business we have no precedent to follow, as the first interurban was put into operation in 1885 and this business is, therefore, a comparatively modern development. History tells us, however, that after the Napoleonic wars twelve or fourteen years passed before prices returned to normal and following our own Civil War a period of five years elapsed.

To my mind there are three factors which have saved the interurban from going on the financial rocks during the last eighteen months: First, the increased rates which have been granted us by commissions and regulatory bodies; second, the postponement of maintenance work which could be deferred with safety, and third, the increased travel which many roads have enjoyed due to war activities. Even though commodity prices may gradually recede, nevertheless, for several years to come we shall need these increased rates to maintain our business in a healthy condition and they should be continued until we may have an opportunity to bring it back to a normal basis. From observation I have gained the impression that, in the past, operators of interurbans have given too much thought to steam road competition, rather than to a development of business along the lines for which it was originally intended, namely, in serving localities which for one reason or another could not be served by steam roads.

If my assumption is correct that it will take some years for prices to return to normal, then in order that we may do the proper amount of maintenance work and keep our properties out of receivership we must be allowed to continue with at least the rates we are now receiving for our service. In addition we must carefully study our possibilities so as to bring about increased revenues. The main source of our revenues is in passenger business and, so far as I have been able to observe, no special effort is being put forth to build up earnings in this quarter. Is it not a fact that we have had the feeling that the public would only ride with us if the service was cheap? I do not agree with this theory. The public will ride with us if we furnish suitable accommodations in the way of comfortable, well-ventilated cars and transport them at speeds essentially the same as those at which they can make similar trips on the steam roads. I do not, however, advocate rates as high as steam road rates for passenger business, for I realize there are a great many people to whom a lower rate is a consideration.

Let us turn to the other phase of our business, the freight service. Many roads were averse to handling freight until they were forced to do so by the commissions. This is another field in which the interurban operators felt it necessary to have low rates to secure business. The operating expenses of an interurban road for its freight business are higher than on steam roads, therefore, we should have rates equal to steam road rates, placing dependance upon our superior service to get the business. There is no question that for merchandise carrying, at the first, second and third class rates on short hauls, say up to 150 miles, our service cannot be equaled by the steam roads. Our service is more of the nature of express than freight service, and we should receive remuneration accordingly. We have all heard it said that freight with the interurban cannot be made to pay. My own experience teaches otherwise. The development of the freight business on our property has not been entirely accomplished through increased rates. With practically no solicitation we were getting more freight than we could handle, so that it became necessary at times to put on embargoes. We found that some additional equipment was needed and this was purchased last spring. As a result our hopes have been realized in the turning of our freight business from a liability to a small asset. In addition, we have developed a milk service, and have made an express contract with the Wells-Fargo Express Company. We bring a carload of milk into Indianapolis each day and the express matter is carried on our regular trains at small expense.

It is an economic fact that when money is plentiful, commodity prices are very likely to be high and money to be cheap, and vice versa. In the past two years high commodity prices have prevailed, due not only to the plentiful supply of money but also to the law of supply and demand, and to the fact that our own government and our Allies were the principal purchasers of both materials and money. War conditions have upset all calculations which the business world may have made and the government will be a large bidder for money for several years, or until the billions of debts it has assumed have been paid. During this same period reconstruction will necessarily take place, with demands for both materials and money. We must look forward, therefore, to a continuance of abnormal prices of materials and money for a period of from five to ten years. For these reasons we must be allowed to maintain rates which will give us adequate returns on the capital invested in our properties and thereby attract capital to our enterprise and assist the persons responsible for raising the necessary funds with which to purchase the equipment for the betterment of our service.

There is another duty devolving on us, namely a more careful scrutiny of our expenses. The production engineer must seek to produce greater economies in the power plant; the master mechanic must not only see that his equipment is in safe operating condition but must know that there is no waste; the superintendent of transportation must study his train schedules and train sheets to see that there are no trains operating at a loss; the track maintenance and overhead departments must look carefully into their costs, and the traffic and claim departments must not lose sight of the fact that a great deal depends on them for the success or failure of the enterprise.

Another very important and valuable asset to the interurban of the future will be a department of public relations properly managed and maintained. Very little, if any, attention has been given in the past by interurban management to this important subject. Each interurban organization should have these duties delegated to some of its officials. The war has, I think, more than anything else, brought to the minds of the public and our patrons the troubles which we have had to encounter, and I feel sure that by keeping the public fully advised of our different problems great good can be accomplished in the way of maintaining proper relations.

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*Abstract of paper presented at fall meeting of Central Electric Railway Association, Indianapolis, Ind., on Nov. 21, 22, 1918.

In conclusion I would say that interurbans after the war will only survive and be able to give the maximum of service by being allowed to continue with at least the present rates, and in addition we must do our part by increasing both freight and passenger revenues to the very limit and by exercising a more careful scrutiny of our operating expenses so that not one penny is wasted.

New Orleans Adopts Modern Transportation Organization

Duties of Department Heads Clearly Defined—Inter-relation of Departments Will Result in Greater Efficiency of Each

WHEN Nelson H. Brown, formerly superintendent International Railway, Buffalo, N. Y., became manager of the New Orleans Railway & Light Company a few months ago, he worked out an up-to-date plan of organization. The details of this follow:

Superintendent of Transportation: He will report to the manager and will be responsible for (1) Preparation and maintenance of schedules adequate for traffic; (2) operation of cars and trains to conform to schedules; (3) proper distribution of equipment; (4) enforcement of transportation rules and regulations, and (5) employment, instruction, discipline and records of trainmen and others in the transportation department.

He will have general supervision over all matters in the transportation department, devoting himself to such larger issues as may develop, particularly as to the adequacy and the character of the service performed. He should keep fully informed in advance as to events likely to attract crowds in excess of normal provisions for service, and direct such additional service as may be needed. He should confer freely with his immediate subordinates and devote the major part of his time on the lines, and he should suggest and install improvements in car and train service, discipline, etc.

Superintendent of Schedules: He will report to the superintendent of transportation and will be responsible for preparing schedules adequate to meet traffic requirements. Traffic checkers and others in the schedule department will report to the superintendent of schedules.

Superintendent of Inspection: He will report to the manager and will be held responsible for checking conductors for registration and collection of fares and for violations of rules. These reports, together with the conductor's record, will be forwarded promptly to the office of the manager, who after inspection will forward them to the superintendent of transportation. The latter will be held responsible for the enforcement of the rules and regulations and for the application of discipline.

Superintendent of Employment: He will report to the superintendent of transportation and will be held responsible for employing and instructing conductors and motormen.

Division Superintendents: They will report to the superintendent of transportation and will be held responsible for operating stations and lines to which they are assigned. They will see that all rules and regulations are obeyed, and that proper service is furnished. They will take up directly with the superintendent of schedules all matters pertaining to schedules and keep closely in touch with the schedule department. Before the addition of extra service, the approval of the superintendent of schedules will be necessary, except in cases of emergency.

Station Foremen: They will report to the division superintendent and will be held responsible for the station to which they are assigned. They will be required to see that proper discipline is maintained and that crews are in proper condition for duty. They will see that all cars leave the station promptly, and that station clerks perform their duties properly.

Supervisors (inspectors): They will report to the division superintendents. They will be held responsible for the operation of the line or lines to which they are assigned and will be required to see that the rules and regulations are enforced, and that cars are operated safely and as near schedule as possible. They will see that the schedule is adequate for requirements and will make their recommendations to the division superintendent.

Claim Agent: He will report to the manager and will be held responsible for investigating and adjusting claims. He will confer freely with the manager in regard to claims involving large expenditures.

Superintendent of Track: He will report to the manager and will be held responsible for maintaining track, roadway, paving, bridges and buildings.

Roadmaster: He will report to the superintendent of track and will be held responsible for constructing and maintaining track. All employees in the track department will report to and receive their instructions from the roadmaster.

Superintendent of Equipment: He will report to the manager and will be held responsible for maintaining cars, equipment, shops, etc.

Master Mechanics: They will report to the superintendent of equipment and will be held responsible for the shop to which they are assigned. They will see that all employees comply with the rules and regulations.

When this organization was put into effect, Mr. Brown reminded the men that they were all employees of the same company, working to the same end. Should they discover in another department defects requiring immediate attention and are in a position to apply the remedy, they are expected to do so, reporting to the proper head in due course.

Fuel Economy on the Railroads

THAT the campaign among the railroads of the United States for conservation of fuel may result in an annual saving of 10,000,000 tons of coal and 840,000 gal. of oil was a statement contained in a paper prepared for the Western Sections meeting of the American Society of Mechanical Engineers, at Indianapolis, Nov. 15, by Major Edward C. Schmidt, assisting manager of the Fuel Conservation Section of the United States Railroad Administration.

"Present estimates indicate that during the calendar year 1918, United States railroads will use about 175,000,000 tons of coal for all purposes, including both bituminous coal and anthracite," declared Major Schmidt. "Of this amount about 157,000,000 tons will be consumed in locomotive service and about 18,000,000 tons at stationary power plants and for miscellaneous purposes. In addition, the railroads will use approximately 42,000,000 gal. of fuel oil.

"Basing our calculations on these totals, we estimate that the savings likely to result from our campaign during the period for which it has been under way, will be at the following annual rates:

"Two per cent saving due to improvement in quality of coal, or 2 per cent of 175,000,000 tons, which amounts to 3,500,000 tons; 3 per cent saving on the coal used in locomotive service, or 3 per cent of 157,000,000 tons, which amounts to 4,710,000 tons; and 10 per cent of 18,000,000 tons of coal used at stationary power and heating plants and for miscellaneous use, 1,800 000 tons; making a total of 10,010,000 tons. In addition, it is estimated 2 per cent of the 42,000,000 gal. of fuel oil, or 840,000 gal. will be saved."

Energy Consumption of Cars Is Affected by Temperature Changes

That the Power Required for Car Operation Is Affected by Variations in Schedule Speed, Number of Passengers Carried and Temperature Is Shown by an Extended Study Made by the Public Service Railway

BY M. B. ROSEVEAR
Superintendent of Distribution, Public Service Railway,
Newark, N. J.

IN THIS ARTICLE an attempt is made to set forth the results of a study made on the relation between the energy consumption of cars and the temperature variation, as existing on the lines of the Public Service Railway. A general summary of the data used in connection with this study is graphically displayed in Fig. 1. On this chart the following data are plotted for the period of five years and three months: Total kilowatt-hours per month, as measured at the direct-current buses in the substation; total car-miles operated per month; average monthly kilowatt-hours per car-mile; annual average kilowatt-hours per car-mile; mean temperature of each month and of each year.

The energy figures include the line losses as well as the actual input to the trolley as measured at the car itself. The temperatures used are the official figures as given by the United States Weather Bureau for Newark. This point was chosen as a temperature base because the bulk of the power is used in Newark and vicinity and Newark is, therefore, approximately the "center of gravity" of the power distributing system. While other towns served by the company might have temperature variations slightly different from those at Newark, these variations could affect the final results but very little. The graphs of total car-miles and total kilowatt-hours used, while showing cyclic variations with the seasons, do not permit of ready analysis and are of interest chiefly as showing the magnitude of the operations studied.

ANALYSIS OF POWER CURVE

The next step in the study was to calculate the monthly average kilowatt-hours per car-mile and to plot these averages against time as a base line. The resulting graph is interesting. At first glance it would seem that a greater amount of energy was required to perform the same work during the winter of 1915-1916 than during the corresponding periods of 1914-1915 or 1913-1914. Similarly, it would appear that operation was even less efficient during the winter of 1916-1917.

A careful study of the graph and some auxiliary operating data, however, developed several important facts.

It will be noted that wherever there is a peak in the temperature curve there is a "valley" in the kilowatt-hours-per-car-mile curve. In fact, if one follows the breaks in the graphs it will be seen that but for two or three exceptions a break in temperature is followed by a corresponding one in energy consumption. This fact leads at once to the conclusion that the relation between temperature and energy consumption is a very definite one. In order better to illustrate this relation, data relating to mean temperature and average kilowatt-hours per car-mile for the year 1917 were taken from Fig. 1 and replotted in Fig. 2. The resulting points were averaged by the graph shown. It will be noticed that while the line is not a perfectly straight one the diversions of the points from the smooth line drawn are in no case very great. In general this graph shows that an increase in temperature is accompanied by a decrease in energy consumption. And this is equally true of high and low temperatures.

It will be observed, Fig. 1, that the annual average kilowatt-hours per car-mile are closely related to the annual mean temperature. For the warmer years the energy consumption on a car-mile basis is lower than during the cold ones. This relation is better shown in Fig. 3 in which for clearness the temperature graph has been inverted. It will be noted that for the last five years the mean temperature has been slowly decreasing. This would explain in part the apparent increase in energy consumption during this period.

The second factor that has tended to increase the kilowatt-hours per car-mile has been the purchase of new and larger cars to take care of increased business and provide for the retirement of older and smaller equipments. The following list shows the increase by years:

Year	New Closed Cars	New Open Cars
1913	39	0
1914	25	0
1915	30	20
1916	70	127
1917	100	50

The kilowatt-hours per car-mile for 1916 show a greater increase over 1915 than the decrease in temperature would seem to account for. It will be noted that during 1916 there were added 127 large open cars and seventy closed cars. These larger closed cars were in service during all of 1917 whereas they were not in service during the early months of 1916, therefore accounting for a part of the still further increase in kilowatt-hours per car-mile during 1917.

PASSENGER LOADING AFFECTS POWER CONSUMPTION

That the passenger loading is not the most important factor in power consumption is shown by the comparison of 1913 and 1914. In 1914 the kilowatt-hours per car-mile were greater than in 1913 although the passengers per car-mile were fewer. During 1916 and 1917, however, the kilowatt-hours per car-mile increased at rates corresponding quite closely with the loading. Fig. 4 has been prepared to show the relation between passengers per car-mile and kilowatt-hours per car-mile for

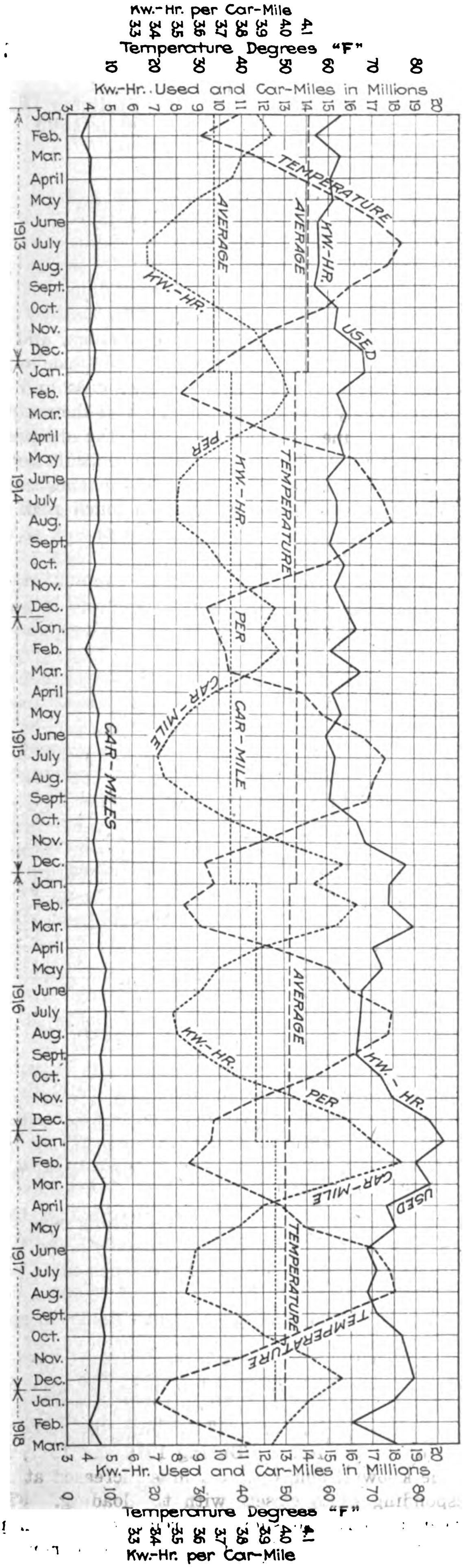


FIG. 1—GRAPHS SHOWING POWER, TEMPERATURE AND CAR-MILEAGE DATA FOR FIVE-YEAR PERIOD

TABLE I—DATA RELATIVE TO PASSENGER LOADING AND ENERGY CONSUMPTION

Year	Passengers per Car-Mile			Kilowatt-Hours per Car-Mile		
	Average	Increase		Average	Increase	
		Average	Per Cent		Average	Per Cent
1913	8.18	......	......	3.678	.....	....
1914	8.11	—0.07	—0.85	3.757	0.079	2.15
1915	8.09	—0.02	—0.25	3.757	.....	....
1916	8.31	+0.22	+2.7	3.867	0.110	2.93
1917	8.58	+0.27	+3.2	3.954	0.087	2.25

the period studied. As additional information relative to the number and condition of cars, Table II has been prepared.

In 1916 and 1917, when increases in passenger loading amounted to 2.7 per cent and 3.2 per cent respectively, it will be seen that the proportions of total new cars, new closed cars, and new open cars are in every instance greater than the increases in passengers per car-mile.

A fourth factor is the increased number of electric heaters in service. The yearly increases are here listed.

Year	Increase in Electrically Heated Cars
1913	39
1914	139
1915	30
1916	126
1917	10
Total	344

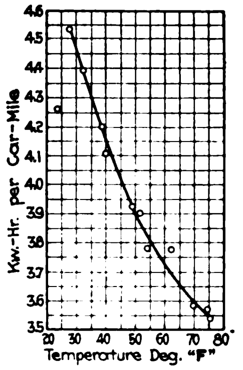


FIG. 2 — RELATION BETWEEN MEAN TEMPERATURE AND ENERGY CONSUMPTION

The total number of electrically heated cars at present is 697. These heaters consume from 3.6 to 9.6 kw. per car, that is, approximately from 10 to 20 per cent of the power required to move the car over the road, and account for a portion of the increased kilowatt-hours per car-mile each year, although obviously not all of it.

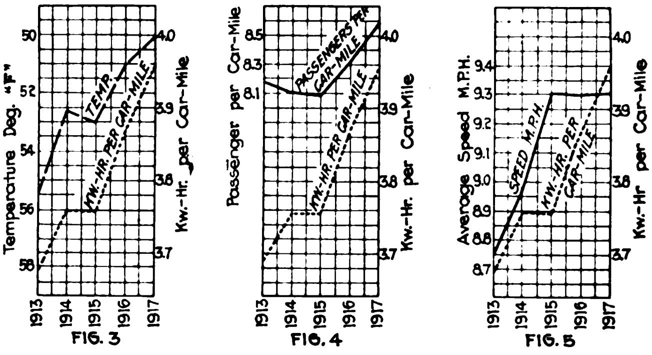


FIG. 3—EFFECT OF MEAN ANNUAL TEMPERATURE ON AVERAGE KILOWATT-HOURS PER CAR-MILE. FIG. 4—INFLUENCE OF PASSENGER DENSITY ON POWER REQUIREMENTS. FIG. 5—EFFECT OF INCREASED SCHEDULE SPEEDS ON ENERGY CONSUMPTION

A fifth factor affecting energy consumption has been the increase in schedule speeds. The increases are graphically shown in Fig. 5. It will be noted that the increase in speed during 1914 as compared with

TABLE II—TOTAL NUMBER OF CARS AND NUMBER OF NEW CARS

Year	Closed Cars			Open Cars			Total Cars		
	Total	New		Total	New		Total	New	
	Number	Number	Per Cent	Number	Number	Per Cent	Number	Number	Per Cent
1913	1665	39	2.34	490	...	.....	2155	39	1.81
1914	1651	25	1.51	433	...	.....	2084	25	1.21
1915	1654	30	1.81	435	20	4.60	2089	50	2.40
1916	1704	70	4.10	560	127	22.60	2264	197	8.70
1917	1792	100	5.58	602	50	8.30	2395	150	6.20

1913 corresponds very closely with the increase in power consumption.

In order properly to interpret the power consumption curve it is necessary, as will be seen from the foregoing, to take into consideration all of the factors mentioned herein. By so doing, we find that:

1. The increase in kilowatt-hours per car-mile for 1914 over 1913 is due to a combination of decreased temperature and increased speed, these two factors more than neutralizing the slight falling off in passengers per car-mile.

2. The equality of kilowatt-hours per car-mile for 1914 and 1915 is due to a combination of higher temperature and fewer passengers per car-mile, these offsetting the increase in speed.

3. The increase in kilowatt-hours per car-mile in 1916 over 1915 is due to a combination of lower temperature and a greater number of passengers per car-mile, the speed remaining practically constant. As brought out earlier, the increase of 0.22 passenger per car-mile, or 2.7 per cent, during the year was made possible by the addition of 197 larger cars which amounted to 8.7 per cent of the total.

4. The increase in kilowatt-hours per car-mile in 1917 over 1916 is due to a combination of lower temperature and larger number of passengers per car-mile, the speed again remaining almost constant. The increase of 0.27 passenger per car-mile, or 3.2 per cent, as also mentioned before, was due in part to the cars added during 1916 which were used during only part of 1916 whereas they were available for service during all of 1917.

INFLUENCE OF POWER-SAVING CAMPAIGN

It will be seen by reference to Fig. 1 that the energy consumption was considerably reduced during the winter of 1917-1918, and this in spite of the extremely low temperature during December and January. This saving, it is believed, has been due to two factors:

1. During the fall of 1917 and the succeeding winter special efforts were made to have trainmen save power by careful operation, these efforts being supplemented by the publicity campaign of the United States Fuel Administration.

2. Commencing early in January, electric heaters were cut off during certain hours prescribed by the New Jersey Public Utilities Commission, in order to save fuel, as the power stations were unable to secure coal due to the unusual severity of the winter.

Accident Reduction in Columbus, Ohio

For the information and encouragement of all concerned H. W. Clapp, general superintendent Columbus Railway, Power & Light Company, has posted records of accident reduction in the form shown in the table below.

1917 ACCIDENT RECORD AS COMPARED WITH PREVIOUS YEARS

Ratios in Per Cent	1917 / 1916	1916 / 1915	1915 / 1914
1. Boarding moving cars	26.5*d*	27.6*d*	4.6*i*
2. Leaving moving cars	50.3*d*	45.9*d*	21.7*d*
3. Collisions, cars and wagons	3.5*d*	14.0*d*	20.6*d*
4. Collisions, cars and automobiles	47.0*d*	37.8*i*	2.0*i*
Automobiles in Franklin County as of Dec. 31	36.0*i*	42.0*i*	43.0*i*

i = increase
d = decrease

Electrically Operated Ditcher Effects Big Saving

This Is the First Electric Machine Built for Ditching Purposes—Operates at 1200 or 1500 Volts with 30-Hp. Motor

By CHARLES W. FORD
General Superintendent Kansas City, Clay County & St. Joseph Railway

THE Kansas City, Clay County & St. Joseph Railway (known as the "Missouri Short Line") operates 78 miles of line comprising two divisions, one running in a northeasterly direction from Kansas City, a distance of 28 miles, to Excelsior Springs, and the other in a northwesterly direction, a distance of 52 miles, to St. Joseph. There are heavy cuts and fills along both divisions, and a great amount of the material that it is necessary to handle out of the ditches is a grade of clay which is exceedingly difficult to dig when dry, and is about the stickiest substance extant when wet. Besides this clay there is much rock and shale in the cuts along the line and a few years ago slides were not uncommon in wet weather. Many of these slides were of considerable proportions, causing much delay to traffic, and making it apparent that ditches were a prime necessity if the lines were to be kept open in rainy weather.

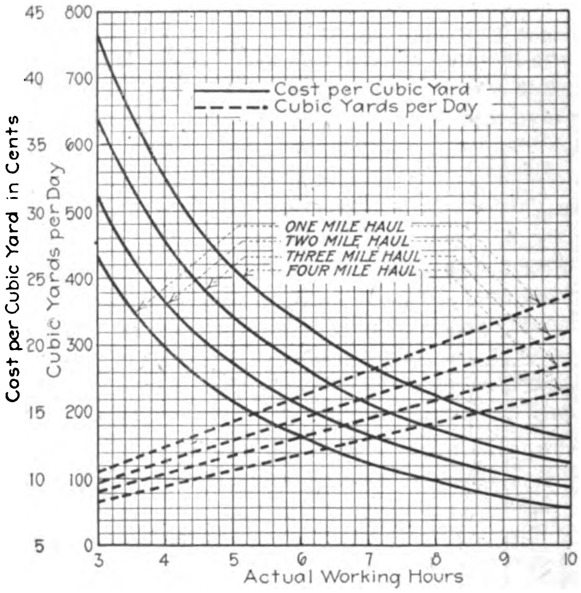


FIG. 1—COST GRAPH FOR ELECTRIC DITCHER

During the years 1913 and 1914 ditching was done by hand, a total of about 20,000 yd. annually being taken out at a cost of approximately 40 cents per cubic yard. This represented a total ditching cost of $8,000 a year, and it may be stated that it was much easier to spend the $8,000 than it was to get the 20,000 yd. of dirt out of the ditches. The diminishing supply of labor and the very apparent fact that hand labor was unable to cope with the ditching problem in a satisfactory manner led the officials of the road to investigate power ditching methods, with the result that an "American Railroad Ditcher," manufactured by the American Hoist & Derrick Company of St. Paul, Minn., was finally purchased for delivery during the first half of 1915. Careful estimates on the amount of work that could be done

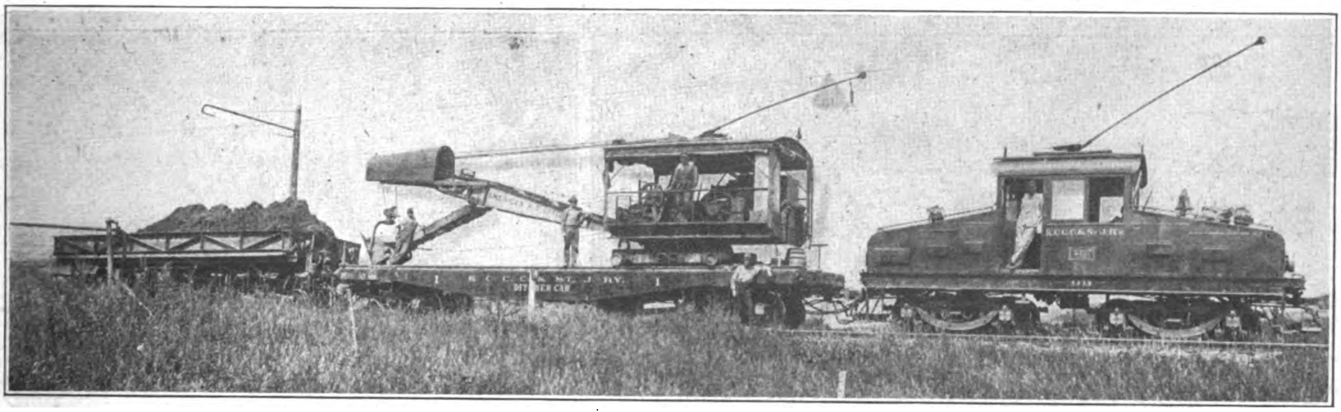


FIG. 2.—ELECTRICALLY OPERATED DITCHING OUTFIT ON THE K. C., C. C. & ST. J. RY.

by this machine were made, and the results to be obtained were calculated on the basis of curves shown in Fig. 1, the total yardage taken out daily being dependent upon two factors, *i.e.*, actual time worked and length of haul.

As the Kansas City, Clay County & St. Joseph Railway is an electric line, an electrically operated ditcher was ordered with a 30-hp. direct-current motor, to operate on 1200 or 1500 volts. This was the first electrically operated machine of this type that was ever built, and its performance has measured up to the fullest expectations of both its builders and the owners. Since the ditcher was installed it has handled, during the working season, from May to December inclusive, an average of 200 cu.yd. per day, or approximately 48,000 cu.yd. for the ditching season.

The ditcher is mounted on a specially constructed flat car 50 ft. long and with a capacity of 100,000 lb. The ditcher travels back and forth on the car on two sections of 100-lb. A. S. C. E. rails, this being necessary in order to permit the flexibility of forward or backward motion when loading the shovel or, if the material is to be hauled, when unloading into dump cars placed in front of the ditcher.

In most instances the material taken from the ditches and the cuts is deposited on the fills as shown in Fig. 3, which illustrates the operation of widening out fills, but in shallow cuts the material taken from the ditches is in many cases deposited on the surface of the sides of the cut, as indicated in Fig. 4, thus providing an embankment which takes the place of surface ditches. This operation, which is much more rapid than is the use of dump cars, eliminates the haul entirely. The dump cars are of the side-dump type, holding 20 cu.yd. and are operated by air, the entire train being hauled by an electric locomotive as shown in Fig. 2.

Now that the ditches have been cleaned out and the slides taken care of it was found necessary to use the ditcher this year for a period of only two months, and for the sixty days from May 1 to July 1, 1918, the following figures covering an average day's work have been compiled:

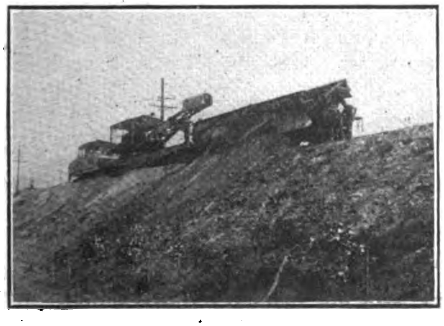
Work: Right-of-way ditching, cut widening, and bank filling.
Material: Clay, fairly dry and tough, with some stone and shale.
Length of day: Fourteen hours.
Time actually working: Seven and one half hours. (This includes the time consumed in ditching, dumping and traveling to and from the siding, clearing for trains.)
Crew used: Operator and two laborers. Train crew: Motorman and conductor.

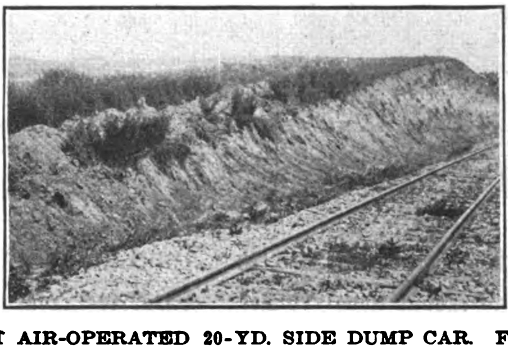
Daily Cost:	
Payroll	$23.52
Power	5.00
Oil, waste and repairs	2.50
Incidentals	1.26
Total	$32.28
Average daily yardage	225.6 yd.
Cost per yard	14.3 cents

Besides being used for the above-mentioned work the ditcher has frequently been used as a pile driver by the simple attachment of a pair of leads, and it is also used in place of a crane or derrick for unloading ties, rails and machinery.

Americanization Means Efficiency

Foreign labor is used to a considerable extent for the heavier work in electric railway repair shops and for track maintenance gangs. For such, the efforts of the National Americanization Committee, Engineering Societies Building, New York, N. Y., possess an interest. Some experience along these lines is summed up by men prominent in the industrial and railroad field in the November issue of the *Efficiency Magazine*, a copy of which may be had from the committee by any executive who applies for it on his business letterhead.





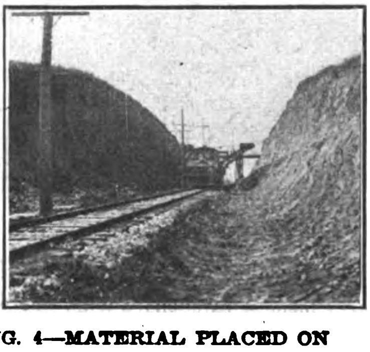
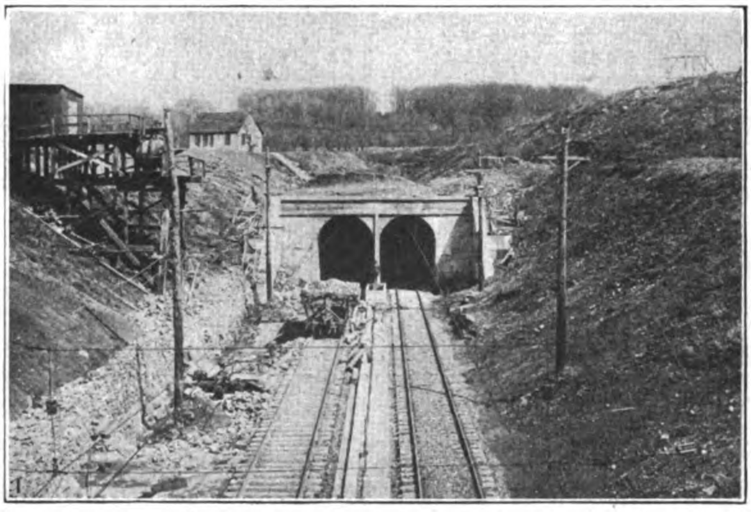
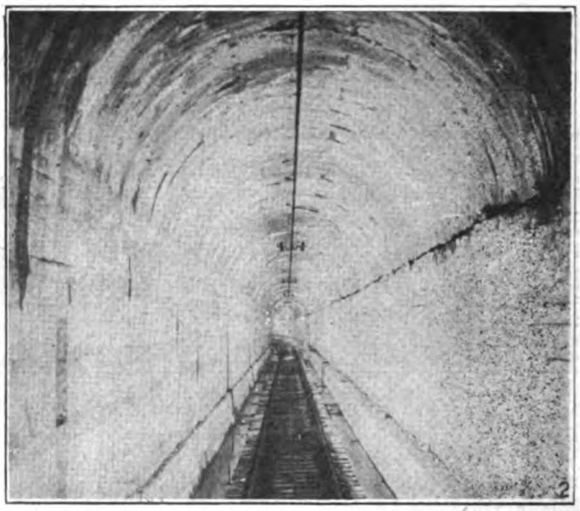
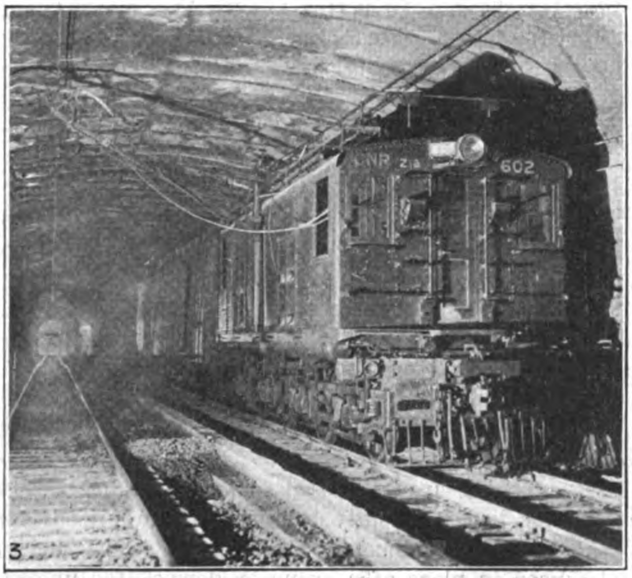
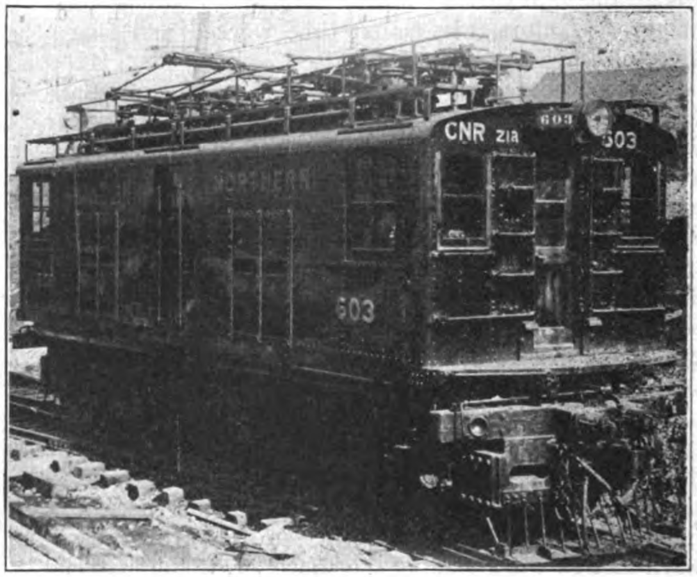


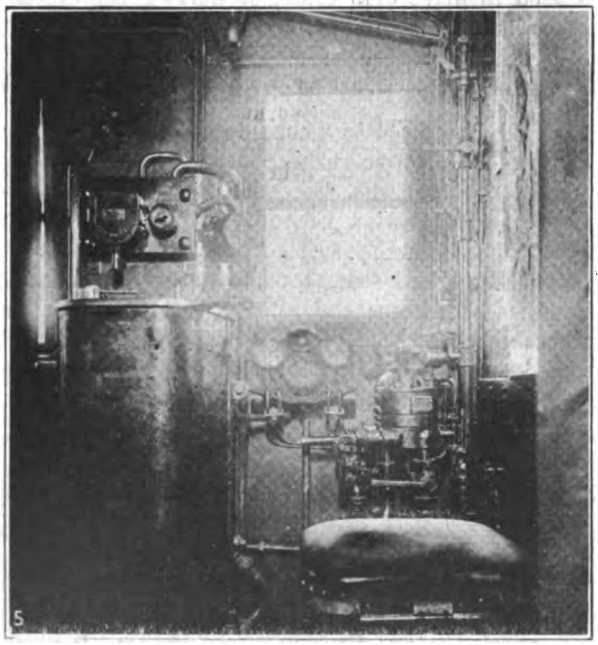
FIG. 3—WIDENING OUT FILLS WITH AIR-OPERATED 20-YD. SIDE DUMP CAR. FIG. 4—MATERIAL PLACED ON EMBANKMENT REPLACES SURFACE DITCH. FIG. 5—A TYPICAL CUT ON THE K. C., C. C. & ST. J. RY.

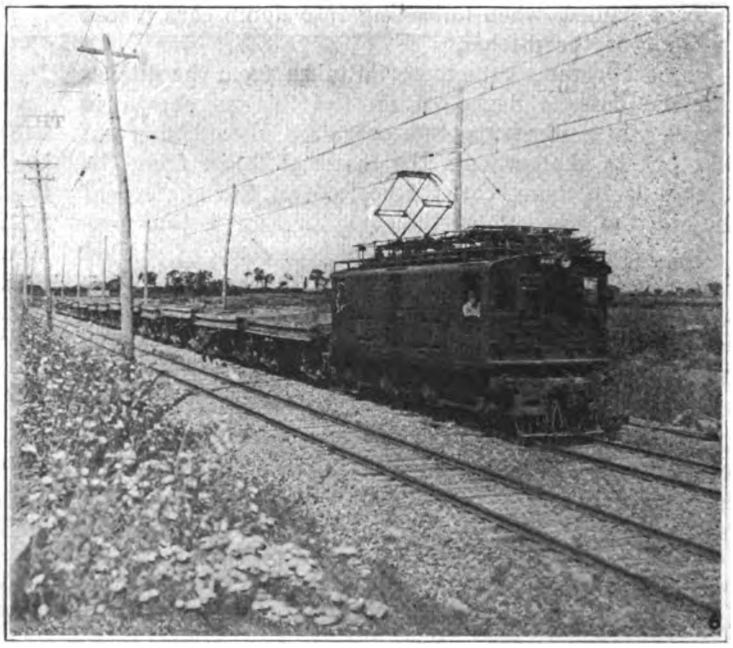












Electrification Scenes at the Canadian Northern Terminal

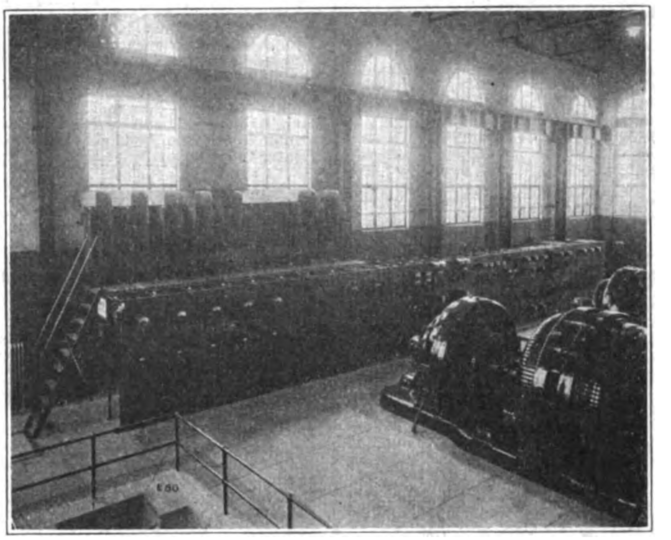
Fig. 1—Approach to west portal of Mount Royal Tunnel.
Fig. 2—Two-degree curve in the tunnel.
Fig. 3—Locomotive pulling in messenger and taking current from opposite track.
Fig. 4—Locomotive with low catenary construction.
Fig. 5—Control apparatus in operator's cab.
Fig. 6—Catenary construction on tangents.

Montreal Tunnel Zone Electrification[1]

The Author Summarizes the Details of the Rolling Stock, Overhead and Substation Equipment, and Gives Some Practical Information as to Design and Construction Problems[2]

BY WILLIAM G. GORDON
Transportation Engineer Canadian General Electric Company, Ltd.
Toronto, Ont.

THE CITY of Montreal is divided into two principal levels; the commercial and financial quarter being on a plain only a few feet above high water, and the residential and shopping district being at about a height of 75 ft. above the river. As the space between Mount Royal and the St. Lawrence River is limited, this district has become greatly congested, and business has largely forced the residence section up and down the river and around the mountain. The tunnel under Mount Royal was built to give the Canadian Northern Railway, now the property of the Dominion government, an entrance into the heart of the city and to render available for residential purposes a large area only a few minutes by train from the main terminal. The present terminal is located about midway between the two levels and it is proposed to extend an elevated line, at the same uniform grade, which will connect up with the proposed viaduct on the lines of the Harbor Commission, thus giving direct access to trans-Atlantic steamers and to all of the harbor facilities. The tunnel is 3.1 miles long and has a uniform grade of 0.6 per cent toward the city for drainage. To meet various physical conditions, different cross-sections were used, in hard sound rock, unsound rock and soft ground respectively. The twin-section type of tunnel was adopted for economy in construction, ease and economy in ventilation, and protection and safety in case of derailments or other accidents.



SWITCHBOARD IN THE SUBSTATION

In addition to working from both ends of the tunnel for construction purposes a shaft was sunk 1 mile from the west portal at Maplewood Avenue. The method employed in the tunnel construction was to drive a bottom center heading about 8 ft. high by 12 ft. wide. This heading could be driven ahead rapidly without much regard for the character of the ground, and from it the full-sized excavation could be developed at as many places simultaneously as was desired.

Four drills were used in each heading, supported on a horizontal bar. The drills were operated by compressed air at a pressure of about 100 lb. per square inch. The break-ups, where the upper part of the tunnel section was excavated to its full width and height, were opened at intervals of from 500 ft. to 800 ft. along the center bottom heading, the practice being to open up as many of these as was necessary to keep up with the heading progress.

The compressed air used for operating the drills and other pneumatic machinery was obtained from two plants, one at each end of the tunnel, with an aggregate capacity of 11,000 cu.ft. of free air per minute compressed to 110 lb. per square inch. The muck was handled by two 10-ton and one 8-ton trolley locomotives, and six 5-ton storage locomotives. The load diagram from which the electrical calculations were made was worked up from the data given in Table I, on page 964. Power is purchased from the Montreal Light, Heat & Power Company at 63 cycles, 11,000 volts, three-phase. It is delivered to a substation located near the west portal of the tunnel through a lead-covered three-conductor cable carried in a duct through the tunnel, reinforced by an overhead line to insure continuity of service. The general arrangement and capacity of the switching equipment provides for the later addition of a steam auxiliary plant at the Back River near the Cartierville yards for extension of the electrification of the main line to Ottawa.

The substation contains two motor-generator sets with provision for a third one, each comprising a synchronous motor, direct-coupled to, and on a common bedplate with, two 750-kw. 1200-volt d.c. generators, connected in series. The sets run at 600 r.p.m. The sets have an overload capacity of 200 per cent for five minutes, this heavy overload capacity being obtained through the use of a pole-face winding. This winding consists of tubes and rods located in holes near the pole faces and so connected as directly to oppose the armature reaction. The pole-face windings and the series and commutating field windings are all connected on the ground side of these machines. The shunt fields of the generators and the synchronous motor fields are arranged for 125-volt excitation.

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[1] Abstract of paper presented before the American Institute of Electrical Engineers at Toronto, Ontario, Nov. 22, 1918.

[2] Previous articles on the electrification of the Mount Royal Tunnel zone of the Canadian Northern Railway at Montreal, Quebec, will be found in the following issues of the ELECTRIC RAILWAY JOURNAL: March 4, 1914, page 572; Aug. 15, 1914, page 295; Sept. 29, 1917, page 585; Oct. 20, 1917, pages 709 and 725; Dec. 8, 1917, pages 1024 and 1039.

Each synchronous motor is started through a three-phase 11,000-volt compensator, that is, an auto transformer having one coil per phase with suitable starting taps brought out.

Each of the three exciter sets consists of a 50-kw., 125-volt d.c. generator driven by an induction motor. The generators are of the commutating-pole type, "flat compounded." A bank of six 100-kw. single-phase transformers supplies power to the induction motors and for miscellaneous station requirements.

All oil switches on the 11,000-volt circuit, excepting the synchronous motor magnetizing and starting switches, are inclosed in masonry cells and have two breaks per pole, each in a separate tank. The switches are motor-operated and open automatically on overloads, excepting the incoming line switches, either instantaneously or with a time-limit action as desired. The incoming line switches operate automatically on the reversal of power only.

The 2400-volt d.c. circuit-breakers and lever switches are mounted on a panel back of and above the main switchboard, and are operated by insulated handles on the front of the main board. They are mounted between fireproof barriers and are equipped with powerful magnetic blowouts. The field switches are mounted on a base back of the panels with the operating handles on the front of the main board.

LOCOMOTIVES HAVE ONE-HOUR RATING OF 1280 HP.

The railway has six locomotives now in operation each equipped with four GE-229-A commutating-pole motors, connected in pairs in series for operation on the 2400-volt circuit. Each motor is rated at 325 hp. at 1200 volts, and is insulated for double this voltage. Ventilation for the motors is obtained by means of a blower located in the locomotive cab. The locomotives are geared for a free running speed on tangent level track of about 45 m.p.h.

The control provides ten points in the series position and nine points in the series-parallel position. The master controller used is of the non-automatic type with two handles. One handle regulates the applied voltage at the motor and the other controls the direction of rotation of the motors. The rheostats which furnish the external motor resistance are placed on the roof of the cab and are thus provided with natural ventilation. A special electropneumatic changeover switch is used for making the transition between series and series-parallel connections of the pairs of motors. The master controller and contactor energizing circuits are designed for 125 volts.

The current for operating the contactors and for lighting the cab and headlights is obtained from a motor-generator set, the motor of which has two 1200-volt windings and two 1200-volt commutators in series. This set is mounted in the center cab and also drives the blower for providing forced ventilation to the main motors.

Protection against overload is furnished by means of fuses of the copper-riveted type, placed in fuse boxes so arranged as to permit the fuses to blow into a common chamber where the arc can do no damage. There is also a knife-blade switch in the main circuit with an operating handle placed in a position for easy operation in case of emergency. This main switch also blows into the arc chamber mentioned and has a powerful magnetic blowout.

Other details of the equipment can be seen in the illustrations on pages 962 and 963. Attention is directed to the speedometer, which is similar to the type largely used on automobiles but which is especially designed for locomotives. The instrument is connected to the driving wheels of the locomotives by means of a flexible shaft and gearing.

Each of the locomotives has four axles, all of the weight being upon the driving wheels. There are two four-wheel trucks, articulated together by means of a heavy hinge and equalized by means of a semi-elliptic leaf spring over each journal box connected through spring hangers to the frame and to the equalizer bars.

TABLE I—TRAIN WEIGHTS AND SPEEDS ASSUMED IN MONTREAL TERMINAL ELECTRIFICATION

Class	Trailing Load, Tons	Speed on Level, M.P.H.	Speed on 0.6 per Cent up Grade, M.P.H..	Schedule Speed, M.P.H.
Transcontinental	1,130	37	26.5	21.2
Express and local	550	37.5	27.1	21.6
Over motor coach	60	50	41.5	22.2
Three motor coaches	180	50	41.5	22.2
Three motor coaches and two trail coaches	260	47.8	34.8	21.8
Freight	1,000	32.5	23.5	....

TABLE II—LOCOMOTIVE DATA

Length inside knuckles	37 ft., 4 in.
Length over cab	31 ft., 0 in.
Over-all height, pantagraph down	15 ft., 6 in.
Height over cab	12 ft., 10 in.
Over-all width	10 ft., 0 in.
Total wheelbase	26 ft., 0 in.
Rigid wheelbase	8 ft., 8 in
Total weight, all on drivers	83 tons
Wheel diameter	46 in.
Tractive effort at 30 per cent traction coefficient	49,800 lb.
Traction effort at one-hour rating	20,300 lb.
Traction effort at continuous rating	16,200 lb.
Speed at rated amperes, one-hour rating	23.4 m.p.h.
Total horsepower	1,280
Speed at rated amperes, continuous rating	24.6 m.p.h.
Total horsepower	1,090
Gear ratio	80:25

TABLE III—MULTIPLE-UNIT CAR DIMENSIONS

Length over buffers	67 ft., 5¾ in.
Length over body corner posts	57 ft., 6¼ in.
Truck centers	42 ft., 9 in.
Width over side-sill angles	9 ft., 10¼ in.
Width over eaves	10 ft., 2¾ in.
Height top of rail over roof	13 ft., 0 in.
Height top of rail to under side of side sill	3 ft., 7¼ in.
Center to center of body side bearings	4 ft., 10 in.
Center to center of deck sills	5 ft., 6 in.

TABLE IV—OVERHEAD CONSTRUCTION DATA

Messenger outside of tunnel	S. M. steel cable ½ in., 7-strand
Ultimate strength of above	11,000 lb.
Elastic limit of above	6,600 lb.
Messenger inside tunnel	Phosphor bronze 0.9 in. 19-strand
Ultimate strength of above	22,000 lb.
Elastic limit of above	18,600 lb.
Cross-span, double-track	S. M. ⅜-in. cable, 7-strand
Cross-span yards, same width, in addition	S. M. ⅜-in. cable
Hangers	Long loop type
Standard hanger spacing	15 ft.
Height of contact wire, outside of tunnel	23 ft.
Height of contact wire in tunnel	16 ft.
Contact wire	No. 0000, grooved, special bronze
Breaking strength of above	65,000 lb. per sq.,n.
Elastic limit of above	39,000 lb. per sq.in.

The equivalent of a three-point suspension is thus attained through the side equalization of one of the trucks and both side and cross equalization of the other truck.

The friction draft gear is mounted in the end-frame casting of the truck, thus restricting the hauling and buffing stresses to the truck side frame and the articulated joints. The cab and apparatus are thereby relieved from the effects of severe shocks.

The cab, of the box type, is divided into three compartments, the center one for the apparatus and the end one for the operator. Each operator's compartment is supplied with controller, control switches, ammeter, air brake and pantagraph control, air gages, 2400-volt cab heater, bell rope and control for whistles and sanders. The locomotive thus has complete double-end control. The motors are nose-supported and geared to the axles through twin gears.

The air-brake equipment is of the combined straight and automatic type, including a 2400-volt motor-driven air compressor with a capacity of 100 cu.ft. of free air per minute.

Additional data of the locomotive will be found in Table II.

MULTIPLE-UNIT MOTOR CARS WILL BE ADDED LATER

Local traffic will be handled by means of multiple-unit motor cars which will weigh, loaded, about 80 tons. Dimensions of these cars will be as shown in Table III.

These cars will be equipped with four fully-ventilated GE-239-A, 125-hp., 1200-volt commutating-pole motors, insulated and connected like the locomotive motors. They will, however, be ventilated by means of fans on their own armature shafts. The control will be of the non-automatic type with five series steps and four parallel steps.

The multiple-unit cars will be heated by an electric hot-air system, one complete heater being placed underneath the car and receiving its power direct from the 2400-volt supply. The heater will have a capacity of about 25 kw. and will be arranged for two heat combinations. Each complete heating equipment will consist of the heating unit, the blower with its regulating mechanism, the controlling switch and the thermostat. The regulating equipment will be operated from the 600-volt supply furnished by a motor-generator set. The air will be forced over the heating unit by means of the blower and distributed throughout the car by means of air ducts along the side. The blower motor will be connected in series with the heating unit on the ground side. The motor-generator set referred to, of course, is primarily for the supply of 600-volt current to the control circuits, the air compressor and the lighting circuits.

CATENARY CONSTRUCTION WAS SOMEWHAT UNUSUAL

Special local conditions and the extremely low temperature which must be encountered were features which made the design of the catenary system for this electrification somewhat out of the ordinary. The electrified track at present is about 10 miles in length, and in this distance there is a passenger terminal station and coach yard in the city, a double-track tunnel, double tracks in a cut with low clearances under highway bridges, a long stretch of single track both tangent and curved, and a large freight yard with repair shops and storage tracks. The temperature sometimes reaches 30 deg. below zero, while in the hottest summer weather it may go as high as 110 deg. in the sun. In the early spring severe sleet storms sometimes occur.

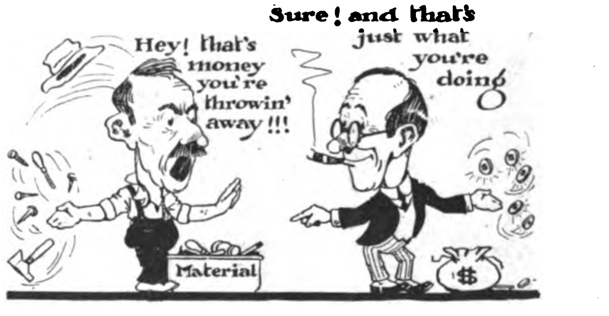
In general the poles used are of Eastern white cedar, treated with creosote oil, steel poles being used in the terminal yard in the city on account of their more sightly appearance. On single track the poles are spaced 150 ft. on tangents and 120 ft. on the 2-deg. curves. On the double-track portion, where the overhead clearance is limited, the spacing is reduced to 105 ft. on tangents. Some data of the overhead construction are given in Table IV.[1]

The messenger outside the tunnel consists of ½-in. steel cable anchored every half mile, with bracket construction on the single-track portions and cross-span suspension on the double-track portions. Inside the tunnel where the overhead clearance is limited the catenary had to be quite flat, and the messenger therefore pulled up very tight. For this reason a cable of phosphor bronze was selected with an over-all diameter of about 0.9 inch. The ultimate breaking strength of this is 22,000 lb. and the elastic limit 18,600 lb. This messenger is supported every 90 ft. from the roof of the tunnel by a combination of iron yokes held in the concrete.

The contact wire is No. 0000 A.E.R.A. standard grooved trolley wire. This wire was selected rather than hard-drawn copper wire both because of its longer life when subjected to the wear caused by sliding pantagraphs and because it could be pulled up tighter than copper. This latter point was considered especially important on account of the wide variation in temperature in Montreal and the consequent great variation in the sag which there would be with ordinary copper trolley wire between winter and summer. The contact wire is supplemented by two No. 0000 feeders, one running the full length of the electrification outside the tunnel and the other extending about 1 mile west of the substation.

Say, You're Throwing Money Away!

The accompanying cartoon from a recent leaflet for employees, prepared by the Columbus Railway, Power & Light Company, furnishes material for thought. This company is making a consistent effort to induce its employees to think of the supplies they use in terms of dollars and cents.


Hey! that's money you're throwin' away!!!
Sure! and that's just what you're doing
Material
$

CARTOON USED BY C. R., P. & L. CO. TO INDUCE ECONOMY ON THE PART OF EMPLOYEES

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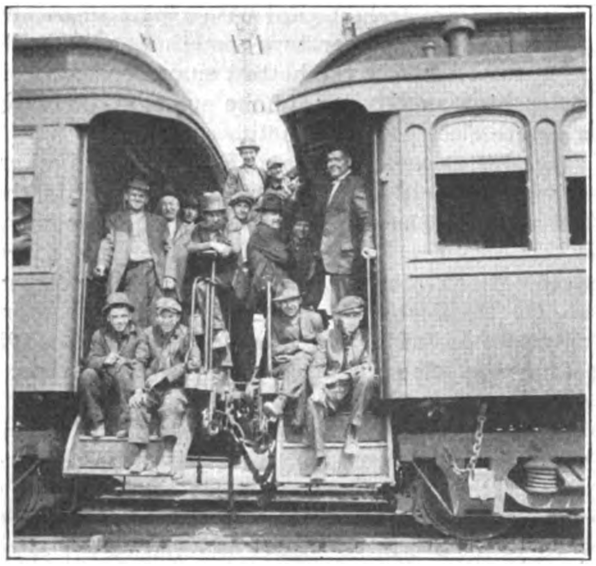
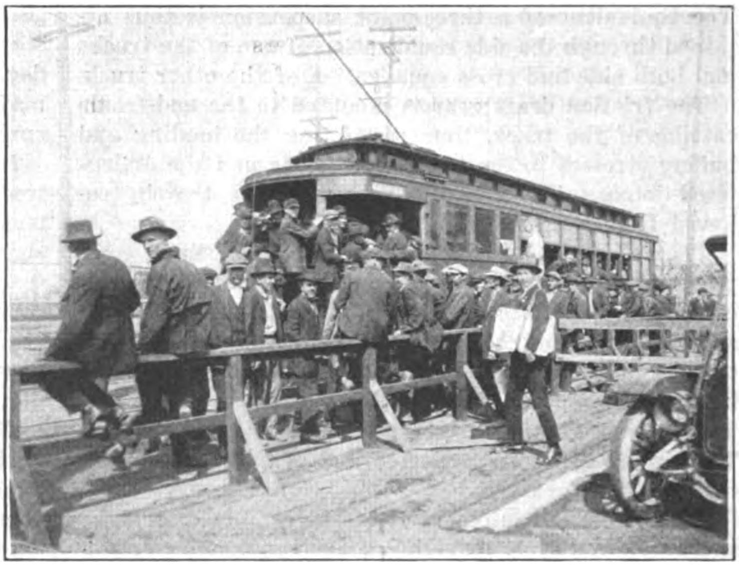
[1] Full details of the overhead design will be found in an article by W. C. Lancaster in the issue of the ELECTRIC RAILWAY JOURNAL for Dec. 8, 1917, page 1024.



PATRIOTIC WORK AT HIGH PAY WITH FREE STEAM RIDES OUGHT TO MAKE ANYBODY SMILE



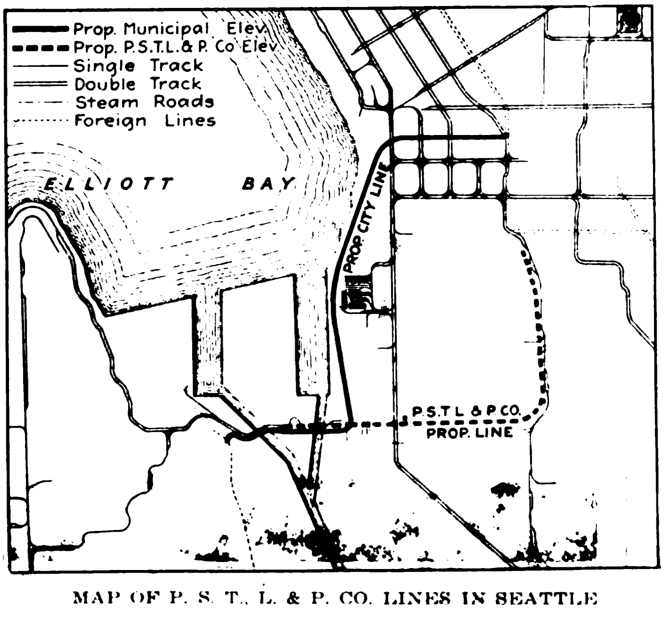
PLAYING THE POPULAR GAME OF "TAKE THE FIRST CAR OUT AND AVOID PAYING FARE"

Carrying Seattle's Shipbuilders

The Local Electric Railway, Steam Lines and Municipal System Are All Working to Speed Up Ship Construction

THE prominent place which Seattle occupies in the shipbuilding world is so widely recognized that no description of its many plants is needed. Let it be said, however, that with one exception all the big shipyards of Seattle are located in the tideflats section south and southwest of the traffic-distributing center of the city. Scarcely a year ago this district was almost a desert, so that three routes were ample. To-day there are many thousand more workers located there, and the question of giving them practical relief has been a pressing one.

Fortunately, even under the present conditions, relief is afforded by the fact that the bigger plants work on three shifts and that the shifts at different plants overlap in some cases. Still more fortunately, the greater part of the afternoon shipyard crowd has been distributed over the Seattle lines before the old-time city peak begins. The greatest difficulties occur in the morning.



MAP OF P. S. T., L. & P. CO. LINES IN SEATTLE

The management of the Puget Sound Traction, Light & Power Company saw at once that its First Avenue double-track surface line could not be expected to give fast and ample service, for it was already well loaded down with all the West Seattle, South Park and Tacoma interurban cars on a highway which is congested also by many other vehicles—not the least to-day being the touring cars of hundreds of shipworkers! Therefore, it suggested the use of steam trains and also of the Elliott Bay Municipal ferry. As the trains carry ten coaches each, it can be seen that they are of real value in bringing thousands of men to the traffic center of Seattle instead of having the short-handed electric railway attempt to give much more mileage where effective movement is impossible.

There are two steam routes. The more important, known as the West Waterway, parallels the electric lines from Occidental Avenue and King Street. The train makes two trips, the first to the Duthie and the Ames yards and the second to the Erickson and Elliott Bay plants. Returning in the afternoon, the train leaves the Duthie plant at 3.40 and returns for a second trip, leaving the Erickson plant at 4.15. The second trip serves also the Ames and Elliott Bay yards.

The East Waterway train makes one round trip morning and evening. Like the West Waterway train, it carries the workers free to the downtown section, from which they walk or ride on the street cars.

The steam service, which was begun in April, carries about 4500 men at a daily cost of $400 to the United States Shipping Board. If the men ever pay for their riding, it will be necessary to use prepayment areas or tickets as the rides are too short for cash collection on the cars. Furthermore, the men are reckless riders at best. On the electric cars smashed windows and stolen lamps are a matter of course.

The Puget Sound Traction, Light & Power Company is also doing its best to help. Many lines have been rerouted to give through service for the extraordinary morning peaks. Loading has also been diversified by carrying some cars around Jackson Street to load on third Avenue with people from the north and east ends of the city and with transfer passengers from the cable lines.

To maintain good voltage and speed conditions in the shipyard district the company has already placed one 500-kw. rotary converter in a substation at First and Spokane Streets and a second 500-kw. unit is to follow. Fifteen trailers have also been added.

As a further aid the city of Seattle made arrangements with the Emergency Fleet Corporation for a loan of $300,000 for extensions to the Seattle Municipal Street Railway and the purchase of thirty-one cars. The city ordered six single-truck and twenty-five double-truck cars, but recently the government notified the city authorities that the loan would not be made. The city has therefore made plans to care for the proposition.

Pneumatic Car Provides Efficient Method of Handling Sand

By the Use of a New Sand Car the Regular Train Crew Takes Care of Sand Transportation Which Previously Required Three Men in Addition to Crew

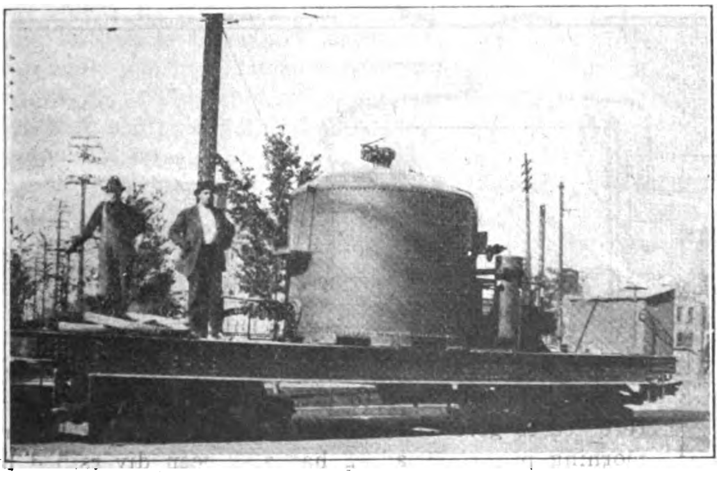
BY W. L. WHITLOCK
Office Engineer Denver (Col.) Tramway

THE present shortage of labor and the increased labor cost led the officials of the Denver Tramway to seek a more efficient method of handling sand than the one previously used. Under the old system a flat car was loaded with approximately 14 cu.yd. of dry sand and served as a source of supply both for storage purposes and for filling street sand boxes. The filling of the sand boxes from the car was done by means of 12-qt. pails, and usually three men in addition to the train crew were required for this service. In addition to the extra men required, this method was expensive and slow, particularly during wet, stormy weather when it was necessary to cover the sand to keep it dry. A large tarpaulin thrown over the sand car was used for this purpose.

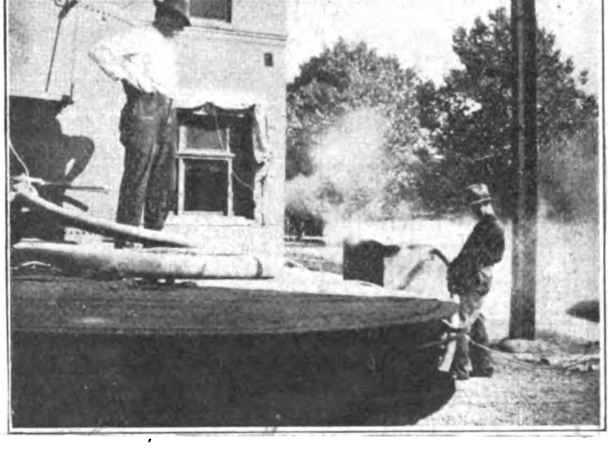
The pneumatic sand car recently constructed by this company is 35 ft. long over all and has a steel underframing of 15-in. channels. It is of double-truck construction and equipped with air brakes. Due to the present shortage of motors and equipment it is used for trailer operation only. The car weighs 50,100 lb. when loaded and 29,600 lb. empty. Its construction follows the general lines of the sand cars of the Philadelphia Rapid Transit Company and the United Railways of St. Louis, descriptions of which were published in the ELECTRIC RAILWAY JOURNAL issues of April 25, 1914, and Aug. 10, 1918.

The sand tank and car frame were built in the local shops of this company and the entire car was assembled here. The sand tank is 6 ft. x 7 ft. 6 in. in dimensions and has a net capacity of 8½ cu.yd., or approximately 10 tons. The air pressure used for unloading the sand is furnished by a D4K Westinghouse motor-driven air compressor mounted on the sand car. Air connections are also provided so that the compressor of the motor car used to draw the sand car can be used for helping out in the supply of the air necessary for unloading the sand. So far the only time that it has been found necessary to use the compressor of the motor car is when large storage bins are filled and the tank is emptied completely in one operation. The complete unloading can be accomplished in a half hour.

The compressor on the sand car is cooled by means of a water jacket. The necessary water supply is obtained from a storage tank mounted on the car. The air compressor which we made use of was one which we



SAND CAR LOADED READY FOR OPERATION



FILLING A SAND BOX ALONG THE LINE

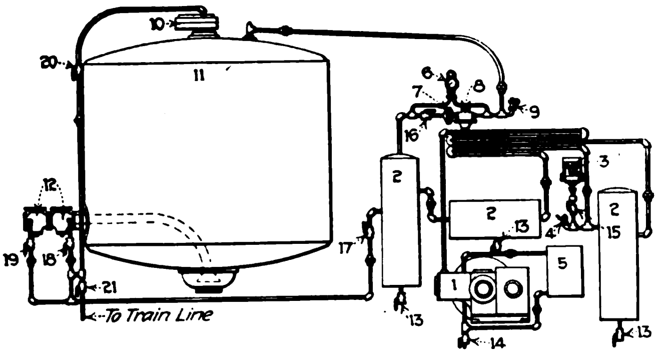


DIAGRAM OF PIPING FOR SAND SUPPLY CAR

(1) Compressor; (2) reservoir; (3) governor; (4) safety valve—high pressure; (5) water tank; (6) duplex air gage; (7) air strainer; (8) pressure reducing valve; (9) safety valve—low pressure; (10) filling valve; (11) sand tank; (12) blow-off cock; (13) drain cock to reservoir; (14) drain cock to water tank; (15) cock to cut off air from governor tank normally open; (16) cock to cut off air from sand tank normally open; (17) cock normally open; (18) cock normally closed to clean out cock and pipe inside of tank; (19) cock normally closed opened to clean out hose; (20) cock normally closed opened to clean out filling valve; (21) cock normally closed opened to connect to train line.

had on hand. Experience has shown that one of slightly larger capacity would be more desirable. For unloading the sand 25 lb. air pressure is used.

The air-piping diagram is shown in an accompanying illustration. Three receiving tanks, two of which are 14 in. x 48 in, and one 14 in. x 33 in., take the air from the compressor at from 60 lb. to 75 lb. pressure. A reducing valve, installed between the last tank and the air connection to the top of the sand tank, reduces the pressure to the working value of 25 lb. The tank is filled from sand bins by gravity through a valve in the top. After filling, this inlet valve is closed and the air compressor is started while the car is on the road to its destination, so that on arrival no waiting for air pressure is necessary. A 2½-in. rubber sandblast hose conveys the sand from the tank to sand boxes or bins. This hose is 40 ft. long, and is divided into two sections for convenience so that a shorter length can be used where the full length hose is not required. The usual type of sand box which is located at the end of the car lines is filled in five minutes. The capacity of these boxes is 1 cu.yd.

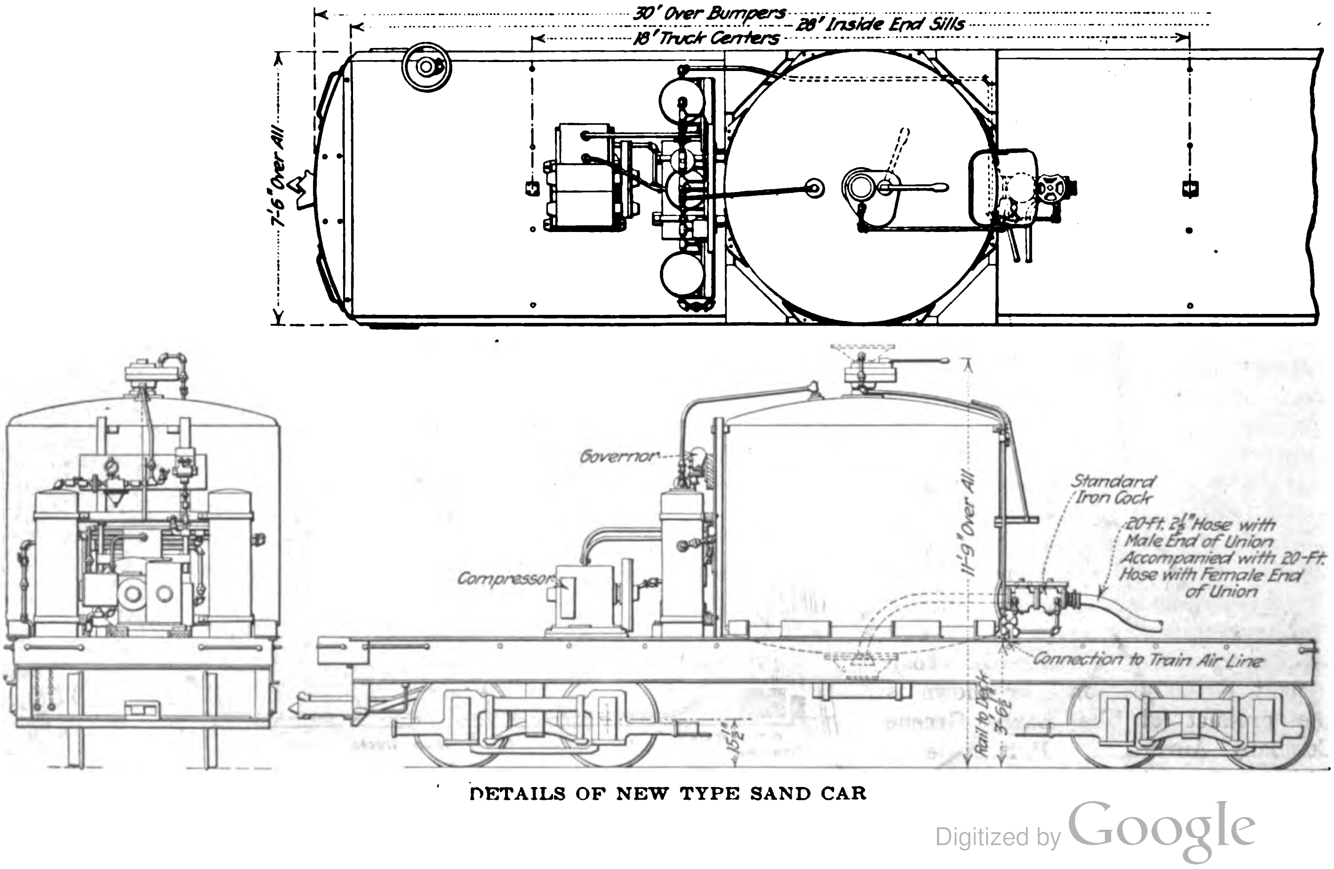
Small air lines are tapped into the tank at the inlet and outlet valves. By means of these lines sand can be blown away from valves in case there is any tendency of the sand to stick or pack at these points. In addition these hose lines provide an effective method for cleaning valve seats which facilitates the valve operation.

A motorman and a brakeman are the only men required to operate this equipment, thus producing a saving of three laborers and a large part of the time necessary for filling boxes.

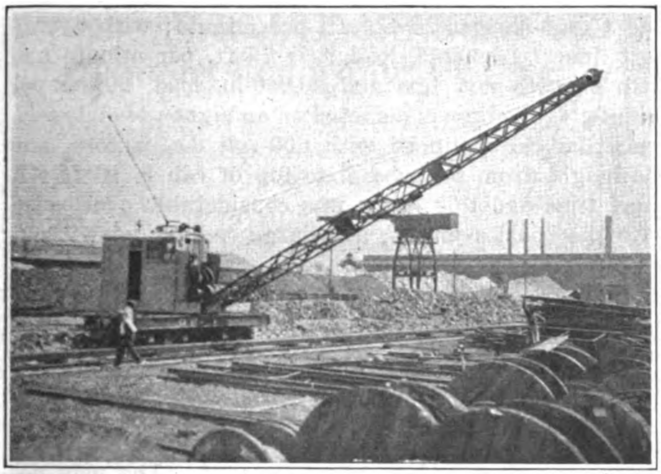
Double-Drive in Belfast

In the issue of the ELECTRIC RAILWAY JOURNAL for July 4, 1914, page 34, A. A. Blackburn, chief engineer Belfast (Ireland) City Tramways, described a double-pinion drive which had been introduced on the cars of the municipal tramway. In response to a recent inquiry as to the results which have been secured Mr. Blackburn states that in consequence of the shortage of gears and pinions due to the war the City Tramways was obliged to rob all of the cars so fitted up of the extra gears and pinions. This necessary return to the old-time single drive, however, is only temporary and as soon as conditions permit the extra drives will be restored as the results were very satisfactory.

In order to relieve congestion on the electric railways in Tokio, Japan, an auto-omnibus company has been formed with a capital of $5,000,000. Not only are passengers to be transported but freight is to be carried and the automobiles are to be manufactured.



DETAILS OF NEW TYPE SAND CAR



ELECTRIC CRANE HANDLING SPECIAL WORK, GANTRY CRANE IN BACKGROUND

PORTABLE CONVEYOR LOADING PAVING BLOCK AT HARVARD AVENUE YARD

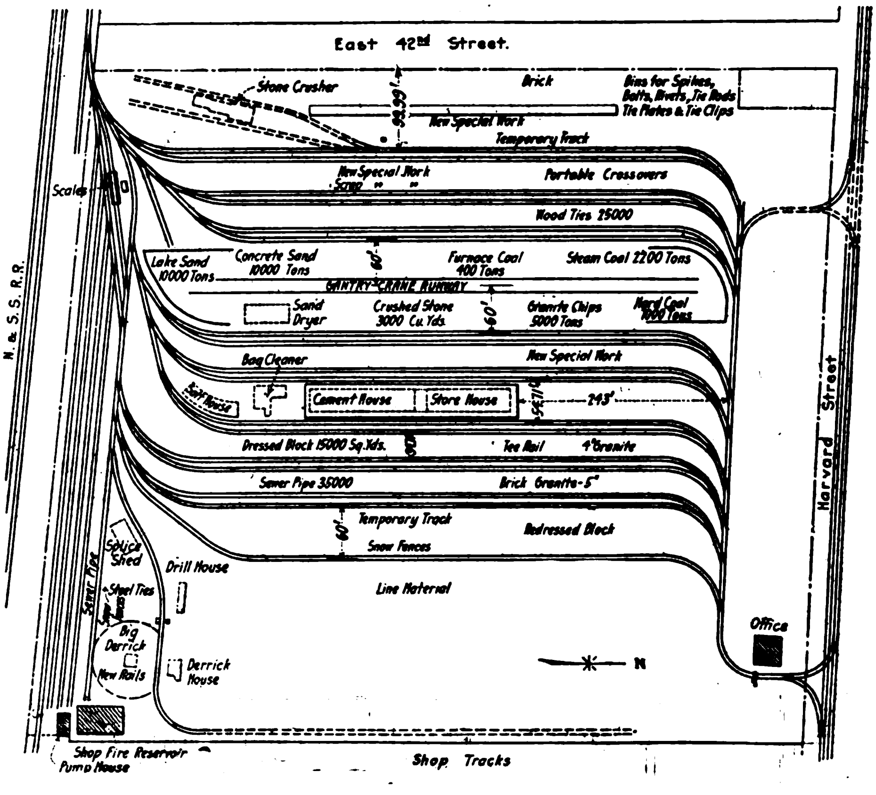
New Equipment in the Harvard Avenue Yard, Cleveland Railway

During Two Years the Track Maintenance Yard of the Cleveland Railway Has Been Taxed to Capacity, Necessitating Increased Facilities

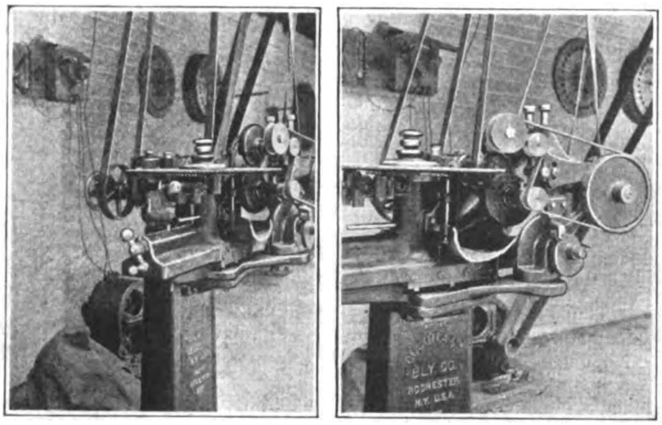
THE Cleveland (Ohio) Railway has a large maintenance yard adjacent to the Harvard Avenue shop which is devoted to the work of the way department. When the yard was laid out a small building was provided for office purposes. This is now being enlarged and in future the work of the department will be administered from this point. In the issue of the ELECTRIC RAILWAY JOURNAL for Feb. 24, 1917, was an illustrated account of the development of this yard with pictures showing it in a rather incomplete condition. Since then almost the entire area of the yard has been put to constant use and is now a scene of very great activity. Some photographs taken recently to show the present appearance of the yard are reproduced herewith, which will be interesting for comparison with those accompanying the earlier article.

One of the novelties in the way of equipment in the yard, recently put into service, is a portable elevator or conveyor, which is driven by an electric motor. This consists of an endless belt, equipped with "flights," traveling in a trussed boom hung from a frame mounted on a two-wheeled truck. The conveyor is hung from the frame by means of steel cables permitting convenient adjustment. It is shown in the operation of loading paving stone on a gondola car. It is also adapted to loading and unloading coal, cement, etc. The conveyor shown is the product of the Barber-Greene Company, Aurora, Ill. It is made on what the manufacturer terms a sectional basis, there being three principal parts, the drive end, the take-up end and the "intermediate." These parts may be combined to form conveyors of any practicable desired length.

The most conspicuous feature of the yard is an enormous gantry crane with its cantilever truss 62½ ft. long from center of rotation to outer end. This great crane travels on a runway 1000 ft. long and commands large storage spaces for coal, paving brick, etc. It

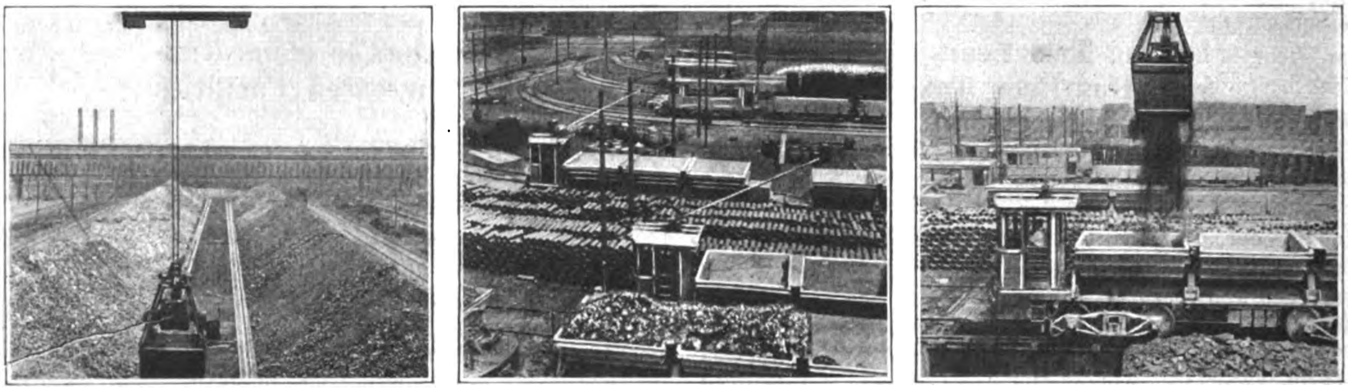

East 42nd Street.
Stone Crusher
Brick
Bins for Spikes, Bolts, Rivets, Tie Rods Tie Plates & Tie Clips
New Special Work
Temporary Track
99.99'
Scales
New Special Work
Scrap " "
Portable Crossovers
Wood Ties 25000
N. & S. S. R.R.
Lake Sand 10000 Tons
Concrete Sand 10000 Tons
60'
Furnace Coal 400 Tons
Steam Coal 2200 Tons
GANTRY CRANE RUNWAY
Sand Dryer
Crushed Stone 3000 Cu. Yds.
60'
Granite Chips 5000 Tons
Hard Coal 1000 Tons
Bag Cleaner
New Special Work
Salt House
Cement House
Store House
54'7½
243'
Dressed Block 15000 Sq. Yds.
Tee Rail
4" Granite
Sewer Pipe 35000
Brick Granite-5"
60'
Temporary Track
Snow Fences
Redressed Block
Splice Shed
Drill House
Sewer Pipe
Steel Ties
Line Material
Big Derrick
New Rails
Derrick House
N
Office
Harvard Street
Shop Fire Reservoir
Pump House
Shop Tracks

LAYOUT OF HARVARD AVENUE YARD, CLEVELAND RAILWAY

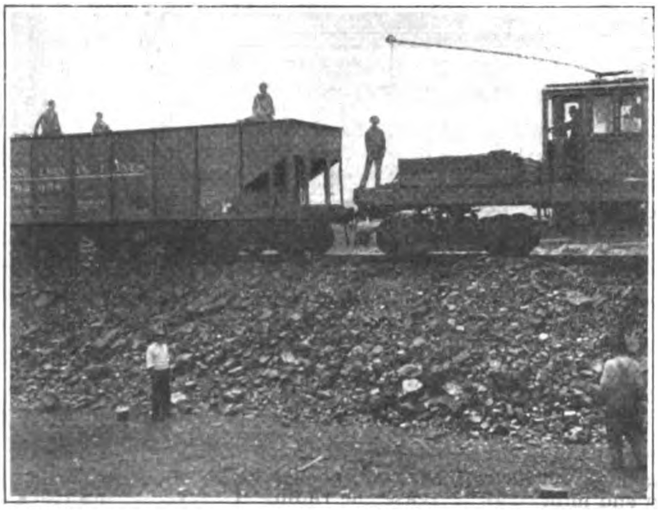


SAW-GRINDING MACHINE INSTALLED IN STORAGE HOUSE

has later been supplemented by a 15-ton Ohio electric locomotive crane with clamshell bucket attachment, which is used for handling special work and miscellaneous heavy materials. On this crane hoisting is done by means of double drums driven by a Westinghouse 75-hp. 550-r.p.m. type-MC series-wound 600-volt d.c. motor equipped with an R-164 drum controller and railway-type circuit breaker. The boom is 50 ft. long and, regardless of its position, the lifting capacity on level track and without the use of riggers and clamps ranges from 30,000 lb. at a radius of 12 ft. to 4200 lb. at a radius of 50 ft. The hoisting speed with a single line and 10,000-lb. load is 150 ft. per minute; with a two-part line at 20,000-lb. load it is 75 ft. per minute and with a three-part line and 30,000-lb. load, 50 ft. per minute. The crane is mounted on an eight-wheel double-truck flat car equipped with 600-volt d.c. motors, and the height from top of rail to top of cab is 16 ft. A short time ago this crane was considerably overloaded with the boom swinging at a large radius and without riggers and clamps attached. As a result of this overloading the equipment was overturned. No serious damage was done and the crane was quickly set back on its "feet" by means of a derrick which happened to be handy.



GROUP OF VIEWS IN HARVARD AVENUE YARD, CLEVELAND RAILWAY, TAKEN FROM GANTRY CRANE



SPREADING COAL ON PILE BY MEANS OF TIE BLOCKING REAR TRUCK WHEELS

A large quantity of coal has been stored in the yard during the past year, and during the summer a pile became overheated and had to be moved. The way department of the company is supplied with a large number of Differential dump cars and these were utilized in making the transfer. Standard steam railroad hopper-bottom coal cars were also utilized. In repiling the coal the expedient shown in one of the illustrations was adopted. This is well known in steam railroad practice. It consists simply of placing a tie in front of the forward wheel of the rear truck and using this as a spreader while the coal is being dumped on the track and the car is being hauled forward.

The department has also installed in the storage house, which is located in the center of the yard, a pair of machines for grinding track saws. The machine is a special grinder built by the Cochrane-Bly Company, Rochester, N. Y., and its appearance is shown in the two views reproduced. It formerly cost $2.10 to regrind a 7-in. saw but now this can be done for 25 cents. From fifteen to twenty minutes is required to regrind a saw of this size, and ordinarily there are about fifty saws to be reground per month. The two machines installed give ample reserve grinding capacity.

Car Announcing System

In the article on the car announcing system at the Forest Hills Terminal of the Boston Elevated Railway, printed on page 883 of the issue of this paper for Nov. 16, no statement was made as to the authorship of the design and the shops in which the equipment was built. The plans were drawn up by John Hamilton, chief electrician Boston Elevated Railway, and the equipment was built in the company's shops.

Some British Experiences and Opinions Regarding Car Axles

Failures of Car Axles Are Discussed and Some Information Given as to the Most Probable Causes

In the Jan. 12, 1918, issue of the ELECTRIC RAILWAY JOURNAL, was published an article on "Experiences with Interurban Car Axles" by A. B. Metcalfe, then master mechanic Empire State Railroad Corporation, Syracuse, N. Y. This article was reprinted by the *Electric Railway & Tramway Journal*, London, and as that paper considered the subject of practical interest to British electric roads, the editors invited expressions of opinion thereon. The following is a summary of some of the most interesting views of British managers and engineers which were received:

C. J. Spencer, general manager Bradford City Tramways, considers that the fitting of a sleeve to carry the gear independent of the car axle as described by Mr. Metcalfe is only of protective value against dislocation of traffic where breakage of an axle has occurred between the car and the gear-wheel hub. Mr. Spencer considers the method of inspection for fracture outlined by Mr. Metcalfe as very drastic, as axles subjected to this treatment would have to be scrapped or fitted with special small bore wheels. He considers the old method of wiping over the axle with paraffin, rubbing it dry and striking its end a heavy blow as a much more profitable way of discovering fatigue fractures.

Two ways are outlined for overcoming liability of axles to fracture; the one most commonly adopted being that of increasing the diameter of the axle at the place liable to fracture. The second method is that of using a steel with physical characteristics giving sufficiently high yield point while retaining adequate elongation to give resistance to fracture from shock. A combination of these methods would enable axles of minimum dimensions to be used.

Axles supplied with the equipment purchased for the Bradford Tramways in 1898 and 1902 invariably fractured through the gear keyway. The axles at that time were 3¾ in. in diameter, with maximum load on each of 13,000 lb. They were of Bessemer steel having 33 to 35 tons tensile strength, yield stress not known.

A change was made in 1905 to axles 4 in. in diameter made from Siemens open-hearth steel, each carrying a maximum load of 14,500 lb. With these axles fractures occurred between the outer ends of the keyway and the car-wheel hub. The average life of these axles was about 100,000 miles.

In 1910 axles of 4-in. diameter were obtained, made of Siemens open-hearth acid steel, oil-toughened and having a maximum tensile strength of 45 tons, with 25 per cent elongation. Those which have broken have given an average life of 150,000 miles. Many are still in service.

In 1912 nickel-chrome axles, 4¼-in. diameter were purchased, having a composition of carbon 0.3 per cent; manganese 0.5 per cent; nickel 3 per cent, and chromium 0.6 per cent; sulphur and phosphorus each under 0.035 per cent. In this steel the maximum stress was not less than 55 tons, the elastic limit 75 per cent and the elongation 77 per cent. These axles are subjected to a carrying capacity of 16,000 lb. each and are fitted to four-wheel cars having 6-ft. wheelbase, 4-ft. gage, 16-ft. body, 27 ft. 6 in. over all, and fitted with covered upper deck. The cars have seating accommodation for sixty-one passengers.

So far out of 120 axles only three have broken, with an average mileage of 166,000. Steels having the higher maximum stress and yield point have not yet been tried, but in the latest axles, 4¼-in. diameter at the motor journals, the gear-wheel fit has been increased to $4\frac{9}{32}$ in., and solid wheels have been adopted in place of the split wheels formerly used.

Due to the complexity and uncertainty of the stresses to which tramcar axles are subjected, it does not appear possible to make any trustworthy calculations as to the minimum dimensions of axles of any given material which would successfully withstand the stresses to which they are subjected. The determination of details for the most economical type and sizes of axles for various equipment can only be decided by experience. Unfortunately, existing traction motors in use in England provide for only a limited diameter of axle through the motor journals which would result in a big contrast in diameter of the axle if the gear and car wheel fits were greatly increased. There would thus appear to be a risk of transferring the liability of fracture from the present position in which they occur to the point of reduction in diameter at the junction between the gear-wheel fit and the motor journal.

EXPERIENCES ON THE BRIGHTON TRAMWAYS

William Marsh, engineer and manager Brighton Corporation Tramways, writes as follows:

> It is well known that narrow-gage systems suffer much more from broken axles than standard gage, and also that axles on wheels dished outwards, as is sometimes the case on very narrow-gage systems, are much more liable to break than where the wheels are dished inwards, as they generally are on standard-gage systems. The gage here is 3 ft. 6 in. with no dish at all on the inside of the present wheels, although originally the chilled iron wheels were dished outwards slightly.
>
> About sixteen years ago we had about fifty to sixty axles break each year, or one and one-fourth axles per year per car. The original ones were 3¾ in. diameter with deep-cut keyways, and they all broke at the same spot, namely between the gear and driving wheels at the sharp end of the keyway.
>
> The diameter was increased to 4 in. without result, and later to 4¾ in. at the wheel seats, and the material used instead of high carbon was altered to low carbon basic Bessemer rolled bars wihout heat treatment.
>
> These axles, which we turned up ourselves, ran for many years without one breaking, and up to date I doubt whether 10 per cent have broken in a period of more than ten years, so that the trouble has been practically overcome.
>
> The cracks start, I think, when the wheel strikes the tangent point of a curve at too great a speed, and then gradually spread much like cracks spread by degrees through glass, although a cracked axle may take years to actually break. Broken axles are not the same danger on trams as they are on railways, owing to the reduced speed.
>
> Incidentally, the increase in diameter of the axles rendered a corresponding increase in the gear wheel hubs essential. These hubs are now 8 in. diameter.
>
> In my view, the cure for broken axles should be partly an alteration in design and partly an alteration in the materials used, and the various points can be summarized as follows: (1) Use soft steel in preference to hard. (2) Increase their diameter at the wheel seats. (3) Use inwardly dished wheels if possible. (4) Cut the keyways in a milling machine with a fairly large diameter cutter instead of using an end mill. (5) Increase the radius of curves in the track as much as possible. (6) Spiralize all curves at the entering end.

Arthur Ellis, city electrical engineer and manager, Cardiff Tramways Department, states that during the first ten years of local operation no breakage of car axles was experienced, but since that time there have been a few breaks. Most of the axles in use were 3¾ in. in diameter, turned to 3½ in. at the journals. During the past four years they have been renewing these with 4-in. axles with boat-shaped keyways, with steel made to British standard specifications, and in some cases special nickel-chrome axles were supplied by John Baker & Company. These latter axles have not been in service a sufficient length of time as yet to determine whether they will eliminate further breakage.

R. H. Wilkinson, general manager and engineer Huddersfield Corporation, reports that he has found satisfactory results from increasing the diameter by ¼ in. at both the gear and the wheel seats, the axles being 4 in. at other points. He finds that bad track conditions have increased axle breakages.

MANCHESTER USES LARGE DIAMETER AXLES AND HIGH-GRADE STEEL

J. M. McElroy, general manager Manchester Tramways, states that for many years his practice has been to use axles of as large diameter as possible and make the wheel and gear seats from ¼ in. to ½ in. larger than the remainder of the axle. Steel with from 35 to 40 tons tensile strength and an elastic limit of 50 to 60 per cent has given good results. Mr. McElroy calls attention to the necessity for careful machining of axles with no abrupt changes of section. He finds that a small keyway with a tight fit gives the best results.

A. R. Framley, general manager Sheffield Corporation Tramways, says that since 1910 his road has been using nickle-chrome steel axles, 4¼ in. diameter, with no keyways in the axles or gears and has had no breakages.

H. England, general manager Yorkshire Electric Tramways, states that he has been obtaining a life of from 150,000 to 300,000 miles from axles which are but 3¾ in. diameter, having split gears and ordinary keyway. He favors a larger diameter axle, however.

RESULT AT SOUTH LANCASHIRE

E. H. Edwardes, general manager South Lancashire Tramways, sent in the following report from his shop superintendent, W. J. M. Wilson:

Position of breakages placed in the order of percentage of breaks. They are all with 3¾-in. axles, No. 1 being about 95 per cent, remainder divide between 2 and 3. Nos. 4 and 5 not included.

1. Cracks and breaks at the end of the key-bed on the outer side of the gear-wheel boss.
2. Cracks and breaks at the inner side of the wheel nearest the gear.
3. Cracks and breaks at the inner side of the wheel furthest from the gear.
4. Breaks in the center of the gear wheel.
5. Inner edge of the journal (or at the shoulder between the bearing and the oil ring).

(1) In this particular break it is the weakest point of the axle, and it is made weaker by a sudden key-bed, in some cases a key-bed being provided 6 in. to 7 in. long by 1 in. wide and ½ in. deep; it is also the point which receives the first and greatest strain from the motor. Methods adopted to overcome this: Axles increased from 3¾ in. to 4 in., and made from a thoroughly well-forged, tough, oil-hardened steel, 30 to 40 tensile, the position of the gear wheel being increased to 4½ in. with no key-bed, split gear wheel pressed on to position.

(2 and 3) These cracks and breaks have only occurred with 3¾-in. axles, the increase in the diameter and the better quality of steel have improved matters so far, that after ten years' trial we have not yet had one broken.

(4) This type of break is very rare, and I merely mention it in passing, as one of the peculiar features was that several were discovered at the depot, having given no trouble on the road, although apparently having been broken some time; and as this system is a single track with frequent loops it makes it all the more surprising.

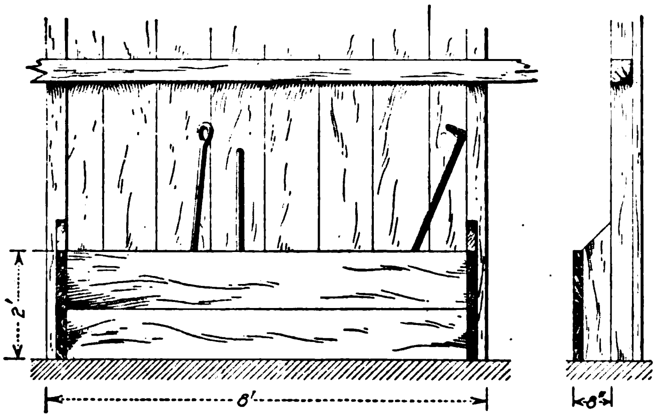
(5) This fault was due to a poor class of axle—in fact, rolled steel and the axles were supplied with twenty-four new cars. I have never had a break with a good-class axle.

General Observations.

1. Split gears previously mentioned are pressed on at 20-25 tons per square inch according to the stretch of the bolts, with an allowance of 0.0312 between bore and shaft, the bolts being increased from ¾ in. to 1 in. mild steel.
2. On our latest trucks, which we have increased to 7 ft., the Brill Company has designed springs to withstand a total load of 33,000 lb.
3. To insure getting forged axles of a good tough quality material, we get them in the rough and machine in our shops.
4. Gear wheel and wheel bosses are well radiused at the bored edges.
5. We thoroughly paint the gear wheel bosses, shafts, and bosses of the wheels with a good thick coat of white lead paint, well mixed with scrap varnish to keep out the water. This method was also applied to the key, key-bed, and inner surfaces of the gear wheel before fixing and bolting together.
6. The use of split gears pressed on is a good support to the axle, as a good grip is insured; by the old method, one portion of the gear was on the axle and the other chiefly on the key.

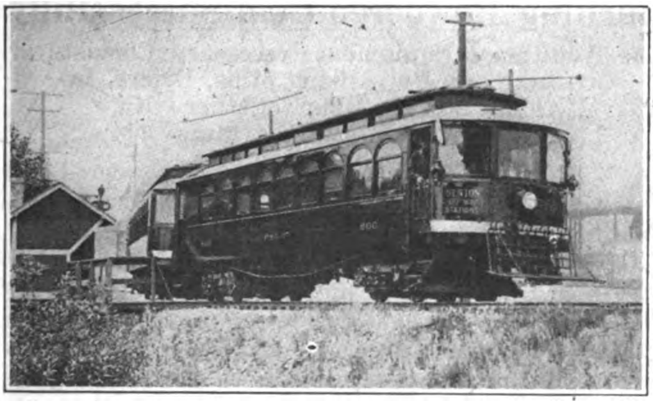
Wrench Pocket Beside Pit Track

In a New England car shop the practice of putting away truck and other wrenches nightly has been simplified by constructing a pocket 24 in. high and 8 in. deep for a distance of 8 ft. against the carhouse wall, parallel to the pit track, as shown herewith. The pocket is made of wooden planking 1¾ in. thick, and is attached at each end to the wooden column adjacent. Despite the extreme simplicity of the scheme, it has saved much trouble formerly experienced from car maintainers leaving crowbars and wrenches in the pits or on the intermediate flooring. It withstands rough usage and enables the wrenches to be disposed of at night and used for work in the morning with minimum loss of time and without the necessity of disturbing the storekeeper for a purely routine tool supply.



STORAGE PICKET FOR PIT TOOLS

The importance of having a reserve supply of electric power was illustrated recently when the Ipswich (England) Corporation Tramways were shut down for some time owing to the "seizing" of a steam turbine bearing.



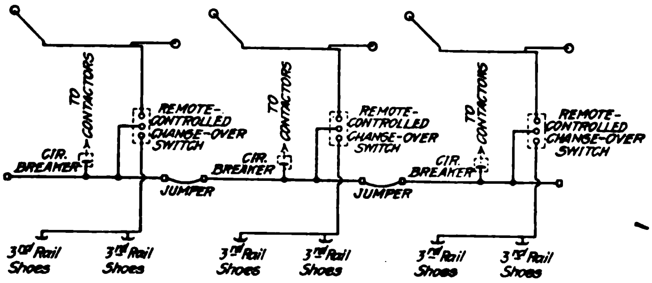
REMODELED CAR IN SERVICE

Making a Suburban Out of a City Car

THE Puget Sound Electric Railway Company is rebuilding nine 56,000-lb. city cars—made available by the introduction of 13,000-lb. safety cars—for short-line (13.45 miles) interurban service to Renton. The rebuilt cars by the addition of H. L. control, Westinghouse radial couplers, sash for all instead of half the car, etc., weigh 62,000 lb. each. The principal dimensions are:

Length over corner posts	38 ft. 9½ in.
Length over bumpers	50 ft. 4 in.
Width over sheathing	9 ft. 1⅛ in.
Width inside	8 ft. 3½ in.
Truck centers	29 ft.
Truck wheelbase	4 ft. 8½ in.
Height over trolley board	12 ft. 8½ in.

There are two passenger compartments, one with eighteen reversible and four stationary seats, all double; and the second with two reversible and four stationary seats of similar dimensions. Originally part were slat seats and part had rattan coverings. The slat seats and backs were removed entirely while the rattan coverings were replaced with Pantasote.



WIRING DIAGRAM OF POWER CIRCUITS FOR THREE-CAR TRAIN

The gates on the rear platforms were replaced by vestibules and the platform was cut in to make three steps. To carry the reconstructed vestibule, two channel-iron sills were installed back of the bolster, these being tied with a cross-sill

The end doors are only at the head end of a car so that the motorman rides in a cab fully closed at the front to keep out gusts of rain.

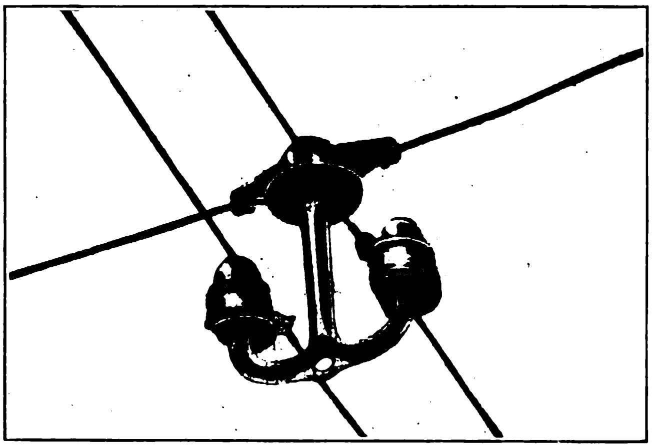
Each car retains its four GE-80 motors except that the gear ratio was changed from 17/69 to 19/67. The air brakes are Westinghouse AMM straight automatic with M22 brake valve. The cars will be run in trains of two to four.

One bus line runs the entire length. When operating from the trolley, the power supply is via one wheel on the first car; but when operating from the third-rail the shoes on every car feed directly into the bus line. As shown in the accompanying wiring diagram the cab of each car contains a remote-controlled changeover switch to meet these conditions.

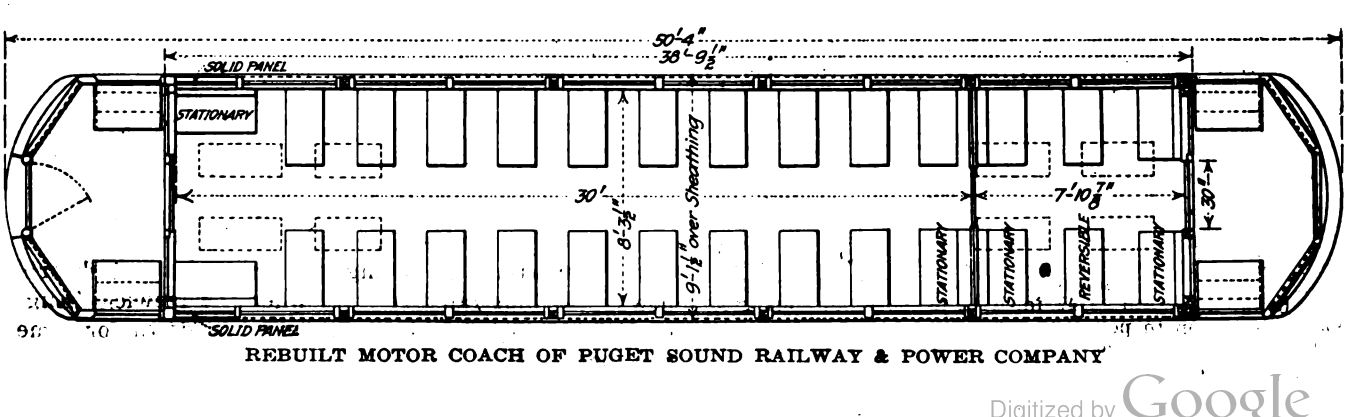
Running Small Wires Along Trolley Lines

BY G. H. MCKELWAY
Engineer of Distribution Brooklyn Rapid Transit System

IT OFTEN HAPPENS that in addition to the feeder and trolley wires necessary to operate an electric railway, there are also lighting, telephone or signal wires that have to parallel the tracks. Where spare pins or arms are available, of course, these may be used for supporting the additional wires. Other arrangements consist of attaching the wires to either the poles, to new arms or to the span wires. When these additional wires are carried on the same poles as feeder wires their proper place is below the feeder arms. The reason for this is the much greater liability of the small wires



SPAN WIRE USED TO SUPPORT OTHER WIRES



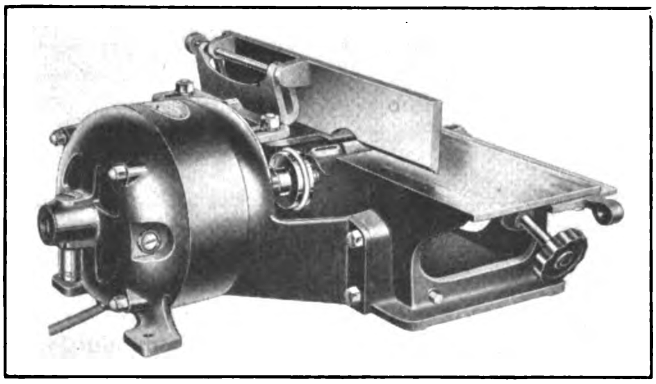
REBUILT MOTOR COACH OF PUGET SOUND RAILWAY & POWER COMPANY breaking and fouling others than there would be in the case of the feeders.

Where there is not sufficient room on the poles, or when a cheaper type of construction is desired, the wires can be suspended from the span wires. The accompanying illustration shows a method of hanging such wires which has been used on the lines of a large railway system in the East. With this plan the wires are tied to pony glass insulators mounted on ceiling brackets, into which are screwed standard round-top straight-line hangers. The hangers are sprung over the span wires.

While this method is extensively used by the company referred to, yet owing to the number of parts and the comparatively high price of each of them it would appear that an equally satisfactory arrangement would be the often used one of tying circuit breaker porcelains to the spans and passing the light or signal wires through the holes in the porcelain. Such an arrangement is cheaper and the tie wires and insulators, though not so permanent as the hangers, will ordinarily last as long as the spans to which they are attached. The method shown in the picture would be of more value only when all of the material was second-hand and could not be used to advantage elsewhere.

Portable Motor-Operated Bench Planer for Light Operations

A BENCH planer and jointer developed for woodwork operations usually done by hand has recently been placed on the market. The mechanism consists of three knives for an alternating-current equipment and two knives for direct current equipments driven by a small motor through a flexible coupling, the difference being due to the fact that as the direct-current motor can be operated at a higher speed fewer knives are required than for alternating-current operation. The use of such a machine practically eliminates hand planing. It also saves time as the planer is portable and can be taken to the work either in the shops or outside, thus saving the time ordinarily consumed in traveling back and forth to larger stationary jointers. The device was developed by J. D. Wallace & Company, Chicago, Ill., and the motors used are of General Electric construction. These motors are standard equipment and can be furnished for operation on any commercial circuit. The device and motor are a single unit with direct drive.



BENCH PLANER WITH SPECIAL END FLANGE ON PULLEY END

Burning Powdered Coal Successfully

The Additional Equipment Necessary Consists of Crushing and Pulverizing Mills, Driers, Inclosed Storage Bins Together with Conveyors and Elevators

AN EXPERIMENT in the burning of powdered coal was carried out recently by the Puget Sound Traction, Light & Power Company. For this test a 300-hp. B. & W. boiler at the Western Avenue steam heating station in Seattle was equipped with a "Dutch oven." The powdered coal was delivered to an inclosed bunker by bucket elevators. From the bunker the coal was fed by air pressure through pipes, and a locally designed burner to the furnace.

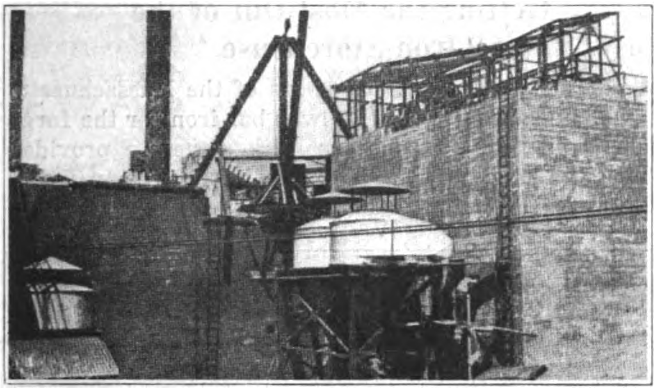
Various difficulties were experienced at first, one of the most annoying being the formation of slag on the boiler tubes. This was due to insufficiency in space between the burners and the tubes, with the result that combustion of the solid matter of the coal was not completed in the firebox, but was still going on among the tubes, the stream of burning coal being from 12 ft. to 14 ft. long. Two means were found for correcting this evil, one by furnishing a longer path for the flame and the other by introducing steam into the fire. The effect of the latter was quite remarkable, resulting in a decrease in flame length of about 50 per cent, the amount of steam required being less than that used for atomization with an oil burner of good design.

With the shortened flame length, the fused portion of the ash is deposited on the furnace walls before reaching the tubes and flows down into the ash pit leaving a glazed coating about $\frac{1}{16}$-in. thick on the brick work. Some difficulty was experienced from accumulation of slag in the ash pit in a solid block which required the use of bars to break up. This difficulty was finally overcome by constructing the throat of the slag pit so that the molten slag was forced to drop from the furnace in semi-fluid masses, and by using a water spray which prevented successive droppings from sticking together. Under this treatment the slag accumulates in the pit in chunks about the size of a large potato and is easily removed with a rake through the usual clean-out door.

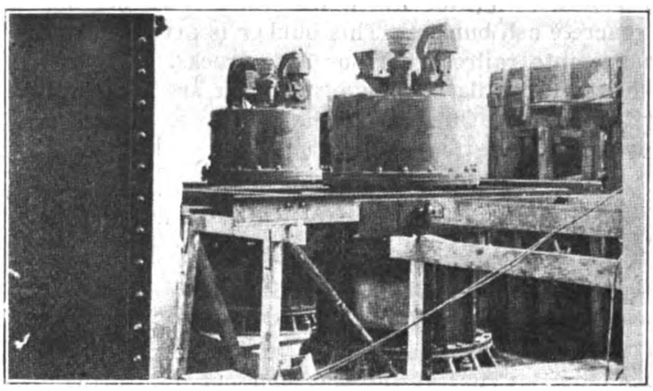
This boiler had previously been used with an oil setting. When fired with oil, it began to show distress at an overload of 50 per cent. With powdered coal as fuel, overloads of more than 100 per cent were carried without visibly affecting either the brickwork or the tubes. Sub-bituminous coals which give an evaporation of about 6¼ lb. of water per pound on chain grates gave better than 8½ lb. evaporation per pound of pulverized product when burned in powdered form, corresponding to an increase of 20 per cent to 25 per cent in the evaporative performance of the raw coal.

Almost perfect control of the fire was possible by regulating the speed of the supply fan by means of a rheostat controlling a variable-speed motor. The boiler was equipped with an indicating steam flow meter, and its responses to changes in fan speed were almost like those of an ammeter on an electric generator.

After three months of operation, during which time all obtainable grades of coal were burned, from high-grade bituminous to the purest lignites, it was demonstrated conclusively that coal of the character obtainable in this region could be successfully burned in powdered form under steam boilers. It was shown also that the



CYCLONE DUST COLLECTOR—FRAME OF HOUSING FOR BELT CONVEYOR BEING ERECTED ON TOP OF CRUSHED COAL BUNKER



TWO OF THE PULVERIZING MILLS UNDER ERECTION. STEPPED CONE PULLEYS ARE FOR SCREW FEED—DRIVE PULLEYS CAN BE SEEN AT BASE

performance of all grades when burned in this way was superior to any other method of firing, the improvements in the case of the lower grades being relatively greater than for bituminous coal.

As a result of these experiments, it was decided to equip the entire Western Avenue plant for burning powdered coal. As the station was equipped for burning oil, it was necessary to provide coal and ash-handling equipment and storage facilities and to change the furnace design as well as to supply the equipment required for drying and pulverizing the coal.

The pulverizing plant will be housed in a new concrete building adjacent to the station. Coal will be delivered from the bunkers and fed by gravity onto a rubber belt conveyor which will carry it to a crusher of the single-roll type. This belt will deliver the coal to a vertical elevator of the two-strand chain and bucket type just inside the pulverizing plant. After being crushed the coal will be raised to the roof and distributed to the crushed coal bunker by flight conveyor.

The crushed coal bunker will extend the width of the building and have a capacity of 300 tons. From two openings in the bottom of this bunker the coal will be fed by apron-type feeders to chutes communicating with the driers on the floor below. The spill from the apron feeders will be picked up by screw conveyors and delivered to the chutes, which are to be so arranged that coal can be fed from either end of the bunkers to either of the two driers.

The driers will consist of two steel cylinders, 55 ft. long, one 5 ft. and the other 6 ft. in diameter. They will be slightly inclined to the horizontal and arranged for rotation about the longitudinal axis. Steel baffles will be arranged longitudinally inside which will successively raise the coal and drop it as the cylinder rotates, thus forcing the coal, because of the pitch, gradually to pass through the drier.

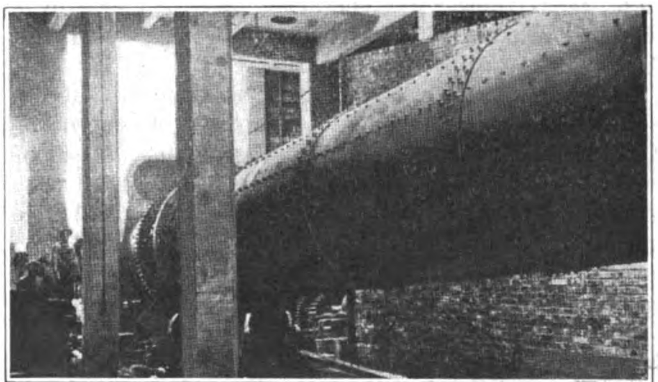
Heat for drying will be supplied by furnaces which will inclose the driers for the greater part of their length. The furnaces will be fired with powdered coal and the gases of combustion will pass into the driers at the discharge ends and be sucked through the shell, together with the moisture and dust from the coal, by fans at the opposite ends. These fans will discharge into cyclone dust collectors installed on the roof.

After drying, the powdered coal will be delivered to the dry-coal bunker on the roof by means of a bucket elevator. From the dry-coal bunker the coal will feed through chutes to four pulverizing mills, built by the Fuller Engineering Company. These will grind the dry coal to a fineness permitting 95 per cent to pass a 100-mesh screen and 85 per cent to pass a 200-mesh screen. The powdered coal will be carried from these mills by screw conveyor to the north side of the building, raised to the roof by bucket elevators and distributed by screw conveyors to steel bins in the boiler plant.

The powdered coal will be taken from the bottom of the steel storage bins by short screw conveyors driven by variable-speed motors and delivered into down pipes communicating with the burners. The passage of the coal through the down pipes is facilitated by air.

Dutch ovens have been constructed in front of each boiler and the floor cut away to provide the necessary furnace volume and slag pits. The clean-cut doors for the slag pits are at the basement floor level under the boiler room, and slag will be handled in wheelborrows

RAW COAL BUNKERS EXTEND BELOW STREET LEVEL WITH BELT CONVEYOR BENEATH THEM



DRIER BEFORE PLACING BRICKWORK, WITH DRIER FURNACE IN BACKGROUND to a bucket elevator which will raise it to the top of a concrete ash bunker. This bunker is arranged to discharge into railroad cars or auto trucks.

Further details of this installation are given in an article by G. E. Quinman in the July issue of the *Puget Sound Electric Journal.*

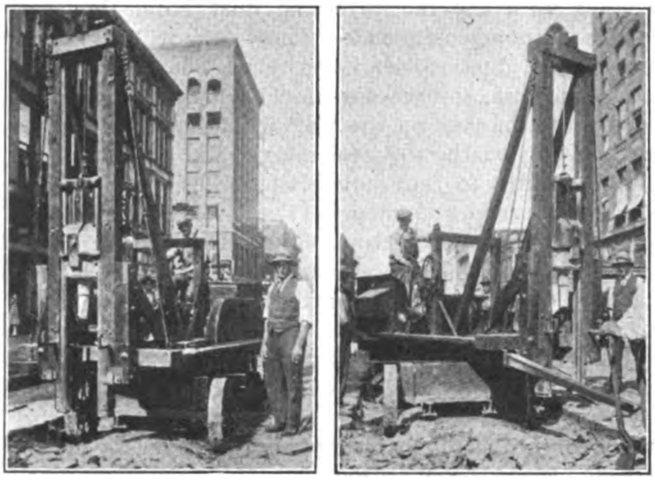
Cutting Paving Foundation with a Drop Hammer

By Harley Kimmel
Engineering Department, Des Moines (Iowa) City Railway

DURING the summer of 1918, the Des Moines (Iowa) City Railway was confronted with the task of relaying 4500 ft. of track. This work was all on paved streets with pavement laid on a thick concrete base in which the ties were imbedded.

Changes in track construction necessitated the removal of this old concrete base which ranged in thickness from 8 in. to 14 in. and was of an excellent quality in most places. Various methods of removing this were tried, none of which were at all satisfactory until the following device solved the problem.

An ordinary back filling machine, such as is used for filling trenches left in sewer construction, was made use of. The frame of this was raised above the wheels and upon this raised frame the mechanism was placed. 6-in. x 8-in. x 12-ft. leads with 1⅜-in. x 4-in. channel iron mortised on their inner edges were erected, and an 800-lb. common drop hammer with a 4½-in. x 2-ft. steel chisel clamped to its bottom was arranged to slide in these leads. Power for operating was furnished by a 15-hp. 825-r.p.m., 550-volt compound-wound d.c. motor. Current was taken from the trolley wire.



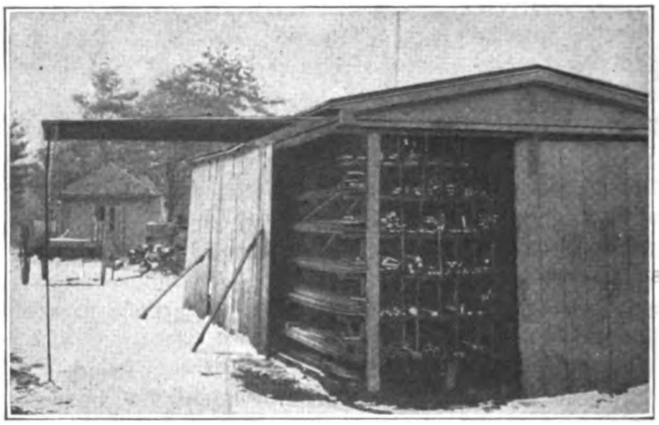
DROP HAMMER BREAKING UP CONCRETE

An eight-tooth No. 87 sprocket on the shaft of the motor drives a twenty-nine-tooth sprocket on the hoisting drum through a No. 88 steel roller chain. The hammer is operated through a ⅜-in. steel cable which runs from the drum under a 12-in. sheave bolted to the frame and over a similar sheave at the top.

The crusher is drawn by horses and a 12-ft. handle clamped to the end of the frame and at right angles with the leads acts as a lever with which to swing the mechanism from one side of the track bed to the other. The accompanying illustration gives an idea of the construction of the machine.

Getting the Most Out of the Iron Storehouse

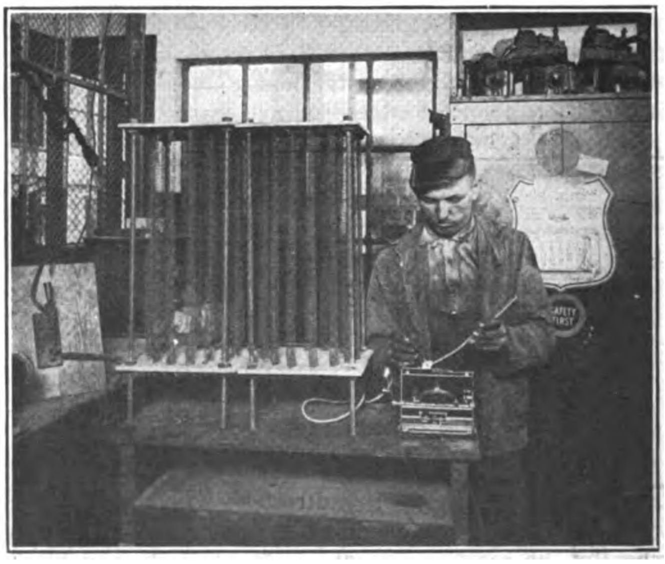
AT THE Salem (N. H.) shops of the Massachusetts Northeastern Street Railway bar iron for the forge shop is stored in an outdoor rack structure provided with a sectional housing, as shown in the accompanying illustration. Double sliding front doors are a convenient feature, but the handiest feature in the design is the provision of folding side doors. These are in three sections and can be easily raised and lowered by one man, and fastened open by a vertical rod connection. This arrangement enables the rods or bar iron stored at the side of the rack to be handled with maximum speed.



IRON STOREHOUSE OPEN AT BOTH SIDE AND END

A Welding and Battery-Charging Set from Heater Coils

J. L. BROWN, master mechanic, Dallas (Tex.) Railway, recently constructed the welding rheostat and charging set shown in the accompanying illustration. The material used was largely some coils from old electric heaters and some pieces of transite board. There are two groups of twelve coils each, giving 10 amp. in multiple and 5 amp. in series. The outfit is used for light welding jobs and for charging automobile 6-volt storage batteries.



WELDING RHEOSTAT AND BATTERY CHARGING SET

Block Signals Immune to Lamp Failures

Special Arrangements for Counting In and Out Also Provide for the Proper Distribution of Traffic

BY W. C. WEFEL
Light Foreman Denver (Col.) Tramway

A SET of 550-volt automatic block signals has recently been constructed in the shops of the Denver Tramway, and installed on one of the lines of this company. A careful investigation of available records indicates that 50 per cent of signal failures are lamp failures, and special attention has been given to an elimination of this trouble. In doing this we are using for lighting the signals 80 per cent of the current consumed, rather than 20 per cent or 40 per cent, as in some signals.

The signal shown in Fig. 1 has two circuits, each one consisting of four 115-volt bow-tungsten lamps, and one 250-ohm resistance coil. The lamps, as well as the coil, are provided with automatic shunts, and in case of the failure of any lamp or coil, it is at once recorded by compensating lamps, while one good lamp still remains behind the colored lens. The compensating lamps are placed in a separate compartment, and are visible through a long, narrow strip of frosted glass, underneath the colored lenses. Motormen have been requested to report to the dispatcher at once the appearance of a white light, as this indicates a lamp failure and the need of attention. The maintenance men can then pick out the bad lamp without molesting any other, which is not the case without the compensating feature. From a lighting standpoint a complete failure of the signal would never take place, for even if both lamps behind the colored lens should fail the white light would indicate trouble and cause the motorman to seek instructions or proceed with caution. Both red and green lenses are 5⅜ in. in diameter, hooded, and they can be seen on both sides of the signal very distinctly night or day.

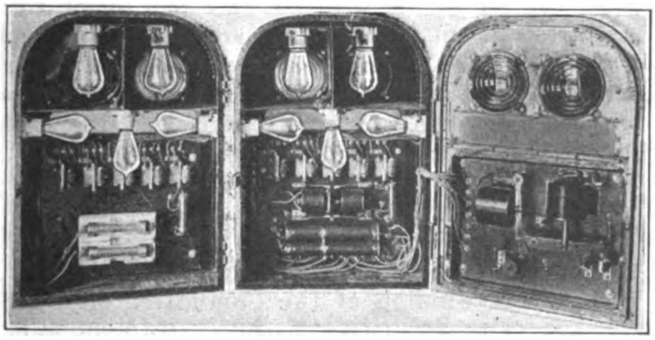


FIG. 1—AUTOMATIC BLOCK SIGNAL WITH COMPENSATING FEATURE TO NEUTRALIZE LAMP FAILURES

The installation now in service did not require the counting in and out system. Whenever traffic conditions demand it this signal will, however, take care of this feature with a slight change in the mechanism. The tendency of cars going in one direction to hold those going in the opposite direction will also be done away with. This is accomplished by providing a means whereby the car that is waiting for the occupied block to clear can, by standing with its trolley wheel on the contact, change the green signal on the counting-in or clear end of the block to red, and keep any other cars from following those already in the block. The signal on the end at which the car is waiting remains in the stop or red position until the block is clear, and all cars are counted out. For a fraction of a second the signals are restored to normal or clear, and the car waiting with its trolley wheel on the contact pan at once sets the signal on that end to green and on the distant end to red. This will provide for a more equal movement of cars in both directions, and avoid delay to a car on time by those that are late. The possibility of burning up the magnet coils by leaving the trolley wheel on the contact pan has also been removed by providing two paths for the magnet current; one straight across the line and the other shunted around a 2000-ohm resistance coil. As soon as the operation of the magnet has been completed, the former path is broken and the shunted circuit takes care of the current flowing through the resistance coil and magnet. This avoids a rebound of the selective switch and keeps the flow of current very small through the magnet. Accessibility of all parts has received consideration. Any part of the signal can be removed without disturbing any other, and all wires entering the signal are fused and are in a separate box. The magnet coils are wound to perform their function with a line potential as low as 300 volts. The signal containing the operating mechanism weighs about 50 lb. and the other 30 lb. They are attached to the pole with L-shaped brackets as shown in Fig. 2, and can be adjusted to allow for the rake in the pole.

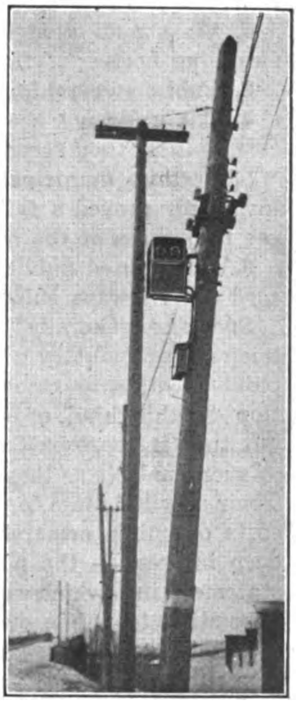


FIG. 2—NEW 500-VOLT SIGNAL MADE BY DENVER TRAMWAY

Women Substation Operators at Cleveland

For some time past the Cleveland (Ohio) Railway has been employing women in substation operation with entire success. At present twelve are engaged in this work out of a total of twenty-four operators. The experience of the company has shown that women have certain qualities which are particularly essential in this work. They have a keen sense of responsibility and are very reliable in the performance of their duties. They are somewhat slower in switching operations, partly due to this conscientiousness and partly to inexperience. For example, when there is trouble which by rapid switching might be taken care of, the women are apt to let an entire station go out before starting up again. A skillful man might be able, in such a case, to get the equipment back onto the source of power without losing the momentum of the station and thus insure minimum loss of direct current power supply.

LETTERS TO THE EDITORS

Public Ownership Should Not Be Suppressed

NORTH AMERICAN COMPANY
NEW YORK CITY, Nov. 25, 1918.

To the Editors:

The arguments urged against public ownership at this time may be summarized as follows:

1. Public ownership would prove inefficient in practice and cause an increase in fares or support by taxation;

2. We should give regulation a good tryout before swapping horses;

3. Public ownership is the cry of despair;

4. The railways need a new relationship with the communities they serve;

5. Because municipal ownership is reported to have invariably proved a failure, we should not capitulate to the prejudices of the hour;

6. An aroused public opinion will sooner or later accord the railways substantial justice.

Speaking generally, the representatives of the electric railway industry who contributed their views on the public ownership resolution have voiced their opposition to this kind of ownership. I have little doubt but that it represents their mature views in the light of such analysis as they were able to give to the subject. Their unwillingness to permit the public to pay the high costs of public ownership is convincing proof of their deep interest in the public welfare. There is not one statement into which can be easily read the thought that opposition to public ownership results from individual selfish interest. Through practically the entire discussion runs an evident deep interest in the common people and taxpayers, a belief in their ultimate fairness, and an optimism as deep-seated as the deficits from which the industry pretty generally has been suffering for some time past.

I must confess that in advocating public ownership I am prompted by selfish motives. I am not a statesman, and I have no right to tell the people what is for their own best interests. Even if I did, I doubt if the general public would believe me any more than it seems to believe what other public utility operators say. I recognize that we live in a democracy. The people are sooner or later going to have what they want. A desire to have often comes from a belief that it is difficult of attainment. Once attained or possessed of the knowledge that it can be had, the desire for possession is often removed.

In introducing a resolution favoring the facilitating of public ownership, I had no hope that it would be promptly adopted by the American Electric Railway Association. A policy involving so important a change in the industry cannot be passed upon over night. I wished to call the attention of electric railways to this important question, knowing that they would be required to meet it sooner or later in their dealings with the communities they serve. The industry will never settle its pressing problems until it has reconciled itself to the idea of public ownership and is prepared to welcome it as one of the important elements in any settlement or enabling legislation. The ease of settlement will likely vary in fairly direct proportion to the facility with which public ownership is provided for. This is not the occasion to push my views further or give the other reasons for advocating legislation looking toward public ownership (not necessarily municipal), which were not contained in the draft of the resolution.

It is not the duty of any individual to point out to the industry what it should do. I trusted that we needed only the suggestion of an idea and that the brains which we generally admit we are endowed with would do the rest. A review of the written opinions shows how far the idea made progress.

J. D. MORTIMER, President.

Municipal Ownership Not the Solution

WASHINGTON RAILWAY & ELECTRIC COMPANY
WASHINGTON, D. C., Nov. 26, 1918.

To the Editors:

The American Electric Railway Association has heretofore been opposed to municipal ownership, and while it is true that the industry is now confronted with unprecedented difficulties, I for one am not of the opinion that the solution of those difficulties lies in municipal ownership, nor do I feel that the association is justified in taking any action in that direction. Our backs may be to the wall, but it seems to me there is a greater realization on the part of the public and of the regulatory bodies of the necessities of the situation than there has been at any time in the past, and I believe that with a return to normal conditions the outlook for the industry is far from hopeless.

WILLIAM F. HAM, President.

Menaces Should Be Removed

Such Is the Finding of the Committee on Public Service Securities of the Investment Bankers Association

THE electric railway situation is reviewed at length in an interim report just issued by the committee on public service securities of the Investment Bankers Association of America. The report outlines at length how communities would be benefited by a removal of the menaces that now frighten investors away from the electric railway field.

In the committee's opinion, there will undoubtedly have to be increases in rates, but relief can also be given by the reduction of certain expenses, such as paving and special taxes. Continuing, the report says:

> There seems little question that in keeping down the rates and improving the service of public utilities there is nothing the public and its representatives can do that will be so effective as the removal of menaces to the business. Menace in itself is a cost of the service. Uncertainty as to results, fear of illogical burdens, lack of freedom in handling the business in a business-like way, indefinite fear of attack—all are costly because the objects feared are certain to be insured against in the rate of return that investors consider adequate. Where risks appear great, insurance premiums are great.
>
> There are well-grounded objections to the guarantee of income returns by city and state governments, but if city and state governments were to recognize clearly the quasi-public nature of utilities and were to protect jealously the security of the investments in them; if they were to show through a period of years that unreasonable burdens would not be imposed, and that capital devoted to a public use and irrevocably placed at the mercy of the public would be kept inviolate, then there would be almost the equivalent of a guarantee based on custom and the practice of fair dealing. An investment banker does not need to be told that under these conditions capital would be invested in

the utility business at considerably lower rates of return than the rates that have been necessary to attract it heretofore.

One of the most serious of the menaces that the investor fears is that in arriving at a capital base for regulation or purchase, the value of the property will not be recognized, and that unreasonable standards will be applied in valuation. The community that fancies it has made a profit for its people by forcing the acceptance of under-valuation as a capital base for its utilities makes its first loss in the higher rate of return necessary to attract new capital into a community that has proved that capital has something to fear. This higher rate of return applies to all the new capital needs of the future. The effect is shown not only in the larger proportion of any receipts from new business that must go to new capital, but is shown also in the slower contribution of capital because there will be less business to be taken on that will yield the larger returns. The service to the community is restricted. If communities were to consider valuations not with the idea of squeezing them to the minimum but with the idea of doing full justice to the owners, we should soon have investors considering utility investments in a new light.

AMERICAN ASSOCIATION NEWS

More War Labor Board Awards

THE Electric Railway War Board has issued Bulletin No. 39, giving details of awards made by the National War Labor Board, affecting electric railways, on Nov. 20 and 21. The bulletin was dated Nov. 25. The awards affect the following: Portland Railway, Light & Power Company, Butte Electric Railway, Denver Tramway, Charleston Consolidated Railway & Lighting Company, Cincinnati Traction Company, Cumberland County Power & Light Company, Empire State Railroad Corporation, Lewiston, Augusta & Waterville Street Railway, East St. Louis, Columbia & Waterloo Railway, Syracuse & Suburban Railroad, Syracuse & Northern Electric Railway, Auburn & Syracuse Electric Railroad, Detroit United Railway and Rochester & Syracuse Railroad. A list of previous bulletins issued by the War Board will be found in the issue of this paper for Nov. 16, page 895.

Simplifying the Automatic Substation Circuit Diagram

AS WAS mentioned briefly in the issue of the ELECTRIC RAILWAY JOURNAL for Nov. 9, a feature of the Nov. 5 meeting of the Elevated Railroads company section at Chicago was a talk by Charles H. Jones on the history and principles of operation of the automatic substation. Mr. Jones gave the members the benefit of his experience with the four substations on the line of the Chicago, North Shore & Milwaukee Railroad.

In his talk Mr. Jones made a special and successful effort so to simplify the wiring diagram of the "automatic" that the essentials of its operation would be clear to men without electrical engineering experience. For this purpose he showed numerous pictures and also the diagrams reproduced herewith. These are almost self-explanatory. Fig. 1 was used to give the men a clear understanding of the primary pieces of apparatus in an ordinary manually-controlled substation, while Fig. 2 had a similar purpose with respect to the "automatic." The combination of these two showed in a simple manner the difference between the two. Fig. 3 was used in explaining the sequence of operations in putting an automatically-controlled substation on the line, after the control equipment had been set in motion by the contact-making voltmeter.

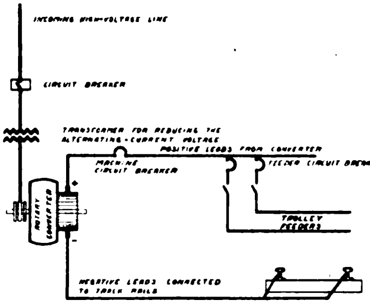

INCOMING HIGH-VOLTAGE LINE
CIRCUIT BREAKER
TRANSFORMER FOR REDUCING THE ALTERNATING-CURRENT VOLTAGE
POSITIVE LEADS FROM CONVERTER
MACHINE CIRCUIT BREAKER
FEEDER CIRCUIT BREAKERS
ROTARY CONVERTER
+
-
TROLLEY FEEDERS
NEGATIVE LEADS CONNECTED TO TRACK RAILS

FIG. 1—SIMPLIFIED CIRCUIT DIAGRAM FOR MANUALLY CONTROLLED SUBSTATION

These operations, as explained by Mr. Jones, were as follows:

First, oil switch closed.

Second, rotary converter closed on the starting taps of the transformer.

Third, shunt field of the rotary connected across the exciter set.

Fourth, shunt field thrown across the rotary leads.

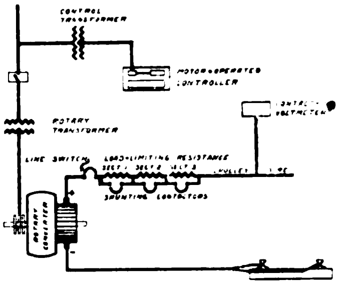

CONTROL TRANSFORMER
MOTOR-OPERATED CONTROLLER
CONTACT-MAKING VOLTMETER
ROTARY TRANSFORMER
LINE SWITCH
LOAD-LIMITING RESISTANCE
SECT. 1
SECT. 2
SECT. 3
TROLLEY
SHUNTING CONTACTORS
ROTARY CONVERTER
+
-

FIG. 2—SIMPLIFIED DIAGRAM FOR AUTOMATIC SUBSTATION

Fifth, rotary connected to the full-voltage taps of the transformers.

Sixth, connection made from the positive lead of the rotary to the controller for furnishing current to operate the direct-current contactors.

Seventh, main contactor closed.

Eighth, ninth, tenth, shunting contactors closed in sequence, thereby putting the rotary on line with all resistance cut out.

The relay contacts are indicated in the circuits of the shunting contactors. These contacts are controlled by the load on the rotary.

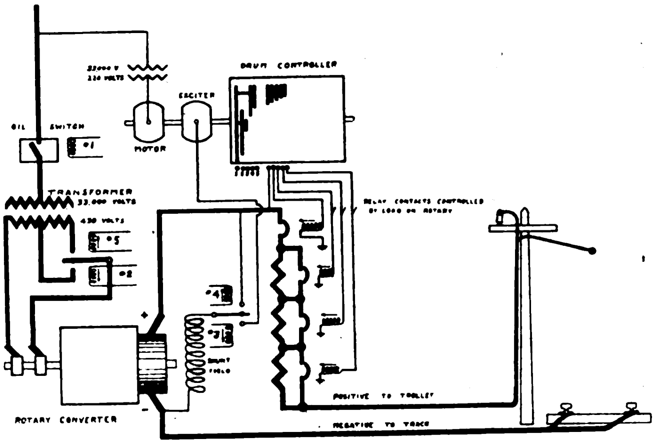

33000 V
220 VOLTS
DRUM CONTROLLER
EXCITER
MOTOR
OIL SWITCH
#1
TRANSFORMER 33,000 VOLTS
430 VOLTS
#5
#2
#4
#3
SHUNT FIELD
RELAY CONTACTS CONTROLLED BY LOAD ON ROTARY
POSITIVE TO TROLLEY
NEGATIVE TO TRACK
ROTARY CONVERTER
+
-

FIG. 3—DIAGRAM SHOWING SEQUENCE OF OPERATIONS IN AUTOMATIC SUBSTATION

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Minneapolis Facing Problem

Can Accept Present Inadequate Service, Permit Fare Increase or Apply Municipal Ownership

Horace Lowry, president of the Minneapolis (Minn.) Street Railway, included in the system of the Twin City Rapid Transit Company, answering a question put to him by Alderman J. D. Williams at a Council committee meeting on Nov. 20, admitted that three courses of action were all that were left to the city in dealing with the railway. In short, the city could accept the present service until financial conditions improved, it could permit an increase in fares with improved service or it could apply municipal ownership.

COMPANY AT END OF ROPE

Mr. Lowry intimated that the company had come to the end of its rope. In the matter of increasing fares, he said, the Legislature could be asked to provide for joint control of the Minneapolis and St. Paul properties of the company and authorize the body so controlling them to regulate fares.

The meeting of the Council committee on street railway matters at which the affairs of the railway came up had been called to determine what legal means could be taken to compel better service in Minneapolis. It had been suggested that the city attorney bring mandamus proceedings to compel better service. After the Aldermen had discussed the situation, Mr. Lowry was asked to make a statement. He said:

"The city can be constructive and take some action looking to increased revenues for the company, thereby permitting us to provide more adequate service, or it can be destructive and force us to go into the hands of a receiver. Other cities throughout the country are permitting their railways to increase their fares, and if that could be done here we could maintain the service demanded. Minneapolis right now is maintaining better service on a 5-cent fare basis than is given in any other city of the country. We cannot do more than we are doing."

COMMITTEE WILL REPORT

Alderman Williams asked Mr. Lowry if he thought it possible to increase fares in Minneapolis when, under present conditions, it was practically impossible to increase fares in St. Paul without a referendum vote. Mr. Lowry said:

"I do not think that could be done. The Legislature could be asked, however, to provide for control of the two properties under one body, with that particular body given power to regulate rates."

The city street railway inspector, the city attorney and the special committee of five Aldermen will report back findings on the adequacy or inadequacy of the service and remedies, if necessary, within two weeks.

Preparing for Grand Jury Action

The Kings County Grand Jury began an investigation on Nov. 25 of the wreck of a Brighton Beach train of the Brooklyn (N. Y.) Rapid Transit Company in the Malbone Avenue tunnel on Nov. 1 which cost almost 100 lives.

This investigation of the Grand Jury is entirely separate from the "John Doe" proceedings in which Mayor Hylan is sitting as a magistrate, and in which Edward Luciano, the strikebreaker motorman who drove the wrecked train, is one of the defendants. At the conclusion of this hearing it is believed that Mayor Hylan will issue warrants.

It is not likely that the Grand Jury will hear additional evidence for several days as the entire staff of District Attorney Lewis's office is to devote its attention to getting the hearing before Mayor Hylan into its final stages.

Among those subpœnaed to appear on Nov. 25 at the Hylan hearing was Vice-President John J. Dempsey, the operating head of the Brooklyn Rapid Transit Company, and his immediate subordinate, Division Superintendent Thomas F. Blewett. They declined to sign waivers of immunity, and Mr. Lewis said that they would not be allowed to testify without signing such waivers.

Nicholas F. Brady, chairman of the board of directors of the Brooklyn Rapid Transit Company, was called as a witness on Nov. 26 before the Mayor. Mr. Brady said that on Oct. 29 the recommendations of the War Labor Board were received. On the Monday previous the matter had been discussed by the executive committee of the company and it was agreed to leave the carrying out of the program to the officers rather than to the board of directors. The policy was for the carrying out of the recommendations of the War Labor Board, with the exception of the cases of one or two men who they had decided ought not to be taken back for the good of the company. Mr. Brady said the question of carrying out the recommendations was left to Timothy L. Williams as president of the Brooklyn Rapid Transit Company, and the case of the New York Consolidated Railways to Mr. Dempsey. Mr. Blewett, division superintendent, was under Mr. Dempsey.

Columbus Franchise Bid

New Factors Regarded as Complicating the Columbus Railway Settlement Matter Still Further

A surprise was caused in the City Council of Columbus, Ohio, during the week ended Nov. 23 when Attorney J. W. Heintzman of Cincinnati appeared on the floor as the representative of a new company which desires to bid for a franchise in that city. He refused to say at that time what interests he represents, but did state that no company would accept the same franchise terms as are now in force.

TEMPORARY FARE ADVANCE ADVOCATED

Councilman Weinland offered an ordinance providing for a temporary rate of six tickets for a quarter, with a 20 per cent increase in the service and extra cars for rush hours, but this was defeated. Mr. Weinland says that the present rate of fare has produced a deficit and there is danger of suspension of service. He wanted measures adopted that would bridge the chasm until some definite arrangement could be made on the basis of the investigation which is under way. His idea is that a service-at-cost plan, such as is used in Cleveland, would fit conditions in Columbus.

President Westlake of the City Council has announced that he will introduce an ordinance requiring all city and interurban cars which carry local passengers to stop at the corporation lines, in addition to other stops for which provision has already been made. This will allow people who have paid the city fare to alight and walk the remainder of the distance, instead of paying the 5-cent fare, to which the company is entitled by its franchises. It is only another phase of the fight to prevent the company from collecting the 5-cent rate, which it did not do until forced to by present conditions.

COMPANY CURTAILS SERVICE

The company began to curtail service on the morning of Nov. 20, in accordance with the notice already served by Vice-President Pomerene, and the cut was a noticeable one. The heaviest curtailment is to be made on the lines where the greatest number of people refuse to pay the 5-cent cash fare inside the city. Some lines are good at one end in this respect and bad at the other.

Edward W. Bemis, representing the city of Columbus, Ohio, has notified the City Council of the employment of Sangster & Matthews, accountants, to aid in the investigation of the books of the Columbus Railway, Power & Light Company.

Seven Wage Awards Announced

War Labor Board in Each Case Urges Necessity of Reconsidering Question of Fare Relief

The Committee on Public Information has just released, under dates ranging from Nov. 21 to Nov. 23, the text of seven electric railway wage awards of the National War Labor Board. The wages on three interurban lines are fixed at from 41 to 45 cents an hour, with rates of from 38 to 42 cents on another line of this sort. The rates in Charleston, S. C., run from 36 to 40 cents, while in the special cases of the Portland (Ore.) interurban lines and the system in Butte, Mont., they run from 47 to 60 cents and from 61 to 65 cents.

In several awards where the wage rates of employees other than motormen and conductors were involved, the board held that the percentage increase granted to motormen and conductors should be applied to these other rates, but that the latter should in any event be raised to a minimum of 42 or 42½ cents an hour up to ten hours of work. On the other hand, the new rates for such other employees must not exceed this minimum or operate to increase wages of any employees who are already receiving union-craft rates.

In every case the board stated that the award would add substantially to the operating cost of the railway and would require a reconsideration by the proper authorities of the fare question. The board repeated its early urgent recommendation of the Cleveland decision for some action to meet the pressing need of the carriers.

Abstracts of the various awards follow:

CHARLESTON (S. C.) CONSOLIDATED RAILWAY & LIGHTING COMPANY

New Wage Scale for Motormen and Conductors: First three months, 36 cents an hour; next nine months, 38 cents an hour, and thereafter, 40 cents an hour.

Time of Award: Effective as of Nov. 16, for the duration of the war, with opportunity for reopening of case at six months' intervals. The company has until Dec. 15 to make back payments.

SYRACUSE (N. Y.) NORTHERN ELECTRIC RAILWAY

New Wage Scale for Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter, 45 cents an hour.

New Wages of Other Employees: The wages of employees (other than motormen and conductors) which have been submitted to the board of fixation shall be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased by this award; provided, however, that if this increase does not bring the wage of any adult male employee up to a minimum of 42 cents an hour he shall be paid this minimum up to not more than ten hours work a day. Where women are employed in the same classification as men, they shall be paid equal pay for equal work. The foregoing provisions shall not apply to employees who already are receiving union-craft rates, or operate so as to increase their wages beyond such rates.

Time of Award: Effective as of Aug. 2, for the duration of the war, with opportunity for reopening of case at six months' intervals. The company has until Feb. 1 to make back payments.

BUTTE (MONT.) ELECTRIC RAILWAY

New Wages for Motormen and Conductors: First three months, 61 cents an hour; next nine months, 63 cents an hour, and thereafter, 65 cents an hour.

Time of Award: Effective as of Aug. 3, for the duration of the war, with opportunity for reopening of case at six months' intervals. The company has until Feb. 1 to make back payments.

PORTLAND (ORE.) RAILWAY, LIGHT & POWER COMPANY

New Wages for Interurban Employees: Flat rates as follows—(a) passenger trainmen, 54 cents an hour; (b) freight trainmen (express, local freight and day yard crews), 56 cents an hour; freight trainmen (night yard crews) 60 cents an hour; (c) passenger and freight brakemen, 47 cents an hour; day yard crews, 59 cents an hour, and night yard crews, 60 cents an hour.

Working Conditions: All motormen and conductors who are called upon to work extra trips or do other extra work or tripper service in addition to the runs to which they are respectively assigned shall be paid time and a half for all such time, where such extra work requires their employment for more than ten hours a day. No motorman or conductor, however, who is regularly assigned to a scheduled run paying more than eight hours platform time shall be required to run any such extra trip or do extra work or tripper service unless there are no available extra men to do such work. With regard to fixing the time within which a day's work shall be completed, the request of the complainants that the eight-hour day be completed within ten consecutive hours is not granted.

Time of Award: Effective as of July 17. The company has until Feb. 1 to make back payments.

CINCINNATI & COLUMBUS (OHIO) TRACTION COMPANY

New Wage Scale for Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter, 45 cents an hour.

New Wages of Other Employees: The wages of employees (other than motormen and conductors) which have been submitted to the board for fixation shall be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased by this award; provided, however, that if this increase does not bring the wage of any adult male employee up to a minimum of 42 cents an hour, he shall receive this minimum up to not more than ten hours work a day. The foregoing provisions shall not apply to employees who already are receiving union-craft rates, or operate so as to increase their wages beyond such rates.

Time of Award: Effective as of Nov. 22, for the duration of the war, with opportunity for reopening of case at six months' intervals.

CINCINNATI, MILFORD & LOVELAND (OHIO) TRACTION COMPANY

New Wages of Motormen and Conductors: First three months, 38 cents an hour; next nine months, 40 cents an hour, and thereafter, 42 cents an hour.

New Wages for Other Employees: Same as in case of Cincinnati & Columbus Traction Company, except that the minimum rate is set at 42 cents an hour.

Time of Award: Effective as of Sept. 1, for the duration of the war, with opportunity for reopening of case at six months' intervals. The company has until Feb. 1 to make back payments.

CINCINNATI, LAWRENCEBURG & AURORA (OHIO) ELEC. ST. R.R.

New Wages for Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter, 45 cents an hour.

Time of Award: Effective as of Nov. 22, for the duration of the war, with opportunity for reopening of case at six months' intervals.

The text of the nine additional awards mentioned very briefly in the ELECTRIC RAILWAY JOURNAL of Nov. 23, page 934, will be published in the issue of this paper for Dec. 7.

Springfield Wage Complaint Made

Officials of the union, acting for the employees of the Springfield (Mass.) Street Railway have requested the War Labor Board to act in behalf of the men's demands for a wage increase of approximately 40 per cent. This request, in the form of a complaint, has been dispatched to Washington and follows the meeting of the men at which consideration was given to the company's refusal to consider the demands.

This is the latest step in a long controversary that has been brewing since the award of Henry B. Endicott last June under which the men are now employed. A grievance was claimed by the company's failure to "adjust" wages to correspond to those paid for similar work by the Worcester Consolidated Street Railway. The war was then in progress and the Springfield Street Railway averted a threatening situation by granting an increase of 4 cents an hour for miscellaneous employees.

Labor Board Decides Two Minneapolis Cases

Discrimination Against Employees for Union Affiliations Considered—Won't Act In Twin City Case

On Nov. 23 the National War Labor Board handed down a decision involving its jurisdiction where a State arbitration board had enunciated principles different from those of the federal board. The same decision covered two cases, those of the International Association of Machinists of the city of Minneapolis against the Minneapolis Steel & Machinery Company and of various employees against the Twin City Rapid Transit Company.

UNION DISCRIMINATION CHARGED

In the case of the Minneapolis Steel & Machinery Company several employees complained that they had been discharged for joining the union, and one of the defenses of the company was that under the rules of the Minnesota Board of Arbitration, a branch of the State Public Safety Commission, employers who before the war had refused to employ or continue in their employment any member of a trade union, need not change their practice. This is not in accord with the rules of the National War Labor Board, which provides that there shall be no interference by employers with the right of their employees to join labor unions. In other respects the principles of the two boards differ but little.

The manufacturers claimed that the federal board should not take jurisdiction because the case was properly within the cognizance of the State Board of Arbitration, but the War Labor Board held that there could be concurrent jurisdiction, even where different rules prevail, as in this case in regard to labor unions, and that until the ratification of the treaty of peace, the federal authority, as it related to war preparation, should be supreme. The board adds, however, that its principles, when they are at variance with those announced by a state board, do not necessarily nullify such rules. Such a question, it says, can well be postponed until it arises on the merits of the case, but it does not see in this difference any reason for ousting the jurisdiction of the federal board, so that the evidence will be heard.

In the street railway case, the board says, a different situation exists. The company made two pleas, one that a method of settlement existed through "shop mediation" through committees, with ultimate reference to the president of the company. The other was that the Public Safety Commission (the State arbitration board) had already begun to consider the controversy. The National War Labor Board declined to accept the first plea as describing a satisfactory method of arbitration, as outlined in its general principles, but accepted the second plea, in view of the fact that the hearings had begun. Incidentally the national body remarks:

"We are relieved in this particular case, so far as the plea is concerned, from any conflict as to a denial of rights to organize in a trade union by the street railroad companies in the decision of the Public Safety Commission itself, enjoining the street railroad company from discrimination on account of union activities."

Service at Cost Will Stay

Delos F. Wilcox, former franchise expert to the Public Service Commission of the First District of New York and the author of a two-volume review of public utility franchise settlement terms, was one of the speakers at the reconstruction congress held recently by the National Municipal League at Rochester, N. Y. Dr. Wilcox is now associated with the United States Bureau of Standards for the purpose of making a study of the standardization of street railway franchises and related matters, but prefaced his remarks by the statement that the views expressed in the paper were personal. He remarked that the present crisis in electric railway affairs was precipitated by the war, but that its origin lies in over capitalization. Briefly, he advocated these reforms:

1. The speculative element in electric railway investments must be removed and the public must get the benefit and bear the burden of service at cost.
2. Electric railway service must be rendered at cost.
3. Power to fix wages and working conditions will have to be conferred on the same public bodies vested with power to fix rates. Strikes on electric railways will have to be outlawed.

Dr. Wilcox pointed out that New York City's dual subway contracts provide that the city defers interest on its own investment until the operating companies have been assured of operating expenses and a fixed return on their capital; in other words, he added, New York thought the uniform 5-cent fare important enough to subsidize it.

Dr. Wilcox believes the New York, rather than the Boston plan, will prevail on the ground that local transit will be recognized more and more as a public function for the general convenience of the people.

New Electric Railway Association

Operators in Trans-Mississippi Territory Organize for Closer Co-operation Through Exchange of Views

Electric railway operators of six States west of the Mississippi River met in Omaha on Nov. 23 to exchange views on present conditions, prospects and courses of action. As a result the Trans-Mississippi Electric Railways Association has been formed to include representatives of companies operating in communities of more than 50,000 population, and one representative from each state association, in Missouri, Iowa, Minnesota, Kansas, Nebraska and Colorado. Meetings will be held by executives not oftener than once a month, and there probably will be an annual meeting.

The purpose of the organization is to provide a means of finding out what are the specific problems of operation for companies under similar conditions and evolving definite suggestions on the best ways to meet these problems. Col. P. J. Kealy, president of the Kansas City Railways, who was appointed a member of the committee on reconstruction and adjustment of franchises by the American Electric Railway Association at its recent meeting, suggested the meeting in Omaha as a means through which the operators of the district could bring about the expression of their position.

The meeting was notable for its optimism and the courage of the operators present with reference to tackling the problems before them. There was general oppposition to any tendency to turn the properties over to municipalities, and general concurrence in the idea of operation on a cost basis.

It is expected to provide the national association with definite information on the electric railways in communities of 50,000 or more population, and with the views of the operators on the advisable action to take. The new body will co-ordinate with state associations, indirectly through the operators who are members of both the state and the Trans-Mississippi; and directly through the representatives of the state associations on the Trans-Mississippi rolls.

Gordon W. Wattles, president of the Omaha & Council Bluffs Street Railway, acted as chairman of the meeting, and R. A. Leussler, assistant general manager of the same company, acted as secretary. There will be no officers or boards.

The next session will be held in Kansas City, about the middle of December.

The following railway officials attended the first meeting of the new association:

Gordon W. Wattles, President, Omaha & Council Bluffs Street Railway.

Philip J. Kealy, President, Kansas City Railways.

R. A. Leussler, Assistant General Manager, Omaha & Council Bluffs Street Railway.

Emil Schmidt President, Des Moines City Railway and Interurban Railway

F. G. Buffe, Assistant to the President, Kansas City Railways.

E. L. Kirk General Manager, Sioux City Service Company.

Foster Hannaford, General Manager, Twin City Rapid Transit Company, Minneapolis.

F. W. Hild, General Manager, Denver Tramway.

J. H. Van Brunt, Vice-President and General Manager, St. Joseph Railway, Light, Heat & Power Company.

B. J. Denman, President, Tri City Railway & Light Company and Assistant General Manager, United Light & Railways Company.

J. M. Bramlette, Vice-President and General Manager, Lincoln Traction Company.

Frank T. Hamilton, Vice-President, Omaha & Council Bluffs Street Railway.

Albert Patten, assistant general manager of the properties of the Illinois Traction Company in Kansas, was not present at the meeting, but notified the new association of his desire to cooperate. His company operates the electric railways in Atchison, Wichita and Topeka.

The states included in the organization are Missouri, Iowa, Minnesota, Kansas, Nebraska and Colorado.

The resolutions which were adopted as a basis of organization for the new association follow:

Resolved that an organization of street railway operators in the State of Missouri, Iowa, Minnesota, Kansas, Nebraska and Colorado, be formed along the lines following:

1. It shall be known as the Trans-Mississippi Electric Railways Association.
2. There shall be no dues. In case it is decided to hold a general convention the expenses for it shall be raised by assessment. There shall be no entertaining other than a luncheon to be given by the chairman.
3. The meetings shall be held not more often than once a month in rotating order, the representative from the city selected to act as chairman of that meeting.
4. The voting membership to consist of a selected representative of companies operating in cities over 50,000 population, representatives of companies operating in two or more cities whose combined populations shall exceed 50,000. Also one representative, other than the above, to represent each state association which shall be its president, or an alternate who shall be an electric railway operator.
5. That the members of this association retain their membership in the various State Associations and the American Electric Railway Association so that it will coordinate the various activities and represent in concrete form the combined thought of the street railway industry in the territory covered.

Mr. Walsh Resigns

Frank P. Walsh, joint chairman with William H. Taft on the War Labor Board on Nov. 19 sent his resignation to President Wilson, with the explanation that professional engagements required his return to his law practice at the earliest possible moment now that hostilities have ceased. A resolution had previously been sent to President Wilson under the signature of Chairman Taft and Vice-Chairman Black, asking that the members be relieved from their duties with the board at the earliest possible moment.

On Nov. 22 Messrs. Taft and Walsh were urged by Secretary of Labor Wilson to remain in charge of that board so that its activities can be continued until the peace treaties have been signed and the problems of labor have been dealt with in connection with reconstruction.

News Notes

Emergency Power Bill Abandoned.—It is reported from Washington that it is probable no further effort will be made to enact the emergency power bill to provide electric current for war industries.

Des Moines Millmen Return to Work.—Millmen employed by the Des Moines (Iowa) City Railway have returned to work and accepted 52½ cents an hour upon suggestion of W. H. Rogers, federal mediator. The company offered the men this scale shortly after they went on a strike about three weeks ago. About twenty-five men were involved.

Toledo Will Take Back Men in Service.—Officers of the Toledo Railways & Light Company, Toledo, Ohio, are making a survey for the purpose of determining what places can be offered each of its 500 employees who went into the military service and will soon return. Frank R. Coates, president of the company, said that every man will be given as good or a better position than he left.

Holyoke Strike Settled.—The operation of the Holyoke Street Railway was resumed on Nov. 15 after a complete tie-up of six days, during which the employees were on strike, as a result of failure to agree with the company on an arbitrator preliminary to consideration of wage and other demands. The deadlock was broken by the acceptance of Henry B. Endicott to arbitrate points on which an agreement cannot otherwise be reached.

To Act Against Wooden Cars.—Charles S. Harvey of the Public Service Commission for the First District of New York will introduce a resolution calling for an immediate inquiry by the commission to decide how much longer the New York Consolidated Railway (Brooklyn Rapid Transit System) is to be permitted to operate wooden cars on the Centre Street subway loop which extends from the Manhattan end of the Williamsburg Bridge to the Municipal Building at Chambers Street.

Trenton Men Accept Forty-two Cents.—The platform men in the employ of the Trenton & Mercer County Traction Corporation, Trenton, N. J., met on Nov. 23 and decided to accept the company's offer of an increase in wages to 42 cents an hour for straight time and 45 cents for all overtime. The former rate of pay was 38 cents an hour. The men asked for 50 cents an hour and 60 cents for overtime. All other classes of employees will receive a raise in wages of from 2 to 11½ cents an hour. The new wage scale is to date from Oct. 15. According to the agreement between the company and men the latter cannot go on strike, but the employees at one time threatened to quit individually if the matter was not settled promptly.

Wants Paducah Franchise Modified.—A. S. Nichols, manager of the Paducah (Ky.) Traction Company, recently placed before the City Commission a new franchise ordinance which he is endeavoring to have adopted. Under the terms of the franchise the company would be permitted to discontinue any line that failed to prove profitable; would no longer be forced to maintain streets inside of its tracks and for 1 ft. each way; and would be permitted to keep a franchise alive by operating a car over any line once in ten days, instead of losing $20 for each day that a car is not operated over a line, at hourly intervals. The railway property is now being operated by a receiver appointed because of the inability of the company to continue service at pre-war rates and under franchise terms that conditions made unduly burdensome.

Union Injunction Suit Hearing on Dec. 4.—Arguments on motions for the dismissal of an injunction suit filed by the Indianapolis Traction & Terminal Company, Indianapolis, Ind., against members of the executive committee and organizers of the local railway union to prevent a strike, and against the city of Indianapolis to test a city ordinance, were set for Dec. 4 by Judge A. B. Anderson in Federal Court in Indianapolis. Attorneys for both sides have agreed upon the date. No final action by the court on the petition for the injunction is expected before Dec. 13, the date on which the sixty-day trial period of the straight 5-cent fare plan terminates. It is said that there is some likelihood that the company officials and the men will come to an agreement on the request of the men for better working conditions before the final hearing on the injunction suit.

Protecting Its Water Rights.—Lumber operations have been started on the extensive acreage owned by the Rutland Railway, Light & Power Company, Rutland, Vt., to protect its water rights. This will cover approximately 200,000 ft. of spruce and hardwood; also 100,000 ft. of white pine. About 700 cords of stove wood and pulp wood are ready and will be delivered as rapidly as possible. The Rutland Railroad is considering the purchase of a quantity of birch, maple and beach crossties. The Rutland Railway, Light & Power Company has been conserving its water supply in its reservoirs, so that at the present time its stock supply is larger than a year ago and sufficient to take care of all increased business. The company has several hydroelectric developments with and without reservoirs with reserve capacity in each. It does not own or operate any steam plant at the present time.

Programs of Meetings

Investment Bankers' Association

The annual convention of the Investment Bankers' Association, which was to have been held in St. Louis, Mo., on Nov. 18, 19 and 20, was postponed because of the influenza epidemic. The new dates set forth for the convention are Dec. 9, 10 and 11.

Southwestern Electrical & Gas Association

The second quarterly conference of the Southwestern Electrical & Gas Association will be held at the Hotel Bender, Houston, Tex., on Dec. 9. The morning session will be called at 9.30 a.m. There will be a luncheon at 12 o'clock noon. The afternoon session will be called at 1.30 p.m.

National Civic Federation

The reconstruction committee of the National Civic Federation will hold a meeting at 1 Madison Avenue, New York, on Dec. 2, at 10.30 a.m. to consider the following questions:

What part of the so-called labor and capital war measures devised by the government shall be retained at the conclusion of war?

How far are compulsory measures which were necessary under emergency conditions to be continued after peace is restored?

What changes in our immigration policy will be forced by economic and other results of the war?

Academy of Political Science

War labor problems and reconstruction will be the general topic of a two-day conference which the Academy of Political Science is to hold in New York City on Dec. 6 and 7. Attendance at the sessions will not be restricted to members but the academy will open its doors to all public-spirited citizens looking forward to the new era in public affairs.

"Women in Industry" is the topic fixed for the first session, beginning on Dec. 6 at 2.30 p.m., at Horace Mann auditorium, and "War Labor Standards and Reconstruction" will be the subject discussed at the evening session in the same auditorium.

The next day's meetings will begin at 10.30 a.m., in the Belvedere room of the Hotel Astor and will consider "Adjustments of Wages and Conditions of Employment," and "Demobilization of Labor in War Industries and in Military Service."

Charles M. Schwab and William B. Wilson, Secretary of Labor, will address the final meeting of the conference, which will be a dinner, held also at the Hotel Astor. "Our Industrial Victory and Its Effect on the Future Relations of Labor and Capital" is the subject for the addresses to be made.

The executive offices of the Academy of Political Science are at Kent Hall, Columbia University, New York.

Financial and Corporate

Operating Ratio Increases

Highest of Any but Two Months Since the Collection of Operating Statistics Began

The most notable feature in the comparison made by the information bureau of the American Electric Railway Association of revenues and expenses of electric railways for August, 1917 and 1918, is the greatly increased operating ratio shown for the United States. This is 70.50 per cent for 1918, as against 65.82 for 1917, and with the exception of the months of January and February, 1918, is the highest operating ratio for all months since the association began the compilation and publication of the statistics.

The showing is all the more discouraging, since in the Western district there was a marked increase in net earnings and a corresponding decrease in operating ratio. In this connection a comparison of operating ratios for the first eight months of 1918, with those of the corresponding months of 1917, is of interest. It follows:

	Jan.	Feb.	March	April
1917	65.10	66.91	64.89	64.66
1918	73.60	72.00	67.80	67.97
	May	**June**	**July**	**Aug.**
1917	64.95	65.10	63.12	65.82
1918	67.67	69.07	66.97	70.50

It will be seen that while the Western district shows a decrease in operating ratio of 2.37 per cent, the Eastern district shows an increase of 8.52 per cent and the Southern district an increase of 7.41 per cent, and the country as a whole an increase of 4.62 per cent. In spite of the decrease there the ratio for the Western district is the highest in the country.

For companies reporting taxes the operating ratios are higher, the companies in the Eastern district again making the most unfavorable showing.

Both the Eastern and Southern districts show a further decline in net income. For roads not reporting taxes this amounts in the Eastern district to 14.41 per cent and for the Southern district 14.72 per cent, while for the country it is 4.39 per cent in spite of the fact that the Western district shows an actual increase of 24.72 per cent. There was for the country a falling off in net earnings of $33 per mile of line—for the Eastern district $119 and for the Southern $101—while the Western district showed an increase of $143.

Taxes increased somewhat uniformly throughout the country—In the Eastern district, 17.19 per cent; in the Southern, 14.49 per cent, and in the Western, 16.85 per cent, while for the country the increase was 16.67 per cent.

The Eastern district showed a falling off in operating income of 25.59 per cent, which was about balanced by the increase of 25.86 per cent in operating income shown by the Western district. The country as a whole showed a decrease because of the figures from the Southern district.

The returns from the city and interurban electric railway companies, as shown in detail in the accompanying tables, have been classified according to the following geographical grouping: Eastern district—east of the Mississippi River and north of the Ohio River. Southern district—south of the Ohio River and east of the Mississippi River. Western district—west of the Mississippi River.

Toronto Net Declines

While the gross earnings of the Toronto (Ont.) Railway in the calendar year 1917 showed an increase, the net earnings were adversely affected by the increase in wages and the abnormal war prices for supplies.

The gross income increased $318,597 or 5.3 per cent for 1917, this being slightly less than the gain of $321,057 in passenger earnings. In view of the large number of men overseas, the company regarded this increase as satisfactory.

The operating expenses, however, rose $464,619 or 13.9 per cent, so that the net earnings fell off $146,022 or 5.5 per cent. The payments made to the city of Toronto showed an increase of $74,021 for the year.

The passengers carried in 1917 totaled 158,087,984, an increase of 8,558,230 as compared to the traffic in 1916. The transfers increased by 958,873 to 62,301,636.

Out of accumulated surplus the company in 1917 paid four quarterly dividends of 2 per cent. The balance carried forward at the end of the year was $5,543,683.

INCOME STATEMENT OF TORONTO RAILWAY FOR YEARS ENDED DEC. 31, 1916 AND 1917

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings..	$6,291,759	100.0	$5,973,161	100.0
Operating expenses.....	3,815,278	60.7	3,350,658	56.1
Net earnings....	$2,476,481	39.3	$2,622,503	43.9
Interest on bonds...	$146,888	2.3	$156,122	2.6
Percentage on earnings....	970,512	15.4	909,881	15.2
Pavement taxes......	264,271	4.2	215,707	3.6
Total......	$1,381,671	21.9	$1,281,710	21.4
Surplus earnings	$1,094,810	17.4	$1,340,793	22.5

COMPARISON OF REVENUES AND EXPENSES OF ELECTRIC RAILWAYS FOR AUGUST, 1918 AND 1917

Account	United States				Eastern District				Southern District				Western District			
		Per Mile of Line				Per Mile of Line				Per Mile of Line				Per Mile of Line		
	Amount, August, 1918	1918	1917	% Increase Over 1917	Amount, August, 1918	1918	1917	% Increase Over 1917	Amount, August, 1918	1918	1917	% Increase Over 1917	Amount, August, 1918	1918	1917	% Increase Over 1917
Operating revenues	$14,276,115	$2,434	$2,197	10.79	$8,002,386	$2,393	$2,170	10.28	$1,197,604	$1,677	$1,622	3.39	$5,076,125	$2,811	$2,460	14.27
Operating expenses	10,063,934	1,716	1,446	18.67	5,638,129	1,686	1,344	25.45	779,585	1,092	936	16.67	3,646,220	2,019	1,825	10.63
Net earnings	4,212,181	718	751	†4.39	2,364,257	707	826	†14.41	418,019	585	686	†14.72	1,429,505	792	635	24.72
Operating ratio, per cent	1918, 70.50; 1917, 65.82				1918, 70.46; 1917, 61.94				1918, 65.12; 1917, 57.71				1918, 71.82; 1917, 74.19			
Av'ge number of miles of line	1918, 5,865; 1917, 5,764				1918, 3,345; 1917, 3,318				1918, 714; 1917, 661				1918, 1,806; 1917, 1,785			

COMPANIES REPORTING TAXES

Operating revenues	$9,538,265	$2,470	$2,219	11.31	$4,449,490	$2,242	$2,051	9.31	$467,832	$1,964	$1,697	15.73	$4,620,943	$2,820	$2,498	12.89
Operating expenses	6,947,191	1,799	1,543	16.59	3,279,399	1,653	1,333	24.01	288,505	1,211	953	27.07	3,379,287	2,062	1,883	9.51
Net earnings	2,591,074	671	676	†0.74	1,170,091	589	718	†17.97	179,327	753	744	1.21	1,241,656	758	615	23.25
Taxes	675,476	175	150	16.67	296,962	150	128	17.19	37,570	158	138	14.49	340,944	208	178	16.85
Operating income	1,915,598	496	526	†5.70	873,129	439	590	†25.59	141,757	595	604	†1.49	900,712	550	437	25.86
Operating ratio, per cent	1918, 72.83; 1917, 69.54				1918, 73.73; 1917, 64.99				1918, 61.66; 1917, 56.16				1918, 73.12; 1917, 75.38			
Av'ge number of miles of line	1918, 3,861; 1917, 3,812				1918, 1,984; 1917, 1,959				1918, 238; 1917, 235				1918, 1,639; 1917, 1,618			

† Decrease.

Unscrambling Pittsburgh's Eggs

Receiver Asks for Master to Determine Distribution of Funds to Subsidiary Companies

Judges C. P. Orr and W. H. S. Thomson in the United States Court at Pittsburgh, Pa., on Nov. 15, indicated that, on petition of Charles A. Fagan, minority receiver for the Pittsburgh Railways, a master will be appointed to systematize the payment of fixed charges for bond interest, mortgages and rentals. Judge Orr then ordered the receivers to pay fixed charges due in November amounting to $234,116.

The charges ordered paid are as follows: Rental, Citizens' Traction Company, $90,750; rental, Pittsburgh & Birmingham Passenger Railway, $66; interest, Title & Trust Company, $5,000; 5 per cent gold car trust bonds, $17,000; interest, Millvale, Etna & Sharpsburg Street Railway, $18,525; interest, Pittsburgh Birmingham Traction Company, $37,500; interest, Pittsburgh & Charleroi Street Railway, $61,125; interest, West Braddock Bridge Company, $4,150.

The order of the court in regard to the interest payments was made in compliance with the request of Majority Receivers J. D. Callery and H. S. A. Stewart. The payments were ordered subject to the limitations of the opinion of the court on Sept. 7.

The court proceedings of Nov. 15 came up on a request from Receiver Fagan for the appointment of a master. His appeal recited that the Pittsburgh Railways was divided into three distinct parts, or underlying companies, and reviewed at length the intercorporate relations of the companies. Mr. Fagan said that on account of previous orders made by the court the receivers will not have sufficient funds to make payment in full of all the fixed charges required to be paid and at the same time make the necessary improvements and betterments to the system called for under franchise grants or by orders of the Public Service Commission.

The master, Receiver Fagan suggested, should be appointed to ascertain: First, what funds are available for the payment of fixed charges; second, to whom said fixed charges shall be first paid; third, whether or not said fixed charges shall be paid in full or partly, and, fourth, to arrange a schedule and rule by which the receivers may be guided in the payment of all fixed charges while operating the lines which are now in their charge.

Attorney E. W. Smith, counsel for the bondholders and former counsel for the receivers, did not oppose the master's appointment if the appointment did not appear to tie the hands of the court. He said he favored the appointment of a "neutral official," who would be independent of influence either by the railway or the city. Mr. Smith also argued for the petition of the Consolidated Traction Company, which he represents, asking that the solvent and insolvent underlying companies be separated in accounts kept by the receivers.

Higher in Hawaii

The gross passenger traffic of the Honolulu Rapid Transit & Land Company, Honolulu, T. H., for 1917 showed a marked increase over that for the preceding year, the revenue passengers numbering 14,378,092, an increase of 1,164,392. The transportation revenue at $713,338 represented a gain of $57,418, and the gross operating revenue at $726,603, a gain of $56,621.

Only $18,090 of this increase was reflected in net operating revenue, however, on account of the mounting costs of operation. The operating expenses for 1917 totaled $393,966, a rise of $38,530. The income deductions amounted to $379,025, an increase of $86,697, with the result that the 1916 surplus of $22,218 was converted in 1917 to a deficit of $46,388.

The increase in operating expenses was due mostly to a rise in transportation expenses from $203,366 to $229,725, and in general and miscellaneous expenses from $49,165 to $61,501. The expenses for maintenance of way and structures dropped off from $60,366 to $55,509, but those for maintenance of equipment rose from $34,612 to $37,477.

The 1917 expenditures for additions and improvements totaled $92,962. The operating revenues per car-mile in 1917 were $0.3563, a gain of $0.0286, and the operating revenues per car-hour $3.300, a gain of $0.213. The operating expenses per car-mile amounted to $0.1931, an increase of $0.0193, and the operating expenses per car-hour $1.789, an increase of $0.151.

Progress Reported in Reorganization

An adjustment of remaining details in the reorganization of the properties of the Northern Electric Railway, Chico, Cal., was discussed before the State Railroad Commission recently in a hearing on the application of the Sacramento Northern Railroad to sell bonds to remove obligations carried by the Northern Realty Company.

When the Northern Electric properties were transferred to the new company—the Sacramento Northern—by the organization committee, stock of the Northern Realty Company was included in the transfer.

The property of the Northern Realty Company had been mortgaged to the Sloss Securities Company for $273,000, and the settlement which the Railroad Commission is being asked to approve includes the payment to the Sloss Securities Company of $135,750 in cash from the sale of Sacramento Northern securities, and the retransfer by the Sacramento Northern to the Sloss Securities Company of properties that are not considered useful for railroad purposes.

Financial News Notes

Cape Town Progressing.—The Cape Town Consolidated Tramways & Land Company, Ltd., Cape Town, S. A., showed a debit balance of £539 for the calendar year 1917 as compared to £630 for the preceding year. The subsidiary tramway company increased its year's profit from £2,225 in 1916 to £3,018 in 1917. The receipts rose £3,794 and the expenses £3,001.

Abandonment to Proceed.—Judge Morton in the United States District Court at Boston, Mass., on Nov. 20 declined to interfere with the intention of Receiver Donham of the Bay State Street Railway to discontinue certain routes which fail to pay operating expenses. The court set Dec. 4 for a hearing on the receiver's petition relating to other lines.

Another Abandonment Proposed.—The Southern New York Power & Railway Corporation, Cooperstown, N. Y., has filed with the Public Service Commission for the Second District, a petition for approval of intention to abandon that part of its road in Lake Street from near Bronner Street in Richfield Springs to near the company's passenger station. The company alleges that operation of that part of the road is no longer necessary because the company has purchased a private right-of-way from near its station to a point in Lake Street, south of its intersection with Bronner Street. The commission will order a public hearing.

Municipal Railway Bonds Sold.—Attleboro, Mass., has sold $22,500 of 4½ per cent "street railway loan, act of 1918" bonds, dated Oct. 1, 1918, payable $2,250 annually, Oct. 1, 1919-1928 inclusive, to E. H. Rollins & Sons, Boston, Mass., at $101,076. The bonds were issued by Attleboro in accordance with the act of the last Legislature authorizing the city to purchase and operate that part of the old Bristol County Street Railway between Attleboro and Briggs Corners. As described in the ELECTRIC RAILWAY JOURNAL for Nov. 23, page 933, the city used $18,000 of the proceeds of the bonds to acquire the road and $4,500 to restore the line to service.

Local Claremont Interests Buy Road.—The property of the Claremont Railway & Lighting Company, Claremont, N. H., has been sold to a corporation made up of local manufacturers, who will endeavor to operate the road according to its usual high standards. The new corporation took charge on Nov. 16. As stated previously in the ELECTRIC RAILWAY JOURNAL, the company gave notice some time ago that it would discontinue business. It was prevented from carrying out this plan, however, by injunction proceedings. Later a receiver was appointed for the company. The property consists of an 8.60-mile road extending from Claremont Junction through Claremont to West Claremont.

Seeks Renewal of Loan.—The United Railways, St. Louis, Mo., has asked the War Finance Corporation to renew the loan of $3.235,000 which it made to the railway last May. The loan was dated June 1 for a six months' period, and the interest rate was 7 per cent. The loan is secured by the entire issue of first and underlying mortgage bonds of the Union Depot Railroad, plus $800,000 in Liberty bonds. The loan to the St. Louis company was the first one made in the electric railway field by the War Finance Corporation. The life of that corporation expires six months after the termination of the war, as proclaimed by the President, but the corporation has ten years in which to liquidate.

Spokane Abandonment Hearing on Dec. 9.—The Public Service Commission of the State of Washington has set Dec. 9 as the date of hearing the protests against the plan of the Washington Water Power Company for abandoning service on some of its lines in Spokane. The hearing was originally set for October, following an order from the City Council to the company to fulfill its alleged franchise obligation and furnish service, but because of the Spanish influenza epidemic the hearing could not be held at that time and the city allowed the matter to rest. City Attorney T. J. Geraghty contends that the furnishing of service is a franchise obligation and can be altered only by agreement between the city and company.

Abandonment Prevented. — Judge F. M. Spann, sitting at Belton, Tex., has granted a temporary injunction restraining the owners of the Southwestern Traction Company from dismantling its lines and discontinuing service. The company owns and operates the interurban railway between Belton and Temple, as well as the city lines in both cities. It had signified its intention of discontinuing service in the Belton-Temple interurban line and tearing up the track for junk because further operation of the line was declared to be unprofitable. The order of the court directs the company to continue operation of its cars as heretofore on both the interurban and the city lines.

Taxes Are Compromised.—The Trenton & Mercer County Traction Corporation, Trenton, N. J., has agreed to a compromise with the city of Trenton on the tax levies for the years 1915, 1916, 1917 and 1918. By the compromise the city gains from the company $1,540,000 in valuation over the assessments for the four years, or $385,000 for each year. This is an increase in the property valuation of nearly 50 per cent. Taxation levies on the company's property have been in litigation since 1915. Both the company and the city agreed to bear a share of the expense of the litigation to this time. In 1915 the company paid a tax on a physical valuation of its property to $815,000 while the property is at present valued at $1,200,000 under the terms of the compromise agreement.

Operating Difficulties in Lisbon.—The result of the operations of the Lisbon (Portugal) Electric Tramways, Ltd., for the calendar year 1917 was a net profit of £16,678. After reserving £10,000 for depreciation, paying £12,766 in preference dividends and taking in the prior balance, £3,135 remained to be carried forward. The passengers increased from 76,620,194 in 1916 to 79,434,362 in 1917. Owing to higher operating costs, however, and the suspension of operation on several occasions because of strikes and political disturbances, the preference divided for the second six months of the year was passed. The company increased the price of its season tickets 40 per cent, but all this increase was required to meet the demands of its employees for higher wages.

Road Sold Under Foreclosure.—The property of the St. Louis, Lakewood & Grant Park Railway and the Carondelet & Webster Grove Railroad, St. Louis, Mo., was sold on Nov. 22 at the courthouse under foreclosure to John F. Betts. The railroad was promoted by Henri Chouteau. It consisted of an electric railroad extending from the end of the line of the United Railways on Gravois Avenue to the vicinity of Lakewood, St. Louis County, with a branch leading to Carondelet. It has not been in operation for two years. John C. Tobin, special master, who conducted the sale, announced that the assets consisted of real estate, easements, franchises, depots and bridges. The rolling stock and rails which had formerly been in use were sold some time ago for junk.

Stock Dividend Increased.—The directors of Cities Service Company, New York, N. Y., at their meeting on Nov. 20 declared the regular monthly cash dividend of 50 cents a share on the preferred stock and the common stock, and increased the monthly dividend on the common stock, payable in common stock at par, from three-quarters of 1 per cent monthly to 1 per cent monthly, all these dividends being payable on Feb. 1, 1919, to stock of record of Jan. 15, 1919. This action of the board of directors indicates that the dividend on Cities Service Company common stock in 1919, payable in common stock at par, will be at the rate of 12 per cent per annum instead of at the rate of 9 per cent as in the current year. The company plans to convert its outstanding series B debentures.

Electric Railway Monthly Earnings

CITIES SERVICE COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net income
1m., Sept., '18	$1,907,155	$54,853	$1,852,302	$48,628	$1,803,674
1m., Sept., '17	1,594,961	28,588	1,566,373	227	1,566,146
12m., Sept., '18	21,973,480	449,361	21,524,119	100,642	21,423,477
12m., Sept., '17	18,169,849	327,646	17,842,203	3,151	17,839,052

CITIES SERVICE COMPANY, NEW YORK, N. Y.

1m., Oct., '18	$1,784,000	$57,013	$1,726,987	$60,345	$1,666,642
1m., Oct., '17	1,659,665	29,646	1,630,019	226	1,629,793
12m., Oct., '18	22,097,814	476,727	21,621,087	160,761	21,460,326
12m., Oct., '17	18,706,604	337,251	18,369,353	2,984	18,366,369

GRANDRAPIDS (MICH.) RAILWAY

1m., Aug., '18	$107,383	*$87,174	$20,209	$19,438	$771
1m., Aug., '17	109,269	*77,203	32,066	18,476	13,590
12m., Aug., '18	1,280,094	*960,399	319,695	230,835	88,860
12m., Aug., '17	1,305,304	*871,233	434,071	209,954	224,117

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

1m., Aug., '18	$97,837	*$73,686	$24,151	$19,809	$4,342
1m., Aug., '17	$100,579	*61,192	39,387	15,498	23,889
12m., Aug., '18	877,803	*754,241	123,562	210,679	†87,117
12m., Aug., '17	875,287	*645,783	229,504	185,464	44,040

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

1m., Aug., '18	$249,935	*$163,564	$86,371	$40,104	$46,267
1m., Aug., '17	200,686	*133,775	66,911	41,374	25,537
12m., Aug., '18	2,666,946	*1,705,247	961,699	487,313	474,386
12m., Aug., '17	2,431,327	*1,546,716	884,611	495,209	389,402

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$271,642	*$174,078	$97,564	$40,225	$57,339
1m., Sept., '17	210,085	*134,315	75,770	40,980	34,790
12m., Sept., '18	2,728,503	*1,745,010	983,493	486,558	496,935
12m., Sept., '17	2,434,511	*1,553,323	881,188	494,302	386,886

NEW YORK (N. Y.) RAILWAYS

1m., Oct., '18	$948,376	*$870,057	$78,319	$277,253	†‡$154,261
1m., Oct., '17	1,048,291	*770,731	277,560	281,058	‡50,580
3m., Oct., '18	2,781,136	*2,394,616	386,520	835,286	†‡317,924
3m., Oct., '17	3,285,291	*2,370,308	914,983	846,610	‡219,772

NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO

12m., Sept., '18	$7,016,315	$4,584,826	$2,431,489	$1,131,375	$1,300,114
12m., Sept., '17	6,126,219	3,696,998	2,429,221	956,507	1,472,713

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

1m., Sept., '18	$826,728	$573,360	$253,398	$172,633	$80,765
1m., Sept., '17	849,506	556,756	292,750	167,620	125,130
9m., Sept., '18	7,299,515	5,224,569	2,074,946	1,442,296	632,650
9m., Sept., '17	7,732,106	5,104,861	2,627,245	1,356,714	1,270,531

TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.

1m., Oct., '18	$751,696	$550,256	$201,440	$185,977	$15,463
1m., Oct., '17	805,687	592,071	213,616	170,118	43,498
10m., Oct., '18	8,051,211	5,774,824	2,276,387	1,628,274	648,113
10m., Oct., '17	8,537,793	5,696,931	2,840,862	1,526,832	1,314,030

* Includes taxes. † Deficit. ‡ Includes non-operating income.

Traffic and Transportation

Increase for Hudson Valley Railway

New York Commission Allows Emergency Rates Sufficient to Prevent Suspension of Service

The Public Service Commission for the Second District of New York has authorized the Hudson Valley Railway, Glens Falls, to charge a 6-cent fare in each of its zones where 5 cents is now charged. The order passed by the commission provides that fares so fixed "shall continue only during the war and a reasonable time thereafter and that this determination and order may be reopened at any time if and when it may appear to this commission that the reasons for permitting the company to charge the increased fares no longer exist." The new fare rates are to become effective on five days' notice.

FRANCHISE PROVISIONS WAIVED

The commission had previously suspended operation of a new schedule of rates, filed as effective on Aug. 29, 1918, pending an investigation.

The company operates 140 miles of line from Waterford to Mechanicville, Schuylerville, Fort Edward, Hudson Falls, Glens Falls, Lake George to Warrensburg with a branch road from Mechanicville to Ballston Springs and through Saratoga Springs to Glens Falls and from Thomson to Greenwich. There is local service in Saratoga Springs and in Glens Falls, including a portion of the road between Glens Falls, Hudson Falls and Port Edward.

There are franchise provisions in Saratoga Springs, Glens Falls and Ballston Springs limiting the rate of fare to 5 cents. Waivers of these restrictions were made by the local authorities and submitting the fixing of rates to the commission with a maximum of 6 cents. No serious opposition was made to the proposed increase and no evidence was presented controverting in any degree that offered by the company.

The commission states that it is apparent that at the present amount of travel and present rates of fares the road will for the period beginning July 1, 1918, be in receipt of revenue hardly sufficient to pay its operating expenses alone without taking into consideration at all the matter of charges upon its indebtedness or return upon the capital investment.

The memorandum of Commissioner Cheney says in part:

"Unless some relief is had the inevitable result will be bankruptcy, with a possible discontinuance of operation. The only alternative is such an increase in rates that the income will be sufficient to justify the continued operation of the line.

"Although it is apparent that the company is entitled to and must have an increased revenue, it is not asking in this proceeding that an order be made fixing rates at such a sum as will yield an adequate return upon the capital invested, as is its right. It is only asking that it may be permitted to put into effect certain specified rates, and the commission has treated the proceeding as involving only the question as to whether or not such proposed rates are reasonable, and has not gone into any of the questions which ordinarily arise in a rate case where the effort is to arrive at a rate schedule which will realize sufficient revenue to pay operating expenses and leave a surplus which will be an adequate return upon the value of the property used in the service. In other words, this case has been treated as an emergency case, the result to be attained being the fixing of a rate which would pay operating expenses and interest charges to which the company is subjected so that it may be continued in operation. The matter of return on capital must wait until after the war is over and more normal conditions prevail.

INCREASED WAGES EAT UP FARE ADVANCE

"Even if the maximum amount of increase is realized, it will practically all be paid out in increased wages already in effect. Increased price in materials will in all probability absorb any balance there may be."

The road, it is stated, is in first-class operating condition and while no detailed valuation was made there is evidence placing a value for rate purposes of $5,000,000, which is practically the amount of the interest-bearing indebtedness.

Illinois State Rate Attacked

Attacking the Illinois State Railroad rate law as being unconstitutional, the Aurora, Plainfield & Joliet Railway, Joliet, Ill., through its counsel, Winston, Payne, Strawn & Shaw, has filed a bill for injunction in the United States District Court asking an injunction against the Public Utilities Commission of Illinois and the state's attorneys of Will, Kane and Kendall Counties, to prohibit them from enforcing it.

The railway, an electric interurban line of 22 miles doing principally a passenger business, recently asked the Public Utilities Commission for permission to raise its rates from 2 to 3 cents a mile. Under the State law a fare of but 2 cents a mile within the State is permissible.

Dallas Traffic Study Explained

Engineering Expert Explains to Police Just What It Is Hoped to Accomplish

A. M. Buck, chief assistant to John A. Beeler, traffic expert retained by the city of Dallas, Tex., addressed the Dallas police on Nov. 5 and answered questions propounded by the men. John Ryan, chief of police, introduced Mr. Buck. He said the instructions were intended chiefly for the traffic officers, but that he felt they would be of benefit to the entire staff.

POLICE VITALLY INTERESTED

Mr. Buck began his address with the statement that he would only take up the points of the Beeler recommendations which directly concerned the traffic situation as affecting the policemen. He explained that the proposed platforms for loading and unloading street cars will be built opposite each other at the principal stops. He said in part:

"Thus you see it will mean the elimination of the present plan of stopping the cars on the near side of the street. In the business district the platforms will be located exactly opposite each other on the east side of the crossing of Elm and Main Streets, at Akard and Ervay Streets, and on the west side of the Commerce Street crossings.

"This plan will mean confusion at first, but later on I believe you will find that the people will take to it splendidly. Lines will be painted on the streets in order to keep the pedestrians within certain boundaries, and traffic officers will have to see that the pedestrian line moves only in accordance with the regular lines of vehicular traffic.

"The double-berthing idea will mean that two cars are to load at each stop whenever practical and that you men will have to move them together as fast as possible. The second car of the line at the intersection will load and unload its passengers from its position behind the first car, and when the first car is signaled on the second car will not be permitted to stop where the first car was halted, but will be required to move on as the other did. In this way you will assist largely in speeding up the electric railway service.

PRECEDENCE FOR STREET CARS

"Then, too, we must consider the plan of giving the street car precedence over automobile traffic. You know it is customary for the average policeman to speed up an automobile. This is done in some instances where street cars containing from forty to one hundred persons are compelled to wait. Manifestly this is not just. No street car carrying workmen should be held up to allow an automobile, carrying an average of two persons, the right of way."

Mr. Buck also referred to the operation of traffic signals by the police from the curb.

Surface Lines Ask More

Chicago Companies Want to Charge Seven Cents—Decrease of $4,500,000 in Earnings Likely

Following the award of a 6-cent fare to the elevated roads, the Chicago Surface Lines on Nov. 21 filed a petition with the Public Utilities Commission to charge a 7-cent rate.

The application sets forth that a 5-cent fare is no longer adequate for several reasons. The high wages fixed by the War Labor Board made such additions to the payroll that the increase for the year which will end July 31, 1919, is expected to be in excess of $3,700,000. Federal taxes will probably show a further increase of $142,000. The first three months after the wages were raised showed a decrease of $253,093 in earnings and an increase of $1,087,077 in operating expenses, thus making a loss in net earnings of $1,340,171. Estimates for the current year contemplate a decrease in earnings of $569,458, an increase in expenses of $3,857,176, and a consequent decrease in net earnings of at least $4,426,634 over the period ended last July. The capital valuation of the surface companies as of Aug. 1, 1918, is set forth as $156,127,356.

The city authorities assert that no definite ruling of the courts has yet been given on the question of the right of the state body to interfere with rates fixed by contract ordinances. The corporation counsel served notice on the commission that the city would appeal to the Circuit Court of Sangamon County for a different ruling in the elevated case. He also expects to resist the application of the Chicago Surface Lines.

The local transportation committee of the City Council on Nov. 20 referred back a letter which Mayor Thompson had written suggesting that steps be taken to forfeit the franchises of the surface lines because of inadequate service. It was made plain to the committee that the specific items of inadequacy mentioned by the Mayor were in reference to matters directly in charge of the city or which had been handled by the company with the approval of the city. The Mayor was also told that enforcement of city ordinances was a matter for consideration by the executive and judicial branches of the city government.

Public Co-operation Received

E. C. Deal, general manager of the Springfield (Mo.) Traction Company, has advised Judge John T. Sturgis, general chairman of the citizens' committee which investigated the railway situation, that he had been authorized to accept the recommendations of the committee.

The acceptance of the recommendations of the committee means an early increase of the wages of the conductors and motormen from 26 and 28 cents an hour to 36 and 40 cents an hour and an increase of railway fare from 5 cents to 6 cents for adults and 3 cents for children. It represents an increase in the wage scale of railway employees by about 45 per cent since July 1. The working day is also reduced.

The next step in the railway question will be an acceptance of the findings of the committee by the City Council. The recommendations will doubtless be effective as soon as the proposed increase of fare is approved by the Public Service Commission.

These matters have been carried to a satisfactory settlement through the cordial co-operation of the citizens as reflected in the attitude of the committees appointed from among them. E. N. Sanderson of Sanderson & Porter, New York, has expressed his appreciation of this co-operation in a communication to Mr. Deal.

New Jersey Case Argued

Argument was heard in the Court of Errors and Appeals of New Jersey on Nov. 25 in the fight by the League of Municipalities against the 7-cent fare and the 1-cent transfer allowed by the Board of Public Utility Commissioners to the Public Service Railway, and the 6-cent fare granted to the Trenton & Mercer County Traction Corporation as a war emergency measure. The Supreme Court recently upheld the action of the commission and the two cases were taken to the higher court.

The brief of R. V. Lindabury and Frank Bergen for the Public Service Railway outlined the litigation and recited the increases in operating and maintenance expense made necessary by the war. It was claimed that the war made an emergency which forced the company last March to apply to the Board of Public Utility Commissioners for permission to increase its fare to 7 cents and to charge 2 cents for an original transfer and 1 cent for a second. The board, by a decision on July 10, denied the company's application, but granted relief to the extent of permitting a charge of 1 cent for an initial transfer, effective on Aug. 1.

The brief then recited the increases in wages made by the company in June and by the War Labor Board in August amounting to $2,716,538 per annum, and referred to the additional ruling by the Board of Public Utility Commissioners allowing the present rate of 7 cents and 1 cent for a transfer. The brief continued:

"Since it is clear that to prescribe a rate is a legislative act, courts cannot set aside an order fixing a rate except for one of three reasons: Because it is discriminatory, and there is no such contention in this case; because the rate is higher than the service is worth, and there is no evidence here that the service is not worth the rate fixed, and because a rate is so low that it does not yield a reasonable return on the fair value of the property properly employed in serving the public, and there is no point of that kind presented in these cases."

Eight Cents in Boston

In Three Months' Period With 40 Per Cent Increase in Fare the Receipts Advanced Only 12.73 Per Cent

Eight-cent fares will supersede the existing 7-cent fares on the Boston (Mass.) Elevated Railway beginning on Dec. 1. The board of trustees of the company issued a statement on Nov. 22 pointing out that the revenue of the company, operating with a 7-cent fare, is insufficient to meet the cost of service as defined by the public control act under which the road is run, and that 8 cents, the next grade of fare above 7 cents, will be put into effect as above announced.

When the present 7-cent fare is discontinued the existing tickets will be redeemed by the company or the tickets accepted, with 1 cent additional, in payment of the new rate. Tickets at the new rate of fare will be issued and sold in the same manner as has been the practice under the 7-cent fare. On Jan. 1, 1919, the fare for school children attending schools of a grade not more advanced than high schools will be 5 cents for a single fare. School tickets will be issued by the company upon conditions to be announced later.

The present 7-cent fare has been in force since Aug. 1, 1918, and a further increase has been generally expected since a statement of the trustees last month to the effect that additional operating expenses expressly required by statute and amounting to $7,500,000 a year must be met. This sum is made up of the recent wage increase established by the War Labor Board, amounting to $3,000,000 a year; an item of additional depreciation of about $1,600,000; an additional rental charge of $400,000 on account of the Dorchester subway; increased cost of coal, $500,000; interest and dividend charges upon recent bond issues and the new preferred stock of the Boston Elevated Railway, of $300,000; and a 5 per cent dividend upon the common stock of the company, of about $1,200,000. In August, September and October, 1918, the company's receipts increased $602,291, or 12.73 per cent above those of the corresponding period of 1917, compared with a 40 per cent advance in the rate of fare.

The official announcement of the company to the public follows in part:

> "Pursuant to Chapter 159 of the special acts of 1918 the board of trustees of the company has determined that the revenue of the company, operating with a 7-cent fare, is insufficient to meet the cost of service as defined by said act and will put into effect the next grade of fare above 7 cents as provided by said act. Announcement is therefore made that beginning Sunday, Dec. 1, 1918, the rate of fare for a single ride upon the company's line will be 8 cents and the present 7-cent fare discontinued. Tickets will be issued and sold in the same manner as to-day except for the change in price. The 7-cent tickets may be redeemed at the treasurer's office or by any ticket seller, or may be tendered as fare with 1 cent additional for each fare to be paid."
>
> "Notice is also given that beginning Jan. 1, 1919, the fare for school children attending schools of a grade not more advanced than high schools will be 5 cents for a single fare. School tickets will be issued by the company upon conditions to be announced hereafter."

Transportation News Notes

Fare Increase in Bowling Green, Ky.—William R. Speck, receiver for the Southern Traction Company, Bowling Green, Ky., recently raised cash fares to 10 cents. Twelve tickets, however, are being sold for $1.

Seven-Cent Tariff Filed.—The Norton, Taunton & Attleboro Street Railway, Norton, Mass., has filed with the Massachusetts Public Service Commission a new passenger tariff increasing the fares from 6 cents to 7 cents, to be effective on Dec. 28.

Wants Increase on Interurban.—The Murphysboro & Southern Illinois Railway Company, Murphysboro, Ill., has filed an application with the Public Utilities Commission for an increase in interurban rates between Murphysboro and Carbondale.

Fare Review Denied.—Application by Pasadena, South Pasadena and Alhambra for a writ of review of the order of the Railroad Commission of California increasing the rates of the Pacific Electric Railway between those cities, has been denied by the Supreme Court of California.

St. Joe Wants Eight-Cent Fare.—The St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., has filed notice with City Counselor Charles L. Faust that it has asked for an increase in fare to 8 cents from the present fare of 5 cents. This petition to the State Public Service Commission supersedes a petition for a 6-cent fare filed about a month ago.

Appropriation for Investigation at Columbus.—The City Council of Columbus, Ohio, has approved the appropriation of $750 to recompense E. W. Bemis, Chicago, for checking up figures presented by the Columbus Railway, Power & Light Company in investigating the question of a proper rate of fare under present conditions. Mr. Bemis is also to investigate certain features of the franchise matter.

Evanston Wants Six Cents.—The Evanston (Ill.) Railway has filed a petition for an increased fare on Nov. 18, asking the city authorities of Evanston for power to charge 6 cents. This company was one of the several local Chicago properties affected by the War Labor Board wage award. Another of these companies was the Chicago & West Towns system which began operation under a 7-cent fare on Nov. 11.

Wants Brooklyn Transfers Abolished.—Timothy S. Williams, president of the Brooklyn (N. Y.) Rapid Transit Company, testified before the Public Service Commission for the First District of New York on Nov. 21 that transfers cost the company more than $3,700,000 a year. If transfers could be charged for, the situation with regard to congestion on cars of the surface lines, he thought, would be materially relieved.

Wants Return to Pre-War Basis.—The City Council of Quincy, Ill., is asking the Quincy Railway, included in the Illinois Traction System, to return to its pre-war transportation rate of six rides for a quarter and to abandon the skip-stop system of operating its car. As part of the power for operating the cars at Quincy is furnished by hydro-electric energy, it is thought that the State fuel administration will not object to relieving Quincy of the skip-stop system.

Chicago Elevated Collects Six Cents.—The Chicago (Ill.) Elevated Railways began collecting 6-cent fares at midnight of Nov. 21 and there was little evidence of friction. Britton I. Budd, president of the company, announced that the first day showed a drop of 6 to 7 per cent below normal in traffic. Some of this lost business went to the Chicago Surface Lines, which parallel some of the branches of the elevated and are still operating at a 5-cent fare.

Carrying Soldiers in Washington.—Soldiers stationed at Vancouver Barracks, Vancouver, Wash., will again be permitted to use the street cars of the Portland Railway, Light & Power Company as a means of transportation between Portland and Vancouver. The soldiers will travel only on trailers, and the capacity of the cars will be limited to forty passengers. Civilians will not be permitted to board the trailers at certain points until all waiting soldiers are accommodated.

Service Conference Proposed.—Chairman Charles B. Hill of the Public Service Commission for the Second District of New York, has announced that he will reconvene the conference of last spring over the International Railway's service in Buffalo, looking to such improvements in operation as will preclude the possibility of a repetition of the breakdown last winter. The conference is for the purpose of considering criticisms or suggestions which will be helpful.

Car Capacity Limited in Spokane.—Following a health department order prohibiting public gatherings and limiting the number of passengers that may ride in street cars, R. A. Willson, general superintendent of the Washington Water Power Company was arrested on Oct. 21 on a warrant sworn to by Dr. J. B. Anderson, charging overcrowding of cars. The health department order forbids the railways from carrying passengers in excess of the seating capacity of cars. Dr. Anderson alleges two violations of the order on the part of the railway.

School Fares Attacked.—Receiver Donham of the Bay State Street Railway, Boston, Mass., has filed in the United States District Court a petition in which he attacks the constitutionality of the Massachusetts statutes permitting electric railways to grant half fares to school children. He asks for permission to discontinue such fares on the lines over which he is receiver. Copies of the petition have been sent to the city officials and school committees in Massachusetts, Rhode Island and New Hampshire, through which the Bay State Street Railway operates.

Six Cents for Syracuse and Utica.—The Public Service Commission for the Second District of New York on Nov. 26 authorized the New York State Railways to charge a 6-cent fare in Syracuse and Utica. The commission did not pass on the question of increased fares in Rome, Oneida or Little Falls pending further investigation. The increased fare as granted by the commission provides only for "the duration of the war and a reasonable time thereafter." The proceedings may be reopened when it appears that reasons for the increased fare no longer exist.

Increase for Morris County Company.—An order allowing the Morris County Traction Company, which operates almost exclusively in about twenty municipalities of Morris County, to increase fares was filed by the State Board of Public Utility Commissioners on Nov. 23. Where the company has been selling six tickets for a quarter it will be permitted to charge 6 cents, and where it has been charging a rate of 2½ cents it will be permitted to charge 3 cents. The increases are allowed as a war emergency, to enable the company to gain additional revenue in the sum of $53,998 a year.

Wants One-Man Cars.—The Oklahoma Railway, Oklahoma City, Okla., asks that the part of the city ordinance governing street cars which requires a motorman and a conductor on every car be repealed. The petition sets forth that on account of the scarcity of men and the high cost of operating local lines, and in order to keep the fare at the present rate, it has become necessary for economy in using men to operate cars. The petition further contends that the operation of cars by one man has been successful in other cities and that such cars can be run in Oklahoma without impairment of the service or of the safety to the public.

Six Cents on Baltimore Buses.—The United Railways & Electric Company, Baltimore, Md., which has been operating a bus line on Charles Street, has applied to the Public Service Commission to increase its rates for passengers from 5 cents to 6 cents. The company states that the bus line has been operated with a deficit of $9,155 for the year Oct. 1, 1917, to Sept. 30, 1918. Owing to the increase in the number of patrons who are diverting their route downtown to save the additional cent charged by the company on its lines, the bus line has been so flooded that it is impossible to take care of the traffic with its present equipment.

Seven Cents Cash for Hagerstown.—The matter of fares over the lines of the Hagerstown & Frederick Railway in Hagerstown, Md., has been decided by the Public Service Commission of Maryland. The company wanted to charge a 7-cent fare. The city protested. It also raised the question of impairment of franchise contract provisions. This last charge the commission refused to entertain. On the matter of fares it requires that the railway shall hereafter sell five tickets for 30 cents. Unless tickets are held the fare will be 7 cents. This is only a slight concession, however, as the company has for some months been selling strips of ten tickets in Hagerstown for 60 cents.

Women to Stay.—*The Green Car Traveller* of Nov. 25 pasted in the windows of cars of the New York (N. Y.) Railways promises jobs to its employees returning from the war, saying: "Six hundred and thirteen of our employees are in Uncle Sam's service. When they come home they will find not only a hearty welcome but their jobs. And our more recent employees will also be retained. The war so reduced our forces that there will be work for men old and new—even more. Thanks to the women it has been possible to keep up this service during the war and we shall need them even after our men return. We believe that the great riding public appreciates their service as fully as we do."

Kansas City Eight-Cent Appeal Heard.—Three federal judges sitting together at Kansas City, Mo., on Nov. 25 heard the application of the Kansas City Railways for the Federal Court to take over control of fares and wages of the railway, but not the operation of the system. With that plan of control, the company asks that the court order a fare of 8 cents or two tickets for 15 cents. The fare in Kansas City was raised recently by the State Utilities Commission from 5 cents to 6 cents. As stated previously in the ELECTRIC RAILWAY JOURNAL, the application is based on a recent decision of the War Labor Board that the wages of the Kansas City employees ought to be increased 10 cents an hour and that fares ought to be raised to meet the higher cost.

Essay Contest on Safety First.—To encourage the practice of safety-first principles, the Union Traction Company, Anderson, Ind., will give $30 in gold to employees, for the best papers on the subject "Conservation and War-Time Efficiency." The contest is open to all employees, except department heads, sub-heads and clerks. The paper is to consist of not less than 150 nor more than 500 words. The winners will read their papers at the next "Safety First" get-together meeting, at which time prizes will be distributed. Each local safety committee of the company is to select one of its number as a judge of the contest, and the committeemen thus selected, in conjunction with E. E. Slick, claim adjuster, as chairman, will constitute the board of judges to pass on all articles presented. Papers must be presented before Dec. 6.

Cincinnati Fares Will Go Up.—Fares on the lines of the Cincinnati (Ohio) Traction Company will go to 5½ cents beginning Jan. 1. That was the prediction made recently by Street Railway Director W. C. Culkins. By March 1 the rate may go to 6 cents. The increase in fare will be automatic for three months, under the new franchise ordinance, until the revenues of the Cincinnati Traction Company are sufficient to meet all expenses and create a stabilizing fund of $650,000, after which it will automatically decrease. If the fare is increased tickets will come into use in strips of ten each, at 55 cents a strip. This prediction as to increased fares was made before the War Labor Board's finding in regard to wages was handed down. This award was referred to very briefly in the ELECTRIC RAILWAY JOURNAL for Nov. 23, page 934.

No Opposition to Peekskill Increase.—There was no opposition before the Public Service Commission for the Second District of New York on Nov. 20 to granting authority to the Peekskill Lighting & Railroad Company, Peekskill, N. Y., to charge a 6-cent fare with 2 cents for transfers to the Putnam & Westchester Traction Company, and to the Putnam & Westchester Company to charge 7 cents in Peekskill with 2 cents for transfers. M. S. Decker appeared for the traction companies and the only witness was H. D. Swain, secretary and treasurer of the companies. Mr. Swain filed statements of earnings and expenses showing operations by both companies at a deficit even while one road was temporarily operating under a 7-cent fare. The village did not oppose the petitions as it has amended its franchises to permit the companies to charge what they ask under the petitions. An early decision is expected by the commission. The commission on Dec. 12, 1917, authorized the companies to charge a 7-cent fare with free transfers, but a rehearing was granted upon the request of the village.

Fare Case Before Court.—The fight over 7-cent fares in Lake Charles, La., reached the Supreme Court recently, when the city filed an appeal from the decision of Judge Winston Overton of the District Court on an application of the Mayor and Commissioners for an injunction against the Lake Charles Railway, Light & Waterworks Company. A rule *nisi* was filed by the city against the railway on Oct. 21 and a temporary injunction was granted. On the hearing of the case the city asked for a permanent writ. The temporary ruling was dissolved on the application of the railway, which furnished a bond of $25,000 until there is a final determination of the issues in the court. The appeal of the city states the company is continuing to collect the 7-cent fare and the Supreme Court is asked for a writ of prohibition. The petition states the franchise which was granted on May 22, 1894, gives the city the right to regulate rates and the operation of the company. On Aug. 28 the city fixed the rate of fares at 5 cents. Plaintiffs charge that in defiance of the ordinance the railway began the collection of the increased fares on Oct. 21.

Mount Vernon Acts.—The Common Council of Mount Vernon, N. Y., has adopted a resolution by a vote of seven to three, authorizing the Westchester Electric Railroad and the Yonkers Railroad to charge a 5-cent fare within a well-defined area in that city, with an additional 2-cent fare outside the 5-cent zone as far as Waverly Square, Tuckahoe. The new rate would be effective from Dec. 1, 1918, to Dec. 1, 1920. The matter is now before the Mayor. This action is regarded as being not without bearing on the recently rejected petition for increased fares in Yonkers, which adjoins Mount Vernon. On this point the *Yonkers Herald* recently said: "How this proposition, if accepted, will affect the Yonkers situation is a matter of concern locally. At present the fare to and from the New Haven Railroad station from or to Yonkers is 5 cents for a continuous ride. The Yonkers Railroad utilizes the tracks of the Westchester Electric from the boundary line at the Bronx River where Yonkers and Mount Vernon Avenues join. There is no obligation on the part of the Yonkers Railroad to do this except that its contract with the city calls for a 5-cent fare with transfer privilege. The through ride was a voluntary act by both companies."

Atlanta Fare Appeal Renewed.—The City Council of Atlanta, Ga., has referred the renewed appeal of the Georgia Railway & Power Company for permission to increase fares from 5 cents to 6 cents to its committee on freight rates and transportation. It was at first proposed to refer the petition to the special committee of citizens which inquired into the merits of the first appeal of the company for relief, but as this was regarded as almost certain to result in a flat rejection of the increase proposal the Council decided to retain jurisdiction for the present at least. In the case of the original appeal the Railroad Commission held that it was without power to fix rates, but it recommended the advance on the evidence as submitted. The Council dissented from this finding and the increase was not allowed. The Council committee proceeded to its work promptly. Among others it heard Preston S. Arkwright, president of the company, and J. L. McCord, chairman of the people's committee, who presented opposing arguments. Following this the Council committee made up a majority report recommending that the Council table the petition of the railway until a decision is handed down in the case involving the same matter now pending in the Supreme Court.

Personal Mention

P. E. O'Brien has been appointed claim agent of the Springfield (Ohio) Railway to succeed E. B. Gunn.

E. V. Groff has been appointed auditor of the Sioux City (Iowa) Service Company to succeed Elmer Larson.

T. W. Murphy has been appointed master mechanic of the Baton Rouge (La.) Electric Company to succeed A. E. Sommer.

C. O. Griffin has been appointed superintendent of the Rock Island (Ill.) Southern Railway, to succeed J. Munday.

P. B. Nicholson has resigned as purchasing agent for the Rockford & Interurban Railway, Rockford, Ill., to become connected with the Standard Steel Car Corporation, Hammond, Ill., as general manager.

Arthur Clapp, assistant treasurer of the Boston & Worcester Street Railway, South Framingham, Mass., has been appointed auditor and treasurer of the company to succeed A. E. Stone, advanced to the position of general manager of the company.

George Lafferty, formerly private secretary to F. J. Derge, assistant general manager, has been appointed manager of the employment department of the Toledo Railways & Light Company, Toledo, Ohio. Heretofore, department managers have looked after the employment of help for their own departments.

W. L. Locke, formerly resident engineer of the Stone & Webster Engineering Corporation at Seattle, Wash., has been named as vice-president and general manager of the American International Shipbuilding Corporation, with headquarters at the Hog Island shipbuilding plant, near Philadelphia. Mr. Locke succeeds Walter Goodenough.

A. E. Stone has been appointed general manager of the Boston & Worcester Street Railway, South Framingham, Mass. He succeeds C. D. Emmons, who has been made general manager of the Boston Elevated Railway. Mr. Stone has been connected with the Boston & Worcester Street Railway since it was opened in May, 1903, as auditor and treasurer.

C. Nesbitt Duffy is the subject of an extended article in *Cable News-American* of Manila, for Oct. 10, on the occasion of his resignation as vice-president and general manager of the Manila Electric Railroad & Light Company and his acceptance of the position of vice-president of the Visayan Refining Company of Manila. It may interest Mr. Duffy's railway friends to know that the Visayan Refining Company is the largest manufacturer of cocoanut oil in the Philippines and much of its product is shipped to the United States.

C. D. Emmons, the new general manager of the Boston (Mass.) Elevated Railway, goes to that property with a long record of successful undertakings in engineering and management in the Central West, coupled with important achievements in the matter of public relations between the companies with which he has served and the communities based upon the foundation of fairness and amiability. He has been in the East now for two years as vice-president and general manager of the Boston & Worcester Street Railway, South Framingham, Mass., and his selection to the position at Boston is conclusive evidence that the record which he made in the West has been reflected in his management of the Boston & Worcester line and will again be reflected in the handling of Boston Elevated matters coming within his province. Mr. Emmons was born in Lafayette, Ind., in 1871. He lived eighteen years in Pittsburgh and was graduated from the Western University of Pennsylvania with the degree of civil engineer. After graduation he entered the service of the Pennsylvania Railroad as a rodman, and was advanced to the position of supervisor of signals for the territory around Philadelphia. In 1900 he was appointed general superintendent of the Lafayette (Ind.) City Railway, and in July, 1903, he was appointed general superintendent of the Fort Wayne & Wabash Valley Traction Company and superintendent of construction of the Ohio & Indiana Construction Company, which was then building the Fort Wayne, Van Wert & Lima Railway. In April, 1905, he was appointed general manager of the Fort Wayne & Wabash Valley Traction Company, which operates 212 miles of line. Under Mr. Emmons' direction two new lines were constructed for that company, the Fort Wayne, Van Wert & Lima Railway and the link between Fort Wayne and Bluffton, which connects with the Indiana Union Traction Company's system. Mr. Emmons also directed the reconstruction of the remaining interurban property of the company as well as the city lines of Fort Wayne and Logansport. From Fort Wayne Mr. Emmons went to the Chicago, South Bend & Northern Indiana Railway and the Southern Michigan Railway, South Bend, Ind., as general manager. He continued with those companies from 1911 until 1916, when he became connected with the Boston & Worcester Street Railway. Mr. Emmons has always taken an active interest in the affairs of the American Electric Railway Transportation & Traffic Association, took much interest in the work of the Central Electric Railway Association when he was in the Central West and is an active member of the New England Street Railway Club.

C. D. EMMONS

Charles E. Elmquist, the representative at the national capital of the National Association of Railway & Utilities Commissioners, has been elected president of the association and has also been appointed general solicitor for the state commissions in addition to his former duties as solicitor for the valuation committee of the association and secretary of the special war committee. His office will be a general clearing house at Washington for the state commissions, in obtaining information and in appearing before Congressional committees. The special war committee of the association has been continued, to give attention to after-the-war problems.

John H. Harrington has again assumed the position of division superintendent on the Boston (Mass.) Elevated Railway, succeeding Joseph L. Webber, resigned. Mr. Harrington was for nine years superintendent of Division 7 of the Boston Elevated Railway, which included Cambridge, and from that division he was transferred to Division 2. Roxbury, which was a consolidation of old Divisions 1 and 2. Last June he was made supervisor of transportation in Traffic Manager Dana's office, and from there has returned to the superintendency of Division 3, formerly Division 7. Mr. Harrington has been in the street railroad business for thirty years, starting as a conductor in horse railroad days.

Obituary

J. A. Swanberg, former fuel agent of the Illinois Traction System, with headquarters at Danville, Ill., died a victim of Spanish influenza and pneumonia.

Thomas M. Bradbury, secretary of the State Public Service Commission of Missouri, is dead. He was the first secretary of the commission, and prior to April, 1913, had been secretary of the Board of Railroad & Warehouse Commissioners for several years.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT
ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Effect of Labor on Reconstruction

Miles of Track and Overhead Will Be in Direct Proportion to Supply of Unskilled Labor

In making plans for the reconstruction market in the electric railway field there are a number of factors not apparent on the surface of things that will exercise a considerable control on the extent to which purchasing is done. The factors to which reference will be made from time to time in these columns include; price of money, price of material and labor supply.

At this time the effect of labor will be considered, for labor perhaps is the controlling factor in all reconstruction.

Present indications are that labor, while it will undoubtedly become more plentiful with the release of men from the army and from strictly war occupations, will not become cheaper for some time. It is much easier to raise wages than to lower them. This is daily becoming more apparent. In fact, the immediate tendency of the stoppage of overtime on a number of government jobs has been to raise the wage rate which the men demand per hour. Otherwise, they figure, their wages at the end of the week will be less than formerly. Labor is becoming uneasy and so nervous that any incautious step towards a wage reduction at the present time might easily excite labor to such an extent as would provoke widespread demonstrations.

Nor is it likely that homecoming of the soldiers will greatly reduce the price of labor. Demobilization will be gradual and the additions to the nation's labor force from this cause will undoubtedly be fully absorbed as they occur.

If labor is to be kept contented, high wages must continue, and furthermore, they must continue even after prices fall. Wage decreases must not precede or even accompany the decline in the commodity market.

The above is written largely as regards skilled labor. With unskilled labor, quantities of which would be needed in any widespread reconstruction movement by electric railways, the situation is even more acute.

In order to rehabilitate the roadbed of a utility, or the overhead system or the distribution system, and these are the parts that have been most sadly neglected in the last five years, unskilled labor is mostly employed. Men who handle the pick, axe, shovel, crowbar, tamper, pike, sledge hammer, etc., are the type referred to. Ordinarily this is looked upon as the lowest kind of labor and consequently is the lowest paid. The war, however, put these men in better classes of work, in places where they earned more money with less physical exertion. It is not reasonable to suppose, therefore, that these men will return to the unskilled work—at least unless something very tempting in the way of wages is offered. An instance is that of a contractor engaged on large work in one of our Eastern cities who is one thousand men short of the number he would like to employ, although he is ready to pay 50 cents an hour.

It is not a new thing to see a class of labor graduate from the unskilled class. Old-time roadmasters have seen different nationalities pass through their hands. But here the people in the unskilled group have been forced to seek better jobs by the incoming peoples of other lands who would work for less money. But now immigration is at low tide. Nor is it to be supposed that European governments are going to sit still and allow such a movement westward again to take place. Besides it is very doubtful if the United States will offer as much in their eyes as the new country of Russia or the devastated regions of France and Belgium which are expected to arise as new countries.

The situation, therefore, is that unskilled labor such as the electric railways is going to need will be scarce and high priced. But there is another factor in this market that must be reckoned with, namely, the railroads. They will need exactly the same kind of labor as electric roads, but will be able to offer better inducements.

Wise superintendents of roads do not make any construction plans without knowing how they stand on labor. In the months to come this factor will become more and more important as the amount of replaced track and reconstructed lines, quantities of which are required, will bear a direct relation to the labor supply.

The Sanford Riley Stoker Company of Worcester, Mass., and the Murphy Iron Works of Detroit, Mich., on Jan. 1, will combine their sales policies in one large constructive organization, it is announced, so as to render the greatest possible service to all clients. Eleven centrally located offices will handle both sales and service for the Riley underfeed stoker and the Murphy automatic furnace as follows: Worcester, Boston, Philadelphia, New York, Pittsburgh, Buffalo, Detroit, Cleveland, Cincinnati, Chicago and St. Paul.

Increased Demand for Change Carriers

Higher Fares Call for Equipment to Handle Pennies—Prices Up $2 a Dozen—Deliveries Good

Since the 6-cent and 7-cent fares for street railways have been granted in a number of sections of the country, there has been an increased demand for equipment to facilitate the handling of pennies. One product that has benefitted as a result of the new fares is the metal change carrier, the demand for which has increased 50 per cent, to take care of the extra pennies. Where change carriers are in use, the manufacturers have provided a new carrier for pennies. This separate penny tube can be quickly attached to the carrier at a small cost.

At the present time more than seventy-five electric railways in the United States and Canada have adopted change carriers as standard equipment.

Wholesale prices to the trade for years have been $18 a dozen, but cost of all materials and labor has advanced to such an extent during the past two years that the manufacturers have had to make an advance of $2 per dozen. The price now quoted is $20 a dozen, $216 per gross f.o.b. shipping point, and by close attention to details in sales and manufacturing the producers hope to maintain these prices. Shipment of a few dozen, as a rule, can be made on the same day the order is received, and gross or half gross lots within a few days.

Standard "D" Coupler

Announcement has just been made by the American Steel Foundries, the Buckeye Steel Casting Company, Gould Coupler Company, the McConway & Torley Company, Monarch Steel Casting Company and the National Malleable Casting Company that they are ready to take their part in the production of the Master Car Builders' Association standard "D" coupler. This coupler became the standard of the association by letter ballot in July, 1916, and represents the culmination of years of painstaking effort on the part of the association and the coupler manufacturers.

The companies above listed state that they have a very complete equipment of flasks, patterns, core boxes, gages, etc., and are now in a position to supply customers with this new coupler in large quantities. The coupler is fully described in a circular jointly distributed by these manufacturers.

New Engineering Firm

Dwight P. Robinson Heads Organization Recently Formed in New York

Dwight P. Robinson, a former partner of Stone & Webster, in charge of their construction and engineering business, has opened offices in New York under the name of Dwight P. Robinson & Company, Inc., constructing and consulting engineers. Associated with him will be R. M. Henderson, in charge of construction; C. W. E. Clarke, mechanical engineer; R. A. Philip and D. L. Galusha, electrical engineers, and M. E. Thomas, structural engineer, together with the nucleus of a strong purchasing, accounting and field construction organization. All of these men, for many years, have been engaged in large undertakings under Mr. Robinson's direction.

In the past they have specialized in the economical and rapid execution of difficult projects, and in the new work are prepared to construct, either from their own designs or from the designs of others, hydroelectric developments, steam-power plants, transmission systems, industrial plants, housing developments, steel and reinforced-concrete structures, the electrification of steam railroad systems, and similar work in this general field. They will also carry on a general practice as consulting engineers, including the making of engineering and financial reports and appraisals.

Mr. Robinson's work runs back for a period of twenty-five years, during which time he has been associated with Stone & Webster, first in the management of some of their electric railway and lighting properties and later, for fifteen years, as president of the construction and engineering branch of the organization. Since 1912 he has been a member of the firm. He is a graduate of Harvard University and the Massachusetts Institute of Technology.

Mr. Henderson was with the Stone & Webster organization for the last twelve years, three as district manager at Chicago, and has had extended experience in construction. Mr. Clarke, also from the same firm, has been intimately connected with or responsible for such stations as the new steam plant of the Buffalo General Electric Company, the South Boston plant of the Boston Elevated Railway, the Fisk Street plant of the Commonwealth Edison Company, Chicago, the Yonkers plant of the electric zone, New York Central Railroad, and more than thirty others of various capacities.

Mr. Galusha has been working under Mr. Robinson's direction for twelve years, and some of his best-known work has been done as electrical engineer in charge of the Mississippi River power development at Keokuk, and the Minneapolis General Electric Company's recent steam station. Mr. Thomas's structural experience has been extensive, including the superstructure of the power station surmounting the Keokuk dam, the concrete structural work of the new buildings of the Massachusetts Institute of Technology, and the design of numerous steel unit warehouse buildings and shop buildings fabricated in America and shipped to France for the American ordnance base depot. Mr. Philip's association with Mr. Robinson began eighteen years ago, when he was electrical engineer of the Seattle Electric Company, which was then under the management of Mr. Robinson and has continued without interruption. His special field is that of consultant on electrical engineering matters.

Adequate financial resources and connections, according to officials of the company, assure its ability to handle operations of any magnitude.

Observations on Current Market

Limited Quantity of Trolley Wire Available—Small Shipments of Rails Now Being Made

While the market for electric railway material is still quiet there is much optimism. Observations made this week by a representative of the ELECTRIC RAILWAY JOURNAL are interesting with regard to trolley wire, rails and rolling stock.

There has been practically no purchasing of trolley wire except for replacement purposes during the past three years and manufacturers are now marking time awaiting the government's decision on what the basic price of copper shall be after Jan. 1.

While there is some supply of trolley wire available it is in limited quantity and shipments are being made in three to four weeks. Foreign buyers are said to be in the market for a considerable quantity for France, Belgium and Japan and the opinion is expressed that this demand may stimulate prices. A representative of one of the largest concerns stated on Wednesday that he expected the demand for home use to begin to show betterment in the next three months.

Small quantities of light Standard T-rails are beginning to be delivered now, pro rata on back orders that have been on manufacturers' books for many months, and inquiry on new business for rails has shown a marked increase the last week.

These small deliveries are made up from the customary lots of tonnage left over on former rollings but until recently not released by the government for shipment. The situation for girder rails still remains doubtful and uncertain.

The rolling stock market shows a little more activity and a representative of one of the more important railway car equipment houses ventured the opinion this week that he was very optimistic and hopeful of the electric car situation and expected considerable buying in the next two or three months, both in this country and for Canadian account.

Export Restrictions Relaxed

Large Number of Items Taken Off Conservation List, Including Many in Railway Lines

On Tuesday of this week the War Trade Board announced that several hundred commodities were removed from the export conservation list, effective immediately. This follows closely on an announcement by the board made several days ago to the effect that while the signing of the armistice made possible the exportation of many articles not now needed for war purposes, for some time to come government control of certain commodities of which there is a general world shortage must continue. It was announced, however, that licenses would be granted "as freely as possible."

Included in the various lists of articles removed from the export conservation list are the following of interest to the electric railway industry: Railway cars, completely assembled and unassembled and parts thereof; iron and steel track bolts, frogs and switches, rails 50 lb. per yard and less and splice bars, steel railroad tie plates, iron and steel poles, iron and steel railroad spikes.

Bituminous Storage Limit Off

All storage restrictions on bituminous coal were removed on Nov. 22 by the United States Fuel Administration in conformity to the action of the War Industries Board in cancelling its preferential industries list. Anthracite coal is not affected, however, by the ruling of the Fuel Administration. Every industry and every householder in the country now may store as much bituminous coal as desired or obtainable, as the action of the War Industries Board removes the necessity for the Fuel Administration to distinguish longer among different classes of industrial plants.

The restrictions just raised provided for the accumulation by the consumers in the preference classes defined by the War Industries Board, of reserve stocks of bituminous coal, in accordance with their location in relation to various mine fields and their classification on the preference schedule. All industries located farthest from distribution points, particularly those in New England and in the Northwest, are found not only to be well stocked, in accordance with Fuel Administration specifications, but in many cases have surpluses above those amounts.

During the war practically all manufacturers of Diesel and other oil engines have been occupied in constructing submarine equipment. These manufacturers, it is reported in the *Electrical World*, are now getting ready to launch a selling campaign among the central stations and among the industrial plants and mines that use prime movers of moderate size.

Franchises

Paducah, Ky.—A. S. Nichols, manager of the Paducah Traction Company, recently placed before the City Commission of Paducah a new franchise ordinance which he is endeavoring to have adopted. Under the terms of the franchise the company would be permitted to discontinue any line that failed to prove profitable; would no longer be forced to maintain streets inside of its tracks and for 1 ft. each way, and would be permitted to keep the franchise alive by operating a car over any line once in ten days, instead of losing $20 for each day that a car is not operated over a line at hourly intervals.

Track and Roadway

Home Electric Company, Eureka Springs, Ark.—The Home Electric Company has been organized for the purpose of purchasing the properties of the Eureka Traction Company and the Eureka Springs Electric Company, which own the electric railway, electric light plant and ice plant in Eureka Springs. The board of directors is as follows: B. H. Blocksom, F. A. Butt, C. A. Fuller, F. C. Walker, Fred Cook, William Kappen and P. L. Smith.

Los Angeles, Cal.—The Board of Public Works of Los Angeles will soon receive bids for the construction of a double-bore tunnel, lined with enameled brick and tile, paved with asphalt, having large concrete approaches and carrying two car tracks. About $1,500,000 is available for this work. H. B. Ferris, secretary.

Municipal Railway of San Francisco, San Francisco, Cal.—The Board of Works recently requested permission of the Board of Supervisors to be allowed to purchase the necessary materials for rebuilding tracks of the United Railroads in the Parkside district. These tracks are to be used by the Municipal cars giving service through the Twin Peaks tunnel. The board also asked to be allowed to buy the material required to connect the Ocean Avenue line of the United Railroads with the city's tunnel line so that the municipal cars can give service to the Ingleside and Westwood Park districts. These expenditures are in conformity with the arrangement made between the city and the United Railroads for the joint operation of street car tracks west of Twin Peaks.

Lincoln (Ill.) Municipal Railway.—The City Commission of Lincoln has determined to build an extension of the Lincoln Municipal Railway to the North Mine and a resolution favoring such construction has been placed on file. The work will not be started until the reconstruction of the Union and Eighth Street track is completed. The track to the North Mine will be laid on the west side of the street, paralleling the pavement, the City Commission saving the expense of tearing up the pavement.

Gary (Ind.) Street Railway.—An extension is being built by the Gary Street Railway to its present Fifth Avenue line along Buchanan Street to the American Sheet & Tin Plate Company works. The northern end of the line will connect with a 1½ mile extension being built by the sheet and tin plate company into its works. This extension will be leased to the Gary Street Railway.

New York (N. Y.) Municipal Railway.—A letter has been sent by the Public Service Commission for the First District of New York to the Board of Estimate & Apportionment, stating that the commission proposes to push the letting of contracts for the remaining portions of the dual system, reaching agreements where necessary, with present contractors, that will secure prompt completion of lines that are not yet ready for operation. This action was recommended by Commissioner Travis H. Whitney, after conferences with the Priorities and other federal boards in Washington last week. These conferences were sufficiently favorable to indicate that steel and other material would now be available, and that the national government now desires to have public work pushed, in order to aid in the demobilization of war industries. In keeping with this motion, the commission has transmitted to the Board of Estimate four proposed agreements with the Degnon Contracting Company, under the general provisions of the Lockwood law, whereby the remaining work is to be done on a cost basis upon the four contracts which the Degnon Contracting Company now has.

Interborough Rapid Transit Company, New York, N. Y.—The Public Service Commission for the First District of New York recently stated that the plans for the extension of the Queensboro subway from Grand Central Station to Times Square are not yet completed, but that the work is being pushed as rapidly as possible. Some difficulty is being encountered in perfecting the plans, because of the grade between those two points, and also in locating the proposed station in the neighborhood of Fifth Avenue. According to Assistant Secretary Robinson, it is probable that forms for bids will be taken up as soon as possible now that the government has lifted the ban on such materials as are needed in the construction work. At the best it is probable that it will be more than a year before the extension is in operation.

Dallas (Tex.) Railway.—Extensive improvements to the electric railway lines of Dallas are to be made by the Dallas Railway as soon as materials can be purchased under the lifting of restrictions placed on such work by the War Industries Board. The company, under the terms of its franchise, is required to make extensive improvements and betterments. These have been held up by the war, but now that the end is in sight and restrictions are being lifted, the company is planning to go ahead with their improvements as rapidly as possible. The company has on hand a large amount of steel rails ordered before the United States entered the war, and these will be used in the first new lines to be built and in relaying steel on lines that must be so improved. According to Richard Meriwether, general manager, the company will begin at once with the relaying of the tracks on Main Street from Haskell to Peak so this portion of the street may be paved as ordered by the City Commission. The paving of Jefferson Avenue in Oak Cliff from Lancaster to the city limits has also been ordered, but held up on account of the war. This will be carried out at once, and will prove one of the biggest improvements for the traction company, as more than 2 miles of street must be laid with new and heavier steel and paved.

Chicago, Milwaukee & St. Paul Railway, Seattle, Wash.—R. Beeuwkes, electrical engineer of the Chicago, Milwaukee & St. Paul Railroad reports that the electrification of the company's line from Othello, Wash., to the Pacific Coast is nearing completion, and operation by electric power will commence during 1919.

Power Houses, Shops and Buildings

Humboldt Transit Company, Eureka, Cal.—A report from the Humboldt Transit Company states that it has purchased a 300-kw. rotary converter. The company intends in the future to use alternating current purchased from the Western States Gas & Electric Company. Its other equipment will be for sale in the near future.

Portsmouth, Dover & York Street Railway, Dover, N. H.—Fire recently damaged the carhouse and power plant of the Portsmouth, Dover & York Street Railway at South Berwick Junction to the extent of $5,000.

Shamokin & Mount Carmel Transit Company, Mount Carmel, Pa.—The power plant of the Shamokin & Mount Carmel Transit Company at Green Ridge will be abandoned in the near future and energy will be supplied by the recently consolidated Pennsylvania Lighting Company at Shamokin and Edison Electric Illuminating Company at Mount Carmel, purchased by Chandler & Company, Philadelphia. An electric transmission line connecting the Shamokin plant with the Mount Carmel plant and with the plant of the Shamokin & Mount Carmel Transit Company is nearly completed and preparations are being made by the power company to install additional machinery at its station in the western part of Shamokin.

Philadelphia (Pa.) Rapid Transit Company.—A contract has been awarded by the Philadelphia Rapid Transit Company to H. E. Baton, Philadelphia, for altering and repairing its shops at Forty-ninth Street and Woodland Avenue at a cost of about $45,000.

Montreal (Que.) Tramways.—Contracts have been awarded by the Montreal Tramways for repairs and extensions to its carhouse at Vitre, de Fleurimont and St. Antoine Streets.

Puget Sound Traction, Light & Power Company, Seattle, Wash.—Plans have been prepared by the Puget Sound Traction, Light & Power Company for reroofing the company's lighting station at 4237 Seventh Avenue, recently damaged by fire. The roof will be entirely of concrete and steel, and will cost about $10,000.

Rolling Stock

Kansas City (Mo.) Railways has bought ten new one-man cars from the National Safety Car & Equipment Company. The cars will be built by the Cincinnati Car Company.

Trenton & Mercer County Traction Corporation, Trenton, N. J., announces through Rankin Johnson, president of the company, that it has secured six new modern cars for the Trenton and suburban service and will place them in commission some time in January. The Board of Public Utility Commissioners of New Jersey requested the company to install five new cars by next April and President Johnson had to confer with war work officials at Washington before he could secure the cars. The cars are promised for delivery within thirty days.

Trade Notes

Capital Traction Company, Washington, D. C., has adopted the International cash registering box for use on its cars.

Ohio Brass Company, Mansfield, Ohio, has moved its New York office from 30 Church Street to 1781 Hudson Terminal Building, 50 Church Street.

Thornton Trolley Wheel Company, Ashland, Ky., capital $250,000, was recently incorporated by Frederick Thornton, T. M. Adams, P. M. Scott and others.

Union Switch & Signal Company, Swissvale, Pa., announces that on and after Dec. 1 the New York office of the company will be located in the City Investing Building, twenty-first floor, 165 Broadway.

A. G. Chapin has been appointed New England manager of the National Conduit & Cable Company, Inc., and the National Brass & Copper Tube Company, Inc., with headquarters at 200 Devonshire Street, Boston, Mass.

United Railways & Electric Company, Baltimore, Md., has purchased 1,000,000 metal tags to be used in lieu of coins. These tags were purchased from the National Railway Equipment Company and will be sold at designated places.

F. Y. Stewart has been appointed manager of the tape department of the United States Rubber Company with headquarters at the company's main office in New York. Mr. Stewart was formerly manager of the Walpole Tire & Rubber Company from the time it was bought and finally absorbed by the United States Rubber Company about three years ago. The Walpole friction tape is now manufactured, sold and distributed by the various branches of the United States Rubber Company in the principal cities of the United States.

New Advertising Literature

W. S. Barstow Company, Inc., New York, N. Y.: 1918 manual of securities of the companies in which it is manager or is interested. Maps accompany the descriptions of most of the properties. The book is uniform in size with the handbooks of the same kind published by Stone & Webster.

Safety Car Devices Company, St. Louis, Mo.: Pamphlet with thirty-six pages and cover containing a reprint of part of the issue of the ELECTRIC RAILWAY JOURNAL for Sept. 28, descriptive of the use of safety cars, also the announcement made in the same issue by the Safety Car Devices Company. The pamphlet is printed in two colors.

Economy Electric Devices Company, Chicago: Circular on Vulcan one-man kerosene furnace or torch. A list of the uses for which this furnace is adapted in the shop and on the line is given. Views are also presented of the way in which it may be used for loosening frozen brakes, for thawing out an air line, for thawing out a triple valve, for preheating a rail preparatory to acetylene bonding, and for thawing ice and snow from interlocking.

Oxweld Acetylene Company, New York, N. Y.: A book entitled "Oxwelding and Cutting," which describes the different operations necessary for this class of work and takes up fifty-four problems that it is desirable for an experienced operator to master. The book is a manual of instruction for the shopman doing welding and cutting and should prove very beneficial in promoting better workmanship, through a more intimate knowledge of the welding principles and their proper application.

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Volume 52 New York, Saturday, December 7, 1918 *Number 23*

Electric Railways Are Now Recognized as a National Institution

ONE of the gains which has been made by the electric railway industry during the war is its coming to realize that it is national rather than provincial in its character and in the scope of its activities. The public has begun to appreciate the same fact. The Electric Railway War Board has been an important factor in this achievement. According to the action of the executive committee of the American Association taken on Tuesday of this week, the war board will now cease to function as such, the war being over to all intents and purposes, but its place will be taken by a committee on national relations. This committee will continue the work so well begun by the war board, so modifying it as to synchronize with the national transition from the state of war to the state of peace.

Every virile electric railway operating staff in the country has a different feeling with respect to its opportunities and responsibilities from that which it had before the war. There is more of a spirit of co-operation in the air. It is important to conserve and intensify this spirit. The committee at Washington will help, but this is not enough. The co-operative spirit cannot be delegated to a committee. The spirit must manifest itself and exercise itself in divers ways. The new Trans-Mississippi association, whose formation was outlined in last week's issue of this paper, is an omen of the times. Older associations can be utilized as means of putting conviction into action. But whatever the means employed, a feeling of national consciousness in the industry must be fostered. There is an inspiration in being part of a country-wide movement, and inspiration is needed in the business now as never before.

The Conscientious Objector to a Reasonable Fare

IN A RECENT ISSUE of this paper there was a news item to the effect that in the months of September and October almost 3,000,000 passengers rode on the street cars in Columbus, Ohio, without paying fares. They were the conscientious objectors to the 5-cent fare which the company adopted because it could not operate on the eight-for-a-quarter rate.

In Chicago recently an alderman requested the City Council to indorse a boycott of the elevated roads because they were beginning to collect a 6-cent fare under authority of the State utilities commission. In the same city some days later the people were urged through an anonymous circular to "strike" for a 5-cent fare and to "make the companies' shameful trickery and greedy extortion cost them dear."

The conscientious objector has been in disrepute with his fellow citizens since the first days of our entry into the great war. There are signs now that he is being succeeded by men of more extreme views. These men are destructive in their preaching and in their methods, and it is natural, perhaps, that they should seize on occasions such as the inauguration of higher street car fares for getting a foothold. However, we are not worried that they will make much progress along this path or that there are many of them.

The public has been educated during the past few years so as to appreciate the justice of petitions for relief filed by electric railways. From the President of the United States down, there have been many advocates of a fair deal to these utilities. The public will not go out of its way to help the companies secure higher fares, but once an increase has been approved by the proper tribunal we believe the patrons will become reconciled to the change. At any rate, we have too much faith in the fairness of the average American to fear any serious indorsement of such views as those cited above.

When Should Surface Cars Be Operated in Trains?

WHAT is the present status of surface car train operation? On the Hog Island Shipyard line of the Philadelphia Rapid Transit Company and on a number of other lines in congested war industry districts, as has been described in recent issues of this paper, surface cars are being operated in trains. In view of the progress which the small one-man car is making even in cities of considerable size, the practice noted above seems to be a direct reversion.

Surface car train operation is not a new idea. Transportation companies have experimented with it ever since the operation of electric cars in trains has been a practical possibility. With the introduction of light multiple-unit control systems a few years ago attention was again directed to it but, like the double-deck car, it was usually discarded after a short trial. As was pointed out in these columns at that time, the inherent defect is that operating units of large passenger carrying capacity, be they single cars or groups of cars operated as single units, slow down the schedules. The reason for this is that in ordinary surface line traffic the number of stops per mile increases with the number of passengers per car.

Train operation is almost ideal where masses of passengers are loaded or unloaded at definite stations, as in rapid transit service. It has been characteristic of the war industry service that most of the industrial or military plants requiring the transport of large numbers of employees during the rush hour are located in places removed from the housing districts and the normal centers of urban traffic distribution. The service to these plants, therefore, has been more akin to rapid transit than to ordinary surface line service. The problem has been to secure a high passenger density per mile of track, and this, of course, is most easily secured by the use of large operating units where the traffic is of the rush-hour character. For this service train operation has been highly successful. That it has been is no indication of its merit for all classes of service, however. Rather it serves to illustrate the value of careful analysis of traffic in connection with the purchase of new rolling stock.

Skip-Stop Movement Must Not Lose Momentum

NOW that permanent peace is in sight, there is a tendency to "let down" in certain quarters. This may be all right with respect to some practices which were incident to the war, but it should not affect the progress of the skip stop in electric railway operation. The savings which were possible through the simple expedient of omitting stops were recognized long before the war, but it required the war to overcome the inertia which opposes even such reasonable innovations.

The skip-stop plan of operation is one that benefits all concerned. Fuel saving, greater speed and increased service are all advantageous to the public, and at the same time they contribute toward enabling the utility to meet the public's demands at less expense per unit of service rendered. To offset these gains there is the slight inconvenience to passengers due to their having to walk a short distance to a car stopping point. There is also a possible source of danger of accident while the public is becoming accustomed to having cars pass certain points without stopping.

In Philadelphia several recent accidents have been laid by the public at the door of skip-stop operation, and there has been an agitation in favor of abolishing this. It is probably true, however, that here or elsewhere there is no increase in accident risk commensurate with the gains secured. The public should remember also that all progress in transportation and in other fields is accompanied by a tendency toward reaction. It would be better, and it is practicable, to safeguard danger points in ways other than by reducing car speeds. We do not believe that there need be any increased danger at non-stop points if pedestrians and vehicle drivers will take reasonable safety precautions, and if the motormen will pass possible danger points with cars well under control.

The railways are handicapped in their advocacy of the skip stop because they are among the beneficiaries of its adoption. Hence they have had to wait until circumstances forced upon the attention of public regulatory bodies the advantages to be obtained for the public by the elimination of unnecessary stops. Now, however, that a demonstration of these benefits has been made on a large scale, it will be lamentable if hasty action by citizens and civic organizations undoes the work of so many months of progress. There is an opportunity for effective publicity work at this time, to show the public all of the facts in the case.

A Word of Appreciation for the Harassed Purchasing Agent

THE purchasing agents of the electric railways have in the few years past had one of the hardest jobs in the gift of the industry, and the job will remain difficult for some time to come. The task of these men is to see that everybody has what he wants when he wants it. They have first to learn what the several departments need, then to locate sources of supply for the required material, and finally to induce reasonably prompt delivery of goods which are ordered. War conditions have, of course, added greatly to the complication of their work, not only because these conditions have caused scarcity of materials and exorbitant prices, but also because of the necessity for establishing priority claims in many instances.

For example, a certain railway wanted some condenser tubes for emergency use. A supply was located in a jobber's stock and could have been released in due course except for the fact that the priority permit applied to the manufacturer and not to a jobber. The manufacturer had to be located and new priority certificates secured authorizing him to deliver the tubes through the jobber as agent. All of this took many weeks and imposed a great amount of labor on the part of the purchasing agent concerned. In the meantime the power plant needed those tubes. This case may be extreme but it illustrates the general principle that we have in mind.

Heads of departments can assist in mitigating the purchasing agent's load by informing him well in advance of anticipated requirements. For example, if it is likely that an unusual number of cars are to be remodeled next summer a tip to the purchasing agent will enable him to do a little "scout work" for materials now. At least one purchasing agent requests heads of supply-consuming departments to meet him at frequent and regular intervals to go over together the company's prospective requirements. This insures co-operation, prevents the ordering of materials not strictly necessary and permits the exercise of foresight generally.

Keeping the Current in the Railway Return Circuit

SOME months ago a very valuable paper on the subject of protecting underground cables and pipes from the effects of stray currents was read by D. W. Roper at an A. I. E. E. section meeting in St. Louis. Mr. Roper has long been in charge of underground and other power distribution work in Chicago and is in a position to know "what is what" in the matter of electrolysis mitigation. The company with which he is connected, the Commonwealth Edison, supplies the power for the electric railways in Chicago, and by virtue of the relations thus involved he has been obliged to co-operate with the railways in determining the best means for safeguarding the power company's vast investment in underground cables. It is a source of considerable satisfaction to note that an insignificant sum (in the neighborhood of $\frac{1}{10}$ of 1 per cent) spent annually is all that has been necessary for this purpose. This fact will tend to dispel the "bogey" of fear of high cost of protection which has sometimes worried the power company engineer or the railway manager.

Mr. Roper's observation and experience incline him to favor the "drainage system" of protection in the interest of economy of investment, as against the insulated negative return feeder system. He explains that the drainage system is simply an insulated negative return feeder system applied to the pipes instead of the rails. This being the case it is obviously a matter of economics to determine where the return system should be applied in cases where protection of underground pipes and cable sheaths is necessary. And it is equally obvious that the parties concerned should get together to use the most economical plan and to determine how the bill for protection should be split between them.

Space limitations preclude the printing of Mr. Roper's article in full but an extended abstract with a number of his diagrams have been given because the full text may not appear in the Institute proceedings. We regard the paper as a distinct contribution to literature on the subject, especially in view of the author's relation to the practical problem of insuring long life of the cable sheaths under his care.

Government Should Not Ask Charity for Mail Carriers

SHOULD not mail carriers, when bearing pouches, be transported by electric railway cars at a flat monthly rate? This question, which is being raised by postal authorities in various cities throughout the country, has elicited from the Milwaukee company a clear-cut comprehensive reply which may be suggestive to other railways. In denying the request Mr. Mortimer passes over legal objections, and he frankly admits that the practice could probably be established without serious public complaint. Upon the basis of economic principles and good government, however, he finds that a concession to mail carriers would be unwarranted.

In the first place, the practice would not result in offsetting economies, for it would probably require cars to stop more frequently in outlying sections of the city, with an increase in energy consumption, decrease in schedule speed and consequent increase in wage disbursements. In the second place, electric railways are obligated to give the best service at cost without discrimination. One class of patrons should not be favored with service at less than cost at the expense of other classes, for each class should pay its full share of the cost of operation, including a reasonable return on the investment.

In the third place, even if an electric railway were under public operation as is the post office, it would be highly desirable that they both stand on their own bases in their respective costs of operation. Free passes or reduced rates to post office employees might be given provided the government would give a corresponding franking privilege or reduced mail charges to the railway and its employees, but such an exchange of courtesies would be most unbusinesslike. It would then be impossible to determine whether each utility service was paying its own way.

Mr. Mortimers' position is impregnable. It is neither wise nor just for the government to try to profit at the expense of the non-postal patrons of electric railways, or to countenance the efforts of postmasters toward this end. As the leading exponent of the American policy of fair play, the government ought to be willing to pay for what it gets. It has not thus far been eager to pay fully for the carriage of mail itself, but it should atone for rather than increase its sins of this sort.

What Constitutes an "Excessive" Fare?

THE recent grant of a 7-cent fare in Ithaca was accompanied by two remarks on the part of the Public Service Commission for the Second District of New York which are worthy of comment. These were:

> It is practically conceded that dividends have been paid in the past when the money so used "in ordinary prudence" should have been used for the rehabilitation of the property.
>
> There is a limit beyond which trolley fares should not go; in fact, they cannot be advanced beyond a certain point without disastrous results to the company. In these times of heavy burdens, the people should not be required to pay an excessive fare.

The first statement raises an unwarranted counterclaim against the plea of the Ithaca Traction Corporation for a reasonable fare. In the first place the Ithaca Traction Corporation was reorganized in 1914 after foreclosure sale of the predecessor property, and the new company has never declared any dividends. In the second place, as the same New York commission stated in granting the company a 6-cent fare late in 1917, the reproduction value of the property in the public service, including intangibles, was ascertained by the commission at the time of the reorganization.

In granting the 6-cent fare last year, therefore, the commission made what it even now considers a "fair and proper adjudication" by allowing what in its opinion was a fair return upon the property value, adjusted to date. With valuation data readily available, the commission was not justified in inserting in its second decision a suggestion that the present company is responsible for any sins of commission or omission of the former owners of the property. Such a theory is erroneous and unlawful and the company is justified in repudiating it.

The second remark refers to the effect on the company and also on the public of the 10-cent fare proposed. In view of the monopolistic nature of electric railway service the right of the commission to limit the fare to a reasonable amount is admitted, though we believe that in the great majority of cases the fare necessary to yield a fair rate of return on the value of the property would not be so high as to be deemed unreasonable. Ten cents is not so very much higher than 7 or 8 cents which are charged in many other places as to bar it from consideration. If it was found after a trial that the company was earning an excessive amount or that the fare was unreasonable in other respects, it could be reduced. In that case steps should be taken by the city or State to determine what other form of relief, such as exemption from certain taxes, could be extended to the company to compensate for its lower fare.

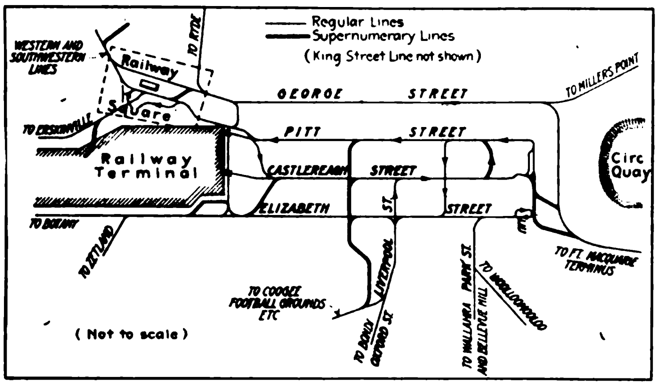
The public must realize that in the final analysis it must pay for the service it uses and insists on having. The commissions, which understand these facts, can help greatly to educate the public by explaining this fact in their decisions as well as the necessity for higher fares under existing conditions.

Taking Care of Downtown Traffic at Sydney, Australia

"Supernumerary" Tracks Are Useful in Preventing Congestion—Nature of Traffic Makes Reconstruction Work Difficult

By C. F. DEWEY
Sydney, N. S. W., Australia

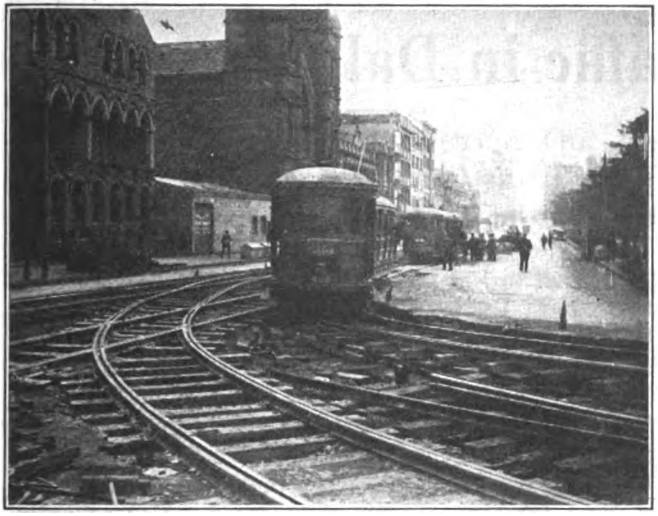
THE layout of the city of Sydney, Australia, is not exactly favorable to the usual methods of tramway permanent-way construction, and various means have been employed from time to time to get out of "tight corners" and at the same time render the best possible service. The relation of the city to its suburbs presents difficulties in the matter of traffic distribution. Furthermore, the city is the oldest in Australia and in general the streets are narrow and crooked. They follow approximately the old bullock and horse trails which led inland from the harbor. As a consequence of these conditions, coupled with great density of traffic, the operation and maintenance of the lines in the center of the city are far from easy. Of all the city streets two bear the greatest amount of traffic. George Street, which is considered to be the principal thoroughfare, takes all the tramway traffic for the western and southwestern suburbs. This requires fourteen different routes all having frequent terminal and intermediate services. The other main street is Elizabeth Street, which is the most eastern of the chief thoroughfares. It takes all the traffic for the eastern and southeastern suburbs, which also require fourteen different routes with frequent service. As several of the Elizabeth Street routes leave the main line a short distance from the terminus, the traffic on this street is not as dense as that on George Street. Between George and Elizabeth Streets are two intermediate thoroughfares, Pitt and Castlereagh Streets which, on account of their narrowness, accommodate but one track each. The one-way traffic, up on Pitt Street and


Regular Lines
Supernumerary Lines
(King Street Line not shown)
WESTERN AND SOUTHWESTERN LINES
TO RYDE
Railway
Square
TO ERSKINVILLE
Railway Terminal
TO BOTANY
TO ZETLAND
GEOROE STREET
TO MILLERS POINT
PITT STREET
CASTLEREAGH STREET
ELIZABETH STREET
ST.
Circ Quay
TO FT. MACQUARIE TERMINUS
TO COOGEE FOOTBALL GROUNDS ETC
LIVERPOOL
TO BONDI OXFORD ST.
TO WALLANRA PARK ST. AND BELLEVUE HILL
TO WOOLLOOMOOLOO
(Not to scale)

DIAGRAM, NOT TO SCALE, SHOWING THE CENTER OF GREATEST TRAFFIC CONGESTION IN SYDNEY

TAILORS
CARYS CHAMBERS
CARYS CHAMBERS
FUR
SHO

RAILWAY SQUARE, SYDNEY, AUSTRALIA. FROM 400 TO 5000 CARS PASS THIS POINT DAILY BETWEEN 6 A.M. AND MIDNIGHT



TRACK WORK UNDER RECONSTRUCTION AT A CONGESTED INTERSECTION IN SYDNEY

down on Castlereagh Street, flows between the steam railroad terminal and various parts of the city, and the Circular Quay (ferry) and *vice versa.* These streets also take the two suburban services of Erskenville and Surrey Hills, thus relieving George and Elizabeth Streets.

The accompanying rough diagram, which is not to scale, shows the streets mentioned and also the provision made for interconnecting the lines upon them. Particularly important is the provision for relief of blocks by means of "supernumerary" tracks, which have been laid for this purpose and also for the accommodation of special football, race, circus and show services without interference with regular traffic. The ways in which these supernumerary tracks accomplish their purposes will be evident from an inspection of the diagram. The track layout is such that should a block occur on any one of the city routes the traffic can be immediately diverted to another regular track by means of existing loop lines or to one of the supernumerary tracks.

On account of the abnormally heavy traffic to which these city routes are subjected it is almost impossible to keep the tracks in perfect order. Reconstruction or repair is constantly necessary. However, to minimize this work the permanent way is built as substantially as possible, and the accompanying photographs have been taken to show a typical job of reconstruction and realignment of the tracks in Elizabeth Street at the intersection with Park Street. This is one of the busiest junctions on the line and the work is being carried out with a minimum interference with traffic. Referring to the photographs the following points will be of interest. One shows the Railway Square at Sydney. In the center of the picture may be seen the tramway waiting room, on the roof of which is the signal box controlling the movements of cars in the square. To the left in the picture is the general Parcel Post Office, next to which are the entrances to the railway terminal. Between 4000 and 5000 cars pass this point between 6 a.m. and midnight each day. Another illustration shows the reconstruction job under way, with a "jumper-box" car taking a temporary curve. The third is a general view of the junction layout looking south.

RECONSTRUCTION AND REALIGNMENT OF TRACKS ON ELIZABETH STREET, SYDNEY

Stamp Tax Cuts Traffic

Higher Costs Due to War Conditions Have Made Existence Difficult for Italian Tramways

THE country or secondary tramways in Italy formerly enjoyed the privilege of freedom from stamp tax on tickets. With a decree several months ago, however, this privilege was ended, and according to *Rivista dei Trasporti* the result has been a large contraction of traffic. On the basis of a comparison in an actual case between the thirty days before the application of the stamp tax and a similar period thereafter, it appears that the pre-tax ticket total of 245,965 was reduced to 199,693, a decrease of 19 per cent. With the normal traffic increase taken into consideration, the ticket loss would be 20 per cent.

It is not asserted that the decrease in traffic in other cases cannot be less, but the example cited is said to be sufficient to show that the stamp tax tends to destroy the object upon which it is levied, namely, the tickets. It is hoped that the matter will be revised, as there are probably some means for securing a well-designed scheme of taxation which will give as much revenue to the government without reducing railway traffic.

It is generally believed that the country tramways are in a rather poor condition, for the government has not defended them against the claims of local authorities and institutions for payments of various sorts, the sharing of profits and the like. The city tramways, however, have been thought to be more or less profitable.

After the beginning of the war some displacement of population and development of war industries created the illusion that the good standing of the city companies had not changed. Soon, however, there came an increase in wages as a result of the higher cost of living, and the subsequent increases in the prices of material made the situation serious even for the most prosperous companies. The deleterious effects of the reduction of maintenance will be seen in a short time.

Out of thousands of kilometers of city tramways in Italy, more than one-third are composed of small lines in small cities. Although of enormous value to the inhabitants of these cities, such lines do not have in the small traffic a sufficient financial support for the high cost of installation and operation. These companies were in a poor condition before the war; to-day they can hardly continue their existence.

Speeding Up Traffic in Dallas

Mr. Beeler Recommends Various Recent and Successful Developments in Proper Control of Traffic for Use in Texas City—Congestion Relieved by Through Routings

THE city of Dallas, Tex., in the opinion of John A. Beeler, has now arrived at the point where the general traffic situation must receive the treatment that metropolitan conditions demand. Street-car and vehicular-traffic requirements must be correlated and adjusted for the good of all the people. How this should be done is indicated in the first sections of Mr. Beeler's report regarding his recent investigation in Dallas. The first section covers the relief of congestion, the promotion of safety and the acceleration of traffic movements generally, while the second section is devoted particularly to the subject of rerouting of car lines. Favorable comment by the Mayor of Dallas upon the proposals was noted in the ELECTRIC RAILWAY JOURNAL of Nov. 23.

It will be recalled that the Dallas Railway is a corporation which began formal operation on Oct. 1, 1917, under a new service-at-cost franchise adopted a short time before. Under this the company agreed to expend $1,000,000 in altering, improving and extending the city property. This formed the basis for the present investigation.

SPEEDING UP TRAFFIC

After calling attention to the irregularity of the street system in Dallas (the various subdivisions being laid out at different angles), the extremely irregular length of the blocks, the traffic congestion in the business district, the reckless automobile driving, the unlimited automobile parking, the bunching of the electric railway cars and the routing of each car line completely through the business district to the far side, Mr. Beeler suggests a number of remedies to relieve the present situation. Abstracts of these recommendations follow:

Install Loading Platforms at the Principal Car Stops and Employ Double Berthing

One of the worst features in connection with the present traffic congestion is the danger from reckless automobile driving to patrons waiting for street cars. The surest way to protect the prospective passengers, it is said, is to provide a position at the car stop where they can wait in safety. The principal argument in favor of the safety zone as against a raised platform is that the former can be used during the rush hours and removed at other times. Mr. Beeler believes, however, that if a safety zone can be created during the period of maximum travel to accelerate traffic, there is no reason why it should not remain in place at all hours. Without question the raised platform gives greater safety to pedestrians. It is also a material aid in speeding up car loading, as the first step from the street level to that of the car platform has already been taken. The platform should be about 6 ft. wide, 10 in. high and 60 ft. long. Their construction is recommended at eleven points in the business section, as shown on the map on page 1001.

The headway given in the present time-tables frequently calls for two or more cars at the same time, which is not deemed desirable practice, but in other cases cars are being operated with trailers, which is called the proper way to operate two cars on the same schedule. After consideration of the subject from various angles, it is considered desirable to load at least two cars at once so as to reduce the wasted time at the stop and increase the schedule speed. Consequently double berthing is recommended for all times of the day at twenty-two points in the business section. These include, in the main, the intersections of Elm, Main and Commerce Streets with Lamar, Akard and Ervay Streets.

Employ Front-End Collectors at the Principal Stops

Front-end collectors should be stationed on the loading platforms at the principal stops in the congested district and should be on duty at least during the period of the evening rush hour. These men should collect fares, issue transfers, assist in loading non-prepayment cars and do anything else possible to keep the traffic moving. Experienced conductors or inspectors should be used for this purpose. The result will be additional comfort to patrons, faster operation, more even loading and better co-ordination with the signals of the traffic officer.

Change the Location of Some of the Stopping Places

While Mr. Beeler disavows the intention of criticising the adoption of the near-side stop in Dallas, he finds a few points at which a readjustment of stops will aid materially in speeding up traffic. For example, where car lines diverge the stopping places should be located so that the cars on one line do not hold back those of the other line. This is done by making the stops in both directions beyond the junction point, the stops on the tracks approaching the junction being near-side and those on the tracks leaving the junction far-side. Such treatment is recommended for the congested corners at Main and Ervay Streets and at Commerce and Ervay Streets. At three other points two stops should be consolidated into one on account of the shortness of the block. The accompanying map shows the proposed location for stops in the congested district.

Give Precedence to the Street Cars Over Other Traffic

Since the street cars are loaded with passengers far outnumbering all other users of the streets, they should have the right-of-way wherever practicable. Traffic officers should be instructed to give them precedence over other traffic as far as possible. When a car makes the far-side stop, the near-side traffic stop may sometimes be avoided.

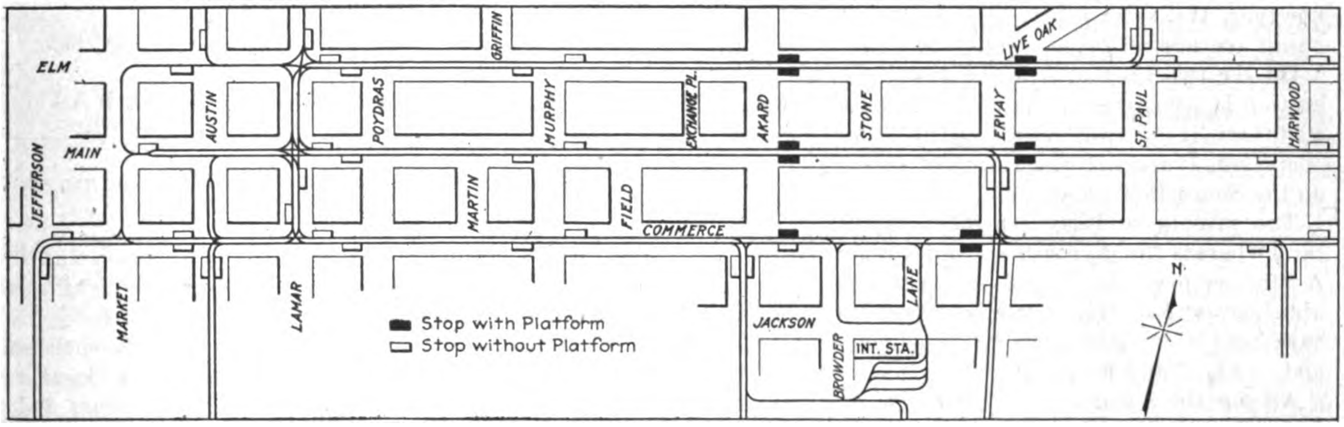
Modify or Eliminate the Traffic Signals

The design of the present traffic signals used by the police is good, but the position of the signals between the car tracks leaves no room for the traffic officer to stand if he attempts to pass cars in both directions at once. The officer should be placed at one side of the tracks and a mechanical device arranged to control the traffic signal from this position, or else these signals should be done away with entirely in the crowded locations. The change will permit the street cars to pass in opposite directions at the same time, thus blocking the intersection only half as long as at present. Furthermore, if cars are ready to proceed, two of them should be passed through the intersection in each direction at one time.

Regulate Automobile Parking

In Mr. Beeler's opinion, the roadways of the busy streets of Dallas are needed almost entirely for the movement of traffic and not as at present to a great extent for garage purposes. The existing regulations regarding the parking of automobiles should be modified as follows:

No parking opposite any street-car stopping place within the congested district, and no parking at any place in the city between the curb and a car-stop sign or loading platform or within 10 ft. of either.



PROPOSED STOPPING PLACES AND LOADING PLATFORMS IN BUSINESS SECTION OF DALLAS

No parking at any point within the congested district on Elm, Main and Commerce Streets, Ervay Street between Main and Commerce Streets and Lamar Street between Elm and Commerce Streets, from 4.30 to 6.30 p.m., but parking for thirty minutes only on Elm, Main, Commerce, Ervay, Akard and Lamar Streets except as noted above.

Parking for two hours only on any other street in the congested district except that the parking privileges of the present ordinance be not enlarged.

Abolish Left-Hand Turns for Vehicles at Certain Points

In order to safeguard and speed up the traffic movement generally, it is stated that the left-hand turn must be abolished at the intersection of Ervay and Main Streets, which is at present the most congested corner of the city.

In order to protect pedestrians crossing the streets in the congested district, the limitations of the crosswalks should be plainly marked on the paving, the simplest and quickest way being to make a line approximately at the building line with a heavy, quick-drying, white-lead paint.

Establish Right-Hand Rule for Right-of-Way for All Vehicular Traffic

In order to avoid accidents, prevent confusion and provide for the relief of congestion in general street traffic, the plan of giving the right-of-way to the vehicle approaching from the right is said to be the simple and logical one. The "east and west" and "north and south" plans are generally unsatisfactory. Visiting motorists are more or less unfamiliar with local rules, and even if they do know the rules, many are not able to tell exactly in what direction they are running. In fact, this is sometimes a question with local motorists, especially where the streets run at the semi-cardinal points of the compass.

Revise the Street-Car Schedules to Give a More Even Headway

The street-car schedules, Mr. Beeler says, should be revised to conform to the service requirements proposed in the new routing, noted hereafter. As far as possible two cars should not be scheduled to operate over any track at the same instant but should be spaced so as to provide an even distance between cars.

Furthermore, it is recommended that the old law prohibiting a speed of more than 8 m.p.h. in the central section of the city or 12 m.p.h. outside be repealed and an ordinance enacted limiting the schedule speed in the congested district to 12 m.p.h. and outside thereof to 18 m.p.h. This will be in keping with the actual requirements of good service.

Instead of all street cars being flagged across steam railroad tracks by the conductors, Mr. Beeler believes that much better results in time-saving and safety could be obtained by placing the entire responsibility on the motormen. At blind crossings regular flagmen should be stationed to flag all traffic. These men should be joint employees of the steam and electric railroads, although the burden primarily belongs to the former as steam train operation creates the dangerous condition.

LINES SHOULD BE THROUGH-ROUTED

The principal criticism which Mr. Beeler makes in the second section of his report is that the majority of the lines in Dallas terminate in the downtown business district instead of being carried completely through and into another residential district. A step in the right direction was made several years ago in the establishment of a number of through routes—the Akard-San Jacinto, Harwood-Oak Lawn, Hickory-Lake and Munger-Highland Park lines. These have demonstrated their effectiveness and have assisted in relieving the downtown congestion. The time has now arrived when the same principle should be applied to all routes which can be connected up, as the street congestion is fast approaching a point where radical measures will have to be adopted to relieve the situation.

To be successful, it is said, a through route should serve sections of the community with as nearly as possible the same riding characteristics. The loading on the two ends of the line should be fairly well balanced, so that if adequate service is given on the one end the other will not be largely over-served. Accordingly no material changes are recommended for the four old through routes, but the various other lines are rerouted so as to make every line a cross-town one except the new Second Avenue line. This will pass through the business section and terminate at the Sanger loop. It is recommended that two sections of lines be abandoned because of insufficient traffic. In spite of the elimination of nonessential service and unnecessary duplication of lines, however, the service throughout the city is increased on an average of 20 per cent by the rerouting.

On the two lines of heaviest traffic two-car train operation is recommended for the rush hours. The North Belt line, it is said, would be ideal for one-man car operation, and one-man cars might possibly be desirable on the South Belt line later.

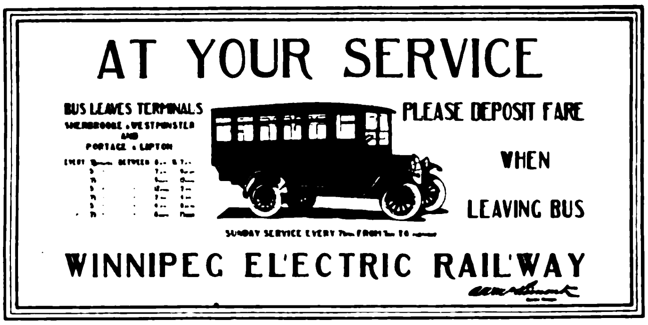
The present mid-day schedules call for ninety-four cars, whereas the proposed schedules require ninety cars. As far as possible all odd intervals like seven, eight, nine, eleven, fourteen, eighteen and twenty-four minutes have been eliminated from the schedules, and five, seven and one-half and fifteen minute spaces substituted.

Among the advantages of the new routings are the facts that the congestion in the business district will be reduced and the necessity for transferring will be decreased. Furthermore, the union station will be connected directly with large sections of east and west Dallas heretofore dependent on transfers, and it will be possible to give express service to the city's eastern section.

Pay-As-You-Leave Bus Operation at Winnipeg

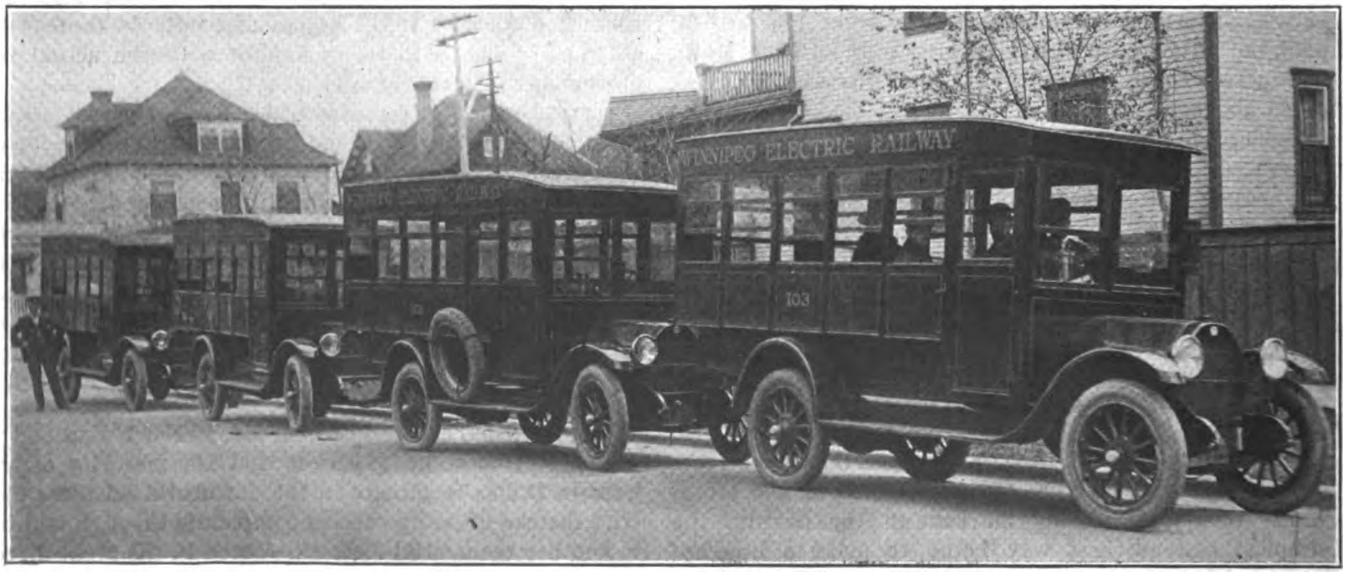
SINCE May 1 the Winnipeg Electric Railway has been operating a bus service on Westminster Avenue for a distance of 1.2 miles. Strictly speaking, this is not merely an extension but a link with one end at Sherbrooke Street and the other at Portage Avenue whereby free transfer connections are established with a large number of routes. The buses run over paved streets except for three blocks.

Four Studebaker buses with 1-ton truck chassis were bought for this service. Of these, two are run regularly, three during the morning, noon and evening peaks, while the fourth is a spare. As shown in the accompanying reproduction of a card designed by a returned Canadian soldier, the headways are either five or seven and one-half minutes. There is no service between midnight and 6 a.m.



POSTER ADVERTISING BUS SERVICE OF WINNIPEG ELECTRIC RAILWAY

The total daily mileage is 450 to 500, with each car averaging 150 miles a day. Cash and ticket revenues, averaging 4 cents per ride, range from $44 to $55 a day. Revenue riders constitute only 25 per cent, the rest riding on transfers. Owing to the fact that the buses are boarded by groups rather than individuals, pay-as-you-leave fare collection is used. The buses seat twelve passengers each but often carry sixteen to eighteen. Their schedule speed slightly exceeds 10 miles per hour.



FLEET OF PAY-AS-YOU-LEAVE BUSES OPERATED IN WINNIPEG, CANADA

Drainage if Necessary vs. Negative Feeder Electrolysis Protection*

A Comparison of the Plans Used in St. Louis and Chicago for Eliminating Damage to Underground Structures, from the Power Company Viewpoint—The Commonwealth Edison Company Spends Only $1,000 a Year in Repairing Electrolysis Damage to $15,000,000 Worth of Underground Cables

By D. W. ROPER
Superintendent Street Department, Commonwealth Edison Company, Chicago, Ill.

ELECTROLYSIS troubles made their appearance shortly after the first electric railways were placed in operation and since that time a great many papers have been written on electrolysis and the methods of its mitigation. This article deals with what St. Louis and Chicago have in common on the subject.

The literature regarding the electrolysis situation in St. Louis is rather meager. It appears that in the earlier days the so-called drainage system was used, and that in later years the insulated negative return feeder system has been adopted in a few locations. Several reports, however, have been published regarding the insulated negative return feeder system installed in the Ann Avenue district.

Edison Company in Chicago Uses the Drainage System

In Chicago the gas company undertook some extended electrolysis surveys in 1901 and as a result installed a number of drainage cables for the purpose of protecting the pipes in several portions of the city. During the period previous to 1903, the Commonwealth Edison Company suffered very little from electrolysis, principally for the reason that its cables were not located in those portions of the city where they would be subjected to trouble. With the construction of the company's Fisk Street power station, however, and the installation of underground transmission lines between this station and the downtown district and to some of the outlying substations, electrolysis trouble first became of consequence. The drainage system of protection has been used by the company from the first. A careful record kept for more than ten years of the cost of repairing burnouts caused by electrolysis shows that on underground cables having a book value of about $15,000,000 the cost is roughly $1,000 per year. The other utilities in the vicinity using underground cable have also adopted the drainage system with satisfactory results, but their exact cost figures are not available.

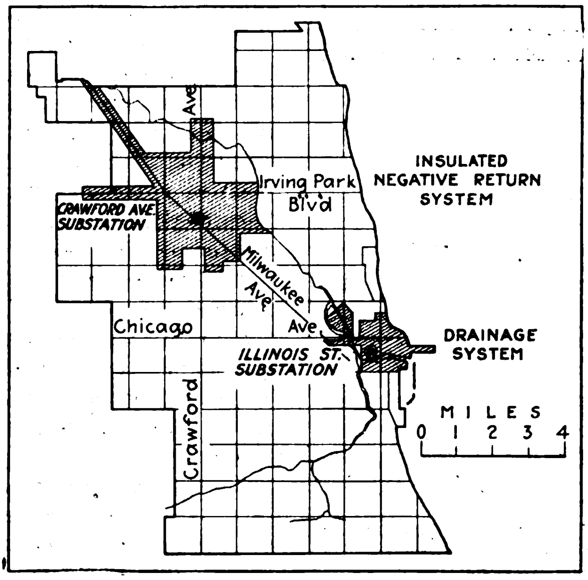


FIG. 1—MAP OF PORTION OF CHICAGO SHOWING TWO DISTRICTS SELECTED FOR TESTS OF ELECTROLYSIS CONDITIONS

As the ordinance providing for the unified operation of the surface lines, passed in 1913, gave the Board of Supervising Engineers authority to determine the system of protection against electrolysis to be used by these lines, the board arranged for test installations of a drainage system in the Illinois Street substation district and an insulated negative feeder system in the Crawford Avenue substation district. It then invited all of the interested utilities to co-operate in making careful tests and potential surveys, in the hope that they might be able to determine which of the two systems should be installed throughout the city. The location and extent of these two districts are shown in Fig. 1. As the systems of protection used in these two trial systems are also the ones which have been used in St. Louis, it is interesting to compare the published figures regarding the installations in St. Louis with the hitherto unpublished data regarding the two trial installations in Chicago. For the purpose of comparing the two methods of protection the potential profile method of analysis was adopted. The potential gradient at any point is the current in the rails at that point multiplied by the resistance of the track per unit length. A specification for maximum potential gradient, therefore, is equivalent, for any type of track construction, to a limit on the maximum number of cars beyond the point where the gradient is measured and supplied with current from the station in question. If there are connections between the pipes and the rails, then the pipes will be negative to the rails at the points remote from the station and positive to the rails near the station. The damage to the pipes occurs near the station where the pipes are positive to the rails. It is the elimination of this positive area that is the object of both of the systems under discussion. Curves are shown in Figs. 2 and 3, which were plotted from the readings taken along two of the principal streets in the Illinois Street substation district in Chicago before the drainage system was placed in operation. Fig. 4 shows a similar curve along the portion of Crawford Avenue which is in the Crawford Avenue substation district.

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*Abstracted from a paper presented before the St. Louis Section, American Institute of Electrical Engineers.

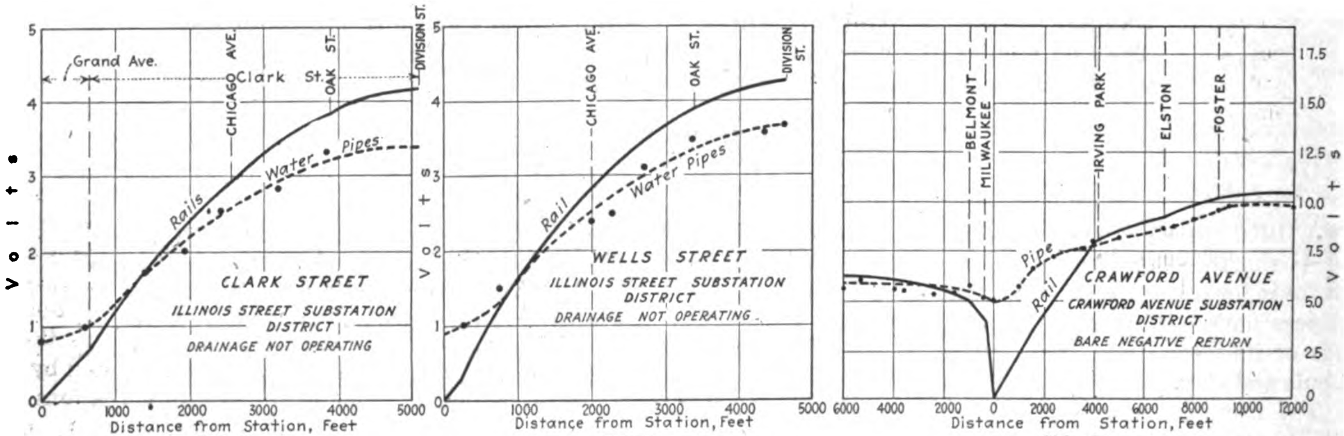


FIG. 2 FIG. 3 FIG. 4

FIGS. 2 AND 3—DIAGRAMS SHOWING POTENTIAL DIFFERENCES BETWEEN RAILS AND WATER PIPES NEAR ILLINOIS STREET SUBSTATION, CHICAGO. FIG. 4—DIAGRAM SHOWING POTENTIAL DIFFERENCES BETWEEN PIPES AND RAILS ON CRAWFORD AVENUE, CHICAGO

An additional power supply station makes a considerable reduction in the maximum overall potential and the potential gradients, as does also the installation of negative feeders from the original station. In order to operate such negative feeders economically, negative boosters have been used in Europe, while in this country the usual method is to insert a resistance between the negative bus in the station and the point in the tracks nearest the stations. Ordinarily more than two feeders are not economical. It may be found necessary to insert a resistance in the shorter feeder to prevent overloading and to secure a proper division of the load between the feeders. The potential profile of the pipe is altered by the use of negative feeders and the positive area in front of the station is considerably reduced. New positive areas, however, are formed at the points where the insulated negative feeders are attached to the rails.

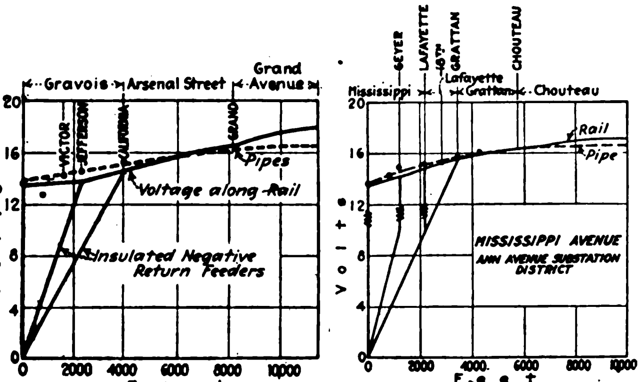


FIG. 5 FIG. 6

FIG. 5 AND 6—POTENTIAL PROFILES ALONG STREETS IN THE ANN AVENUE SUBSTATION DISTRICT IN ST. LOUIS, MO.

In some instances the error has been made of installing bare negative feeders, but if this is done a voltage between the pipes and the feeders is available for causing damage to the pipes by electrolysis. The presence of this voltage means that the negative bus in the station must be insulated and constitutes one of the essential points of difference between the insulated negative feeder system and the drainage system, or the railway system where no method of protection against the electrolysis is applied. The difference in potential between the rails and the negative bus will, of course, vary with the local conditions, but in order to obtain reasonable economy in copper, this potential will ordinarily be as large or larger than the over-all potential on the tracks before the negative feeders were installed.

Figs. 5 and 6 show potential profiles along streets in the Ann Avenue substation district in St. Louis the curves being made up from the data given in the published reports.

RESISTANCE IN NEGATIVE FEEDER SAVES COPPER

Somewhat greater economy in the insulated negative feeders can be obtained by adjusting their resistance so that the direction of current in the rails is not reversed. This is the plan adopted in the design of the Crawford Avenue insulated feeder system, as the ordinance specified a maximum gradient as well as a maximum overall potential. The data from the Crawford Avenue installation are shown in Fig. 7. It will be noted that the positive readings between the pipes and the rails have been considerably reduced by the installation of the insulated negative feeder system.

In 1894 Isaiah H. Farnham, in a paper before the American institute of Electrical Engineers, concluded that: "A large conductor extending from the grounded side of the dynamo entirely through the danger territory and connected at every few hundred feet to such pipes as are in danger, will usually insure their protection."

This system has since been termed the drainage system. In an ideal case with this method of protection the positive area is eliminated and the pipes throughout their length are negative to the rails. It should be noted that in order to secure this result the potential gradient along the pipes or along the drainage cables connected to the pipes must be lower than the potential gradient along the rails. If, for example, the maximum potential gradient along the pipes is specified as 1 volt per 1000 ft. it would mean that the current density in the drainage cables must be less than 90 amp. per 1,000,000 circ. mils. If, however, the negative bus is extended in some manner so that it is adjacent to the rails at some remote point, a voltage is available which under proper conditions might be a source of damage from electrolysis.

PECULIAR CONDITION RESULTS FROM LACK OF TIE LINES

Some years ago when the utilities in Chicago attempted to co-operate in preventing damage by electrolysis, one of the first difficulties encountered was the fact that the elevated and surface lines were supplied from independent sources and were not interconnected at any point. In two portions of the city the elevated and surface lines were only one-half block apart and parallel for several miles. A similar condition, although not quite so aggravated, existed in several other portions of the city. These conditions are shown in Fig. 8, in which, for simplicity, it is assumed that the negative buses in the two stations are at the same potential. In several blocks where these conditions existed, a gas main was located in the alley and a water main in the street. Suppose, now, that a customer who had both gas and water services on his premises desired to install a water heater in his bathroom, using gas as fuel. In such a case we would have the potential difference indicated by *R-B* in Fig. 8 between the gas main in the alley and the water main in the street. Such a case did actually occur and it is not at all surprising that a large current flowed through the gas service, the water heater and the water service. A somewhat similar condition is described in Bulletin No. 27 of the Bureau of Standards as existing at Springfield, Ohio. In both cases the trouble has been eliminated by the interconnection of the return circuits of the two companies. Troubles similar to that described with the water heater have, in a number of instances, been cited in the past as an argument against the drainage system. As a matter of fact, the trouble is independent of the system of electrolysis protection that is used, and such conditions must be eliminated before any system of protection against electrolysis can be successfully applied.

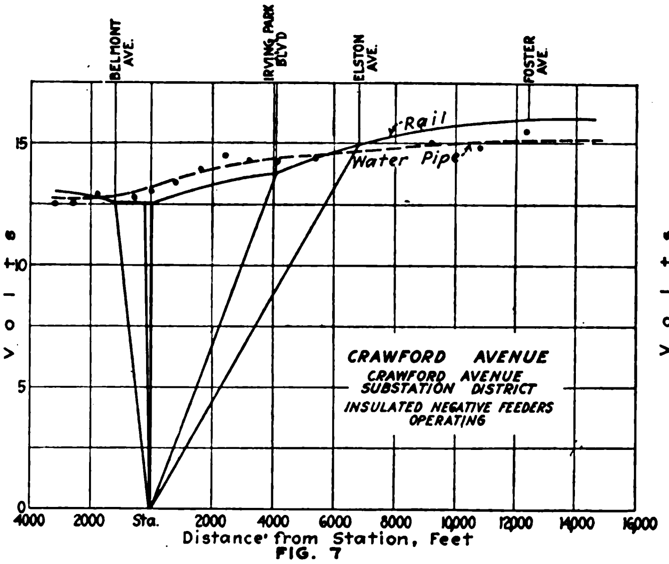
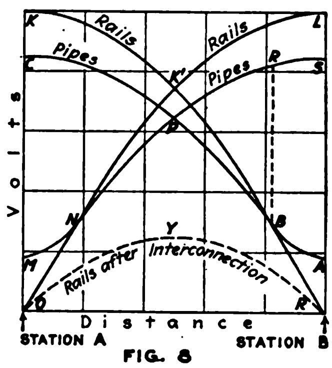


FIG. 7


K
L
Rails
Rails
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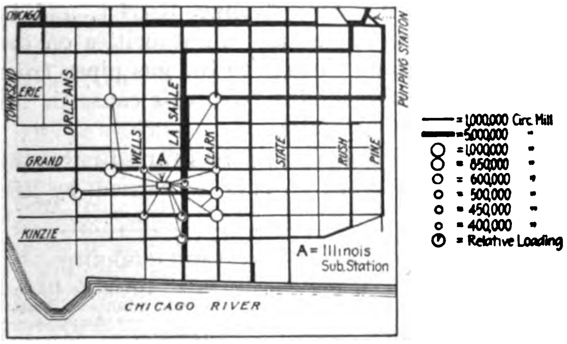
Pipes
C
K'
R
S
D
Volts
N
B
Y
M
Rails after Interconnection
A
O
R'
Distance
STATION A
STATION B

FIG. 8

FIG. 7—POTENTIAL DIFFERENCE CONDITIONS NEAR CRAWFORD AVENUE SUBSTATION WITH INSULATED NEGATIVE FEEDERS IN OPERATION. FIG. 8—DIAGRAM SHOWING EFFECTS ON PIPE-TO-RAIL POTENTIAL OF INTERCONNECTION OF RAILWAY SYSTEMS

At the Illinois Street substation where the trial installation was installed, the lead-covered cables had been in very fair condition for several years, being protected by a drainage system. This cable drainage system was in operation throughout all of the tests described on this trial installation, which was installed primarily for the purpose of draining the gas and water pipes. A diagram of the pipe drainage feeders is shown on Fig. 9. These drainage cables, as actually installed, were all 1,000,000-circ.mil cables, as this was the standard size used by the railway company. Cables of this size were installed, therefore, so that if the drainage system were abandoned for any reason the cables could be used as positive feeders at the same or, perhaps, some other location. After the cables were placed in operation it was found necessary to insert resistances in several of the shorter drainage feeders, in order properly to adjust the current in the feeders.

The areas of the circles at the feeder ends on Fig. 9, show the areas of the several drainage cables, on the assumption that the sizes of the cables are properly ad-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A= Illinois Sub. Station
CHICAGO RIVER
= 1,000,000 Circ. Mill
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= Relative Loading

FIG. 9

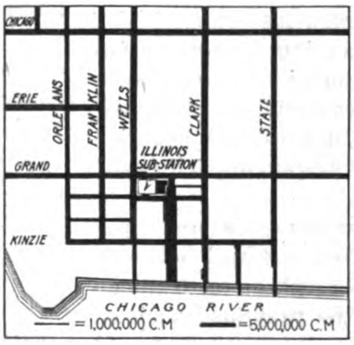
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FIG. 10

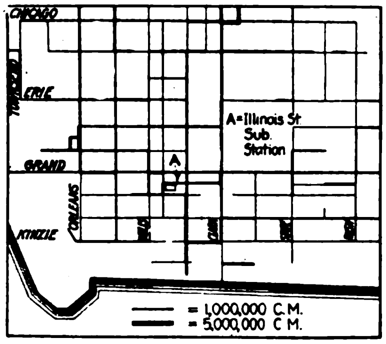

CHICAGO
TOWNSEND
ERIE
A=Illinois St. Sub. Station
GRAND
A
ORLEANS
KINZIE
= 1,000,000 C.M.
= 5,000,000 C.M.

FIG. 11

DIAGRAMS OF PIPE DRAINAGE CONDITIONS AROUND ILLINOIS STREET SUBSTATION, CHICAGO

Fig. 9—Pipe drainage feeders and conductivity of gas and water pipes. Fig. 10—Conductivity of railway return circuits. Fig. 11—Conductivity of lead sheaths of cables and sheath drainage cables

justed to give the cables the correct resistance without the insertion of any external resistances. The ratio of the shaded area to the entire area of a circle shows the percentage of full load carried by each of the cables, assuming that the full load current is figured on the basis of 1 amp. per 1000 circ.mil. On the same sheet the equivalent copper conductivity of the metal of the gas and water pipes is shown, the width of the line being proportional to the conductivity of the metal.

Fig. 10 shows the conductivity of the railway return circuit in the same manner and to the same scale. Fig. 11 shows in the same way the lead sheaths of all of the underground cables, together with the auxiliary drainage cables. Although the conductivity of the cable sheaths is considerably lower than that of the pipes, and **the cables are not in as good contact with the earth as the pipes, the drainage current from the cables is somewhat more than from the pipes. This is undoubtedly due to the resistance of the joints in the pipes.**

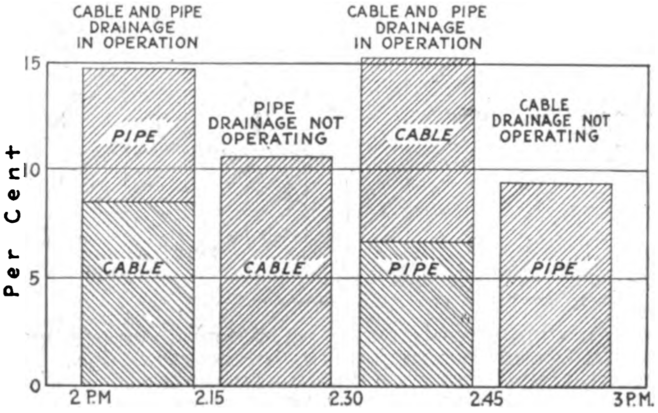


FIG. 12—GRAPHICAL REPRESENTATION OF RESULTS OF TESTS TO SHOW PERCENTAGE OF TOTAL CURRENT CARRIED ON PIPE AND CABLE DRAINAGE SYSTEM

PIPE DRAINAGE VERSUS RAIL DRAINAGE

Tests show that the potential profile along the pipe with a pipe drainage system is very similar to that along the rails with an insulated negative return feeder system. We might, therefore, describe a properly installed drainage system as an insulated negative feeder system applied to the pipes, or, conversely, we might de**scribe what is ordinarily called an insulated negative return feeder system as a drainage system applied to the rails.**

The current drained from the various cables and pipes during the tests is shown in Table I. It will be noted that there is some change in the percentage of drainage current between the midday and the peak-load periods. Apparently this difference is due to the shifting of load between this and the adjacent substations to which it is connected through positive tie feeders.

After the pipe and sheath drainage cables were all in operation, the experiment was made of opening the pipe drainage cable switch, then closing it and opening the cable drainage switches. The results of this test are shown graphically in Fig. 12. From the diagram it will be noted that when the pipe drainage cable switch is opened the sheath drainage cable picks up about one-third of the drainage current formerly carried by the pipe discharge cable, and practically the same condition occurs if the cable sheath switch is opened.

TABLE I—RELATIONS BETWEEN SUBSTATION LOAD AND DRAINAGE CURRENT

All Drainage Systems Operating. Based Upon Readings of Indicating Meters in Substations. Made at Fifteen Second Intervals

Drainage Current From	Per Cent of Substation Load, Period 2 p.m. to 3 p.m.	Per Cent of Substation Load, Period 5 p.m. to 6 p.m.
Edison Company cables	1.94	1.92
Surface railway cables	2.50	2.31
City cables	1.70	1.27
Telephone cables	2.66	2.30
All cables	8.80	7.80
Gas and water pipes	8.10	6.88
All pipes and cables	16.90	14.68
Total amperes drained	1,121	1,703

Table II shows a summary of the pipe drainage currents. The notable feature of this table is the small average current carried by the pipes. In only one case does the current exceed 50 per cent of the current allowed by the Chicago (1912) ordinance, or 8 amp. per pound-foot.

CONDITIONS IN ST. LOUIS

In an article published in the ELECTRIC RAILWAY JOURNAL for Jan. 17, 1914, describing the results in the Ann Avenue installation, Messrs, Rosa, McCullon and Logan gave a table showing thirty-two readings where the pipes are positive to the rail by an average amount of 0.435 volt, Table III. Later in the article the same authors state that "the potential differences have been reduced to so low a value as to make the pipes comparatively safe." **In a separate report issued regarding the same installation by Messrs. Ganz, Waterman, Wyer, Warren and Miller, it is stated that these average potentials are "values which experience has shown offer a substantial measure of protection from injury by electrolysis to underground structures." In the Illinois Street substation district the pipes are negative to the rails through the district with the drainage system in operation, but they are positive to the lead-covered cables at 355 locations by an average amount of 0.230 volt. This average potential is only a little more than half the average potential in the Ann Avenue district, and in view of the statements by the above authorities on the subject it appears that no damage to the gas pipes from electrolysis is to be apprehended from this cause in the** Illinois Street substation district.

Another way in which pipes may be injured is by the so-called "joint electrolysis." This is caused by the

TABLE II—SUMMARY OF PIPE-DRAINAGE CURRENTS

Location	Number of Water Pipes	Drainage Current in Water Pipes, Amperes Total	Drainage Current in Water Pipes, Amperes Average per Pipe	Number of Gas Pipes	Drainage Current in Gas Pipes, Amperes Total	Drainage Current in Gas Pipes, Amperes Average per Pipe
La Salle and Kinzie	3	5.3	1.8	4	15.03	3.76
La Salle and Austin	2	11.08	5.54	2	9.49	4.75
La Salle and Al. S. Grand	2	2.82	1.41	4	17.27	4.32
Clark and Grand	1	1.98	1.98	4	34.99	8.75
Clark and Illinois	1	3.56	3.56	4	25.51	6.38
Clark and Austin	1	3.36	3.36	4	27.76	6.94
Wells and Austin	4	4.78	1.195	3	35.54	11.85
Clark and Erie	3	18.62*	6.20	3	6.88*	2.28
Franklin and Erie (Note A)	2	9.62*	4.81	1	35.12*	35.12
Franklin and Grand	2	20.13*	10.06	1	1.54*	1.54
Grand and Pine	3	3.69	1.23	2	6.97	3.48
Grand and State	3	4.62	1.54	2	9.29	4.65
Grand and Wells	2	26*	13	4	57.60*	14.40
Orleans and Illinois	1	8.95*	8.95	2	26.23*	13.11
Totals and averages,	30	124.51	4.15	40	309.22	7.73

* Reading taken before insertion of regulating resistances.

NOTE A—At this intersection, there are two gas mains on each side of each street, all interconnected. All four mains are drained by one drainage connection.

current in the pipe encountering a high resistance joint and leaving the pipe through moist earth on one side of the joint, returning to the pipe again on the other side. The damage occurs at the point where the current leaves the pipe. An earnest endeavor was made to find an actual case of joint electrolysis in Chicago, but no such case has ever been found. In the literature on the subject a number of references have been made to joint electrolysis, but it seems difficult to find specific data regarding a case telling definitely the location and the circumstances under which it occurred. We also find statements showing that individual pipes carry several hundred amperes. A. A. Knudson, in a report made in 1905 on the water and gas pipes of Detroit, in referring to the possibility of melting joints, placed a limit of 900 amp. as the highest that should be permitted on any underground main. In the Illinois Street drainage district, the highest current found on any gas pipe is only 85 amp. and this is the sum of the currents flowing from two directions. The highest individual reading on any water pipe was 27 amp. and this was on a 36-in. main. It seems probable, in the absence of more specific information on the subject, that the cases of joint electrolysis which have been reported have occurred in those locations where several hundred amperes were flowing in the pipes, and that very little danger is to be apprehended where the currents are 30 amp. or less.

TABLE III—COMPARISON OF POTENTIAL DIFFERENCES

Substation District	System of Electrolysis Mitigation	Kind of Readings	Number of Readings	Average Difference of Potential, Volt
Crawford Avenue..	None	Water pipes negative to rails	257	0.490
Crawford Avenue..	None	Water pipes positive to rails	45	0.637
Crawford Avenue	Insulated negative feeders	Water pipes negative to rails	221	0.476
Crawford Avenue	Insulated negative feeders	Water pipes positive to rails	38	0.250
Ann Avenue...... (St. Louis)	Insulated negative feeders	Water pipes positive to rails	32	0.435
Illinois Street.....	Drainage	Gas pipes positive to cables	355	0.230
Illinois Street.....	Drainage	Gas pipes positive to water pipes	117	0.047
Illinois Street.....	Drainage	Water pipes positive to gas pipes	105	0.064
Illinois Street.....	Drainage	Water pipes positive to rails	1	0.040
Illinois Street.....	Drainage	Water pipes negative to rails	313	0.470

DRAINAGE CABLES BETTER THAN NEGATIVE FEEDERS

The drainage cables are considerably shorter on the average than the insulated negative feeder cables and they carry only 15 or 20 per cent of the total output of the station as against 70 or 80 per cent for the insulated negative feeder cables. Part of this difference is offset by the lower current density on the drainage cables. Calculations on the several systems as installed indicate that the total cost of the cables for the drainage system will be about 20 or 25 per cent of that of the insulated negative feeder cables for the same substation district. In addition the insulated negative feeder system has an increased loss in the return circuit.

It is to be regretted that about six months after the Illinois Street drainage system was placed in operation the city authorities directed that its operation be discontinued. The installation, however, remains intact, ready to be placed in operation on short notice whenever permission for so doing can be secured.

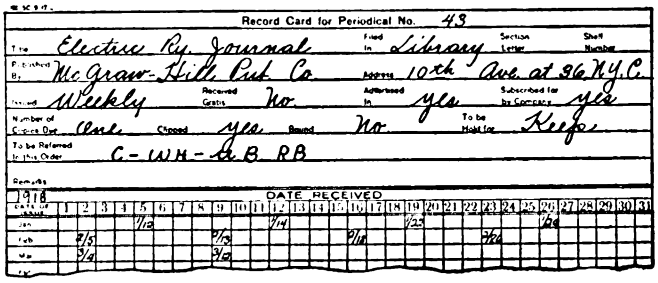
A study of several statements and opinions on the subject seems to indicate that where the conditions are favorable the drainage system may be successfully applied as a means for preventing damage by electrolysis. The results in the Illinois Street substation district, where such a trial system was installed, appear to indicate that where the number of underground pipes and cable sheaths is so large that the amount of drainage current carried by any individual pipe or cable is relatively small, it may be possible for the total drainage current considerably to exceed 10 per cent of the station output without causing any appreciable damage.

In conclusion the author acknowledges his indebtedness to Ralph H. Rice of the Board of Supervising Engineers, who had general supervision of the design and tests of the two trial installations, for his assistance in compiling the data and for his many helpful suggestions during the preparation of this paper.

Intensive Reading of Technical Papers

ALTHOUGH the major portion of the ELECTRIC RAILWAY JOURNAL is made for operators, it has many keen readers among the manufacturers. The accompanying forms show how one manufacturer insures careful reading of this and other journals. One form is the librarian's record card and the other a sticker which is pasted on the periodical itself.

The record card gives the periodical file number, name of periodical and other particulars. It also shows the order in which the paper is to be referred to company officials, the publishing date of each issue and the receipt date of each issue. The sticker is a time record of issuance and receipt by each reader with a notation of the pages that are expected to be of most interest.



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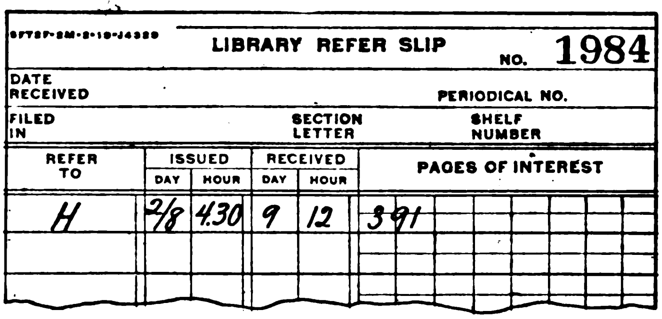

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As this issue of the ELECTRIC RAILWAY JOURNAL goes to press the British Educational Mission to the United States and the Society for the Promotion of Engineering Education are holding a joint meeting at Boston for discussion of the relation of education to reconstruction problems after the war.

A. S. M. E. Holds Annual Meeting

Topics Considered at New York Meeting, Dec. 3 to 6, Covered Wide Range—Standards of Various Kinds Were Discussed

THIS week the American Society of Mechanical Engineers held its annual meeting in New York City with a large attendance. The program comprised a few papers of a general nature but most of them contained the results of detailed studies of standards, or of scientific or engineering problems. A number of the papers were of interest in the electric railway field.

KEEPING THE HEAT IN THE PIPES

The results of tests of heat radiation from pipes, made for the Magnesia Association of America by the Mellon Institute of Industrial Research, were given in paper by Glen D. Bagley, Pittsburgh, Pa. Experiments were made on bare pipes and on pipes covered with various thicknesses of 85 per cent magnesia coverings. These were the product of several makers.

Referring to the generally accepted figure for radiation for bare pipe of 3 B.t.u. per square foot per hour per degree Fahrenheit temperature difference between the surface and the surrounding air, Mr. Bagley said that the loss might vary from less than this to much more than this. It varies with the temperature from say 2 B.t.u., at less than 100 deg. difference, to 5 or more at 500 deg. A 1-in. magnesia covering reduces the average loss to ½ B.t.u., a 2-in. covering to ⅓ B.t.u. and a 3-in. covering to ¼ B.t.u.

There is, of course, an economical limit beyond which it does not pay to increase covering thickness, depending upon cost of applied covering, cost of steam and temperature difference. For example, with magnesia at 30 cents per square foot per inch of flat surface, and assuming 20 per cent of the list price for application cost and 13 per cent of total cost as the annual charges, with steam at 80 cents per 1,000,000 B.t.u. and with 400 deg. temperative difference, the economical thickness works out at slightly more than 2 in. for a ¾-in. pipe.

While the tests showed that magnesia coverings, properly cared for, do not lose their heat-insulating properties with age it is important not to allow oil to be absorbed by them as this makes them better heat conductors. The tests also showed that, when subjected to a current of air at 30 m.p.h., a 3-in. pipe covered with 3 in. of magnesia radiated about 40 per cent more heat when the temperature difference was 460 deg. Fahr. Some startling figures were given by Mr. Bagley which showed that the covering of a 60-hp. and an 80-hp. boiler (locomotive type) in a power plant reduced radiation so as to save more than ¾ ton of coal per day. This was 15 per cent of the coal burned.

GOOD OPERATING PRACTICE IN THE BOILER ROOM.

A very complete paper on "The Chemical and Physical Control of Boiler Operation" was read by A. E. Uehling, New York City. This was designed to demonstrate the importance of attention to the operating conditions in individual boilers in the power plant. He said that the economical status of a boiler plant can be approximately determined by either of two methods; the mechanical one based on the heat utilized, and the chemical and physical one based on the heat wasted. In the former reliance is placed on the coal weigher and the water meter or steam-flow meter; in the latter the CO_2 meter and the pyrometer are used. While both methods are necessary for complete results, the chemical and physical method gives more directly useful information. No wholesale method is adequate, however; each boiler must be treated individually. It must be known what each boiler is doing all the time, and adjustments made to keep the results right.

Mr. Uehling pointed out that there is no such thing as a fixed adjustment in the operation of a boiler. The rate of combustion must be changed to keep the steam pressure right, and the thickness of the fire must be changed to keep the efficiency of combustion (per cent of CO_2) right. As the fuel and ash bed thickens a stronger draft is necessary to keep the required rate of combustion, and there are numerous minor variables which require changes in the draft adjustments if combustion efficiency and the required boiler capacity are to be maintained, *i.e.*, maximum CO_2 and a uniform steam pressure. To insure these results CO_2 as well as boiler and furnace draft indicators must be placed at or near the boiler front within easy view of the fireman and in close proximity to the draft-regulating wheel or lever. Mr. Uehling believes that the CO_2 meters, the boiler draft gage and the pyrometers, the last and first-named being inserted in the main gas flue at or near the chimney, should be autographic recording in order that data may be furnished for study of operating conditions in detail. In addition to the autographic instruments an Orsat apparatus for analyzing the flue gases is essential.

In order to make the general principles concrete Mr. Uehling gave formulas for the actual calculation of the physical quantities involved in boiler operation, illustrated them by sample calculations and applied them to data of a number of boiler tests.

BRITISH HAVE STANDARDS ASSOCIATION

In a paper prepared by C. A. Maistre, secretary British Engineering Standards Association, 28 Victoria Street, Westminster, London, an account of the organization and activities of this association was given. It includes more than 900 members and deals under one central authority with standards relating to practically the whole field of engineering. As part of the work accomplished by the association the author mentioned the standardization of tramway rails, steel-section materials specifications for portland cement and road material, rules for electrical machinery, screw-thread tolerances, etc.

The association has been in existence for seventeen years, the work having been inaugurated in 1901 by the Council of the Institution of Civil Engineers. Many of its standards are in general use. For example, its standard sections for steel sectional material number 175 and more than 95 per cent of the tonnage rolled is rolled to the standard sections. In the case of tramway rails, standardization has had the effect of reducing to a minimum the sections required. At present there are only five sections as against more than seventy sections prior to the advent of the committee. These sections are now being reduced to three, one being a special section for interurban railways operating at speeds higher than city speeds.

The funds for this work have been provided by the government and the industries concerned, including the electric tramways. The main committee, as the governing committee is termed, consists of members nominated by the leading technical institutions. There are also two representatives of the Federation of British Industries and three members at large elected for their eminence in the engineering profession.

FLANGE AND PIPE FITTING STANDARDIZATION

The A. S. M. E. committee on standardization of flanges and pipe fittings presented a report containing tables of proposed 800-lb., 1200-lb. and 3000-lb. "Hydraulic American Standard" hydraulic fittings. In regard to high-pressure steam fittings the committee advised that for 400 lb. steam pressure and not to exceed 250 deg. superheat the 800-lb. Hydraulic American Standard in steel is adequate. A standard to be known as the "American Low-Pressure Standard," for 50 lb. working pressure was also presented.

DAYLIGHT VERSUS SUNLIGHT IN SAWTOOTH ROOF CONSTRUCTION

In a paper presented by W. S. Brown, Providence, R. I., attention was directed to the fact that diffusion of daylight in sawtooth buildings is obtained by placing the "saw teeth" so that the glass or lighting area faces the northern sky; sufficient intensity being dependent, among other things, upon the size and slope of the lighting area. Evenness of distribution is procured by properly apportioning the lighting areas. The amount of direct sunlight admitted daily, and the time of its admission and its duration are evidently dependent upon three considerations, the last two of which may be varied within certain practical limits. They are: (1) The day of the year, determining as it does the sun's path across the sky. (2) The direction in which the lighting area faces as regards the points of the compass. (3) The slope of the lighting area.

For a given lighting area, a variation in its slope is accompanied by a very appreciable change in the amount of daylight admitted. That is, as the pitch of the lighting area is made steeper the amount and duration of direct sunlight entering the building is lessened, and at the expense of the general illumination. Conversely, as the slope of the lighting area is decreased, the intensity of daylight is correspondingly increased, but there is also concurrent therewith a greater amount and duration of direct sunlight.

The questions then become: How steep should this slope be? What is the proper balance between the two contending requirements of little sunlight and much daylight? Also at what time of day will the direct solar rays fall upon the working plane, in what locations and volume, and for how long a period? Naturally, no general answer can be given to these questions. Each individual problem should be worked out only after careful study has been made of the particular conditions and requirements which have to be met, not excluding first cost. In the Southern States, for example, the tendency is to adopt a more nearly vertical lighting area than in the northern part of the United States or Canada, on account of the greater altitude of the sun and its intense heat. Occasionally it has been found advantageous to so locate machinery as to avoid any direct sunlight during the working hours.

DIRECT SUNLIGHT SHOULD NOT BE ENTIRELY EXCLUDED

Various means have been adopted to exclude direct sunlight from the interior of buildings and all of them seem to have the disadvantage of reducing the total illumination. Sawtooth buildings with vertical glass, that is, with the effective angle of the lighting area actually overhanging, are not uncommon. Whitewashing the glass results in some protection against direct solar rays and a cooler interior but also in glare and considerable loss of light, the latter being especially noticeable on dark days and when the sun is not shining.

Whatever glass is used, cleanliness is essential; furthermore it is important to use, where practicable, light-colored roofing materials such as white slag and also white dust-resisting, washable paints upon sawtooth ceilings of buildings in which maximum daylight is desired.

During cloudy weather the amount of useful light contributed from the top of the sawtooth roof is, of course, decreased, but, on the other hand, the quantity of direct skylight, which has been found to constitute the major portion of the total, is considerably increased, depending upon the relative brightness of the clouds.

From the analysis made by the author it followed that the height of valley for a given construction should be made as low as is consistent with protection against the elements, including snow and ice. It is a happy coincidence that in the South; where some difficulty is often encountered in obtaining the desired intensity of daylight (on account of the increased slope of the glass which it is felt necessary to adopt), the lighting area may be considerably augmented by using a shallower valley than would be considered advisable in the North.

Furthermore it will be seen that, for a given building, the use of a small number of large-scale saw teeth as against a greater number of smaller units having the same pitch, results in considerably increased daylight due to the smaller number of valleys, and consequently less proportionate obstruction. This principle, of course, should be applied with due regard to structural limitations and architectural considerations which may be involved, together with the important question of evenness of daylight intensity.

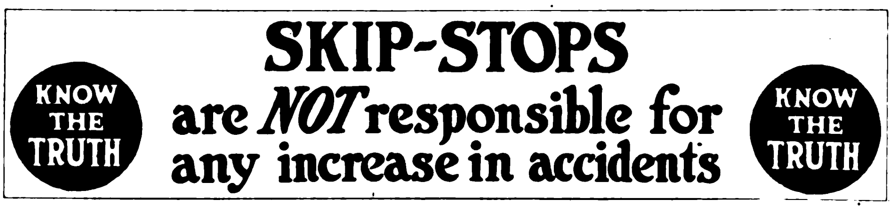
It is also worthy of note that the adoption (for the reasons above outlined) of flatter sawteeth with increasing terrestrial latitudes works out well in conjunction with the heating requirements, since it results in smaller cubical content and radiating surface.

Skip-Stop Campaign in Philadelphia

Company Points Out the Advantages and Expresses Its Willingness to Leave the Whole Matter to a Committee

FOLLOWING the orders issued by the National Fuel Adminstration last spring to the several state fuel adminstrations with reference to the inauguration of the skip-stop system, the Philadelphia Rapid Transit Company was one of the first of the larger companies to undertake to eliminate unnecessary stops. After a survey of the system to determine the best stops to omit, the company, on July 15 last, applied the skip-stop system in the central business district, and it was extended to other sections of the city at intervals, the final step being consummated in October.

The standards set by the Fuel Administration, namely, an average of eight stops to the mile in the central business district, six to the mile in the residential section and four to the mile in suburban territory, were closely followed. Shortly after the armistice was signed, agitation against the plan was started by some who did not fully appreciate its advantages to both company and public, so that the company has started a comprehensive campaign of education of the riding public.


KNOW THE TRUTH

SKIP-STOPS are *NOT* responsible for any increase in accidents

KNOW THE TRUTH

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KNOW THE TRUTH
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BULKHEAD AND DASHBOARD SIGNS USED BY P. R. T. IN SKIP-STOP CAMPAIGN

As one charge made was that the skip stop had increased the number of fatal accidents, the company caused to be posted on the front dashers on all of its cars, during Sunday night, Dec. 1, white cardboard signs, 28 in. wide by 29 in. high, carrying the legend "Know the Truth" in large white letters, within a bright red circle. This sign appeared simultaneously in all parts of Philadelphia and the suburbs on Monday morning and set the entire town, including the newspapers guessing as to just what the legend meant. Early Wednesday morning the first of a series of signs on the interior bulkhead of the cars over the forward doors appeared, carrying the statement "Skip stops are *not* responsible for any increase in accidents." These dash and bulkhead signs are to be continued as the medium for telling the public the exact truth about the skip-stops.

In a statement to the newspapers under date of Nov. 30 President Mitten briefly outlined the company's position and announced the appointment of a committee of thirteen of the most representative men and women in the community, who had been requested to investigate the skip stop in all its phases and make report thereon. This statement reads as follows:

> Most unfortunately, there has been created and fomented a lamentable misunderstanding in the skip-stop matter. There exists no real basis for the violent and unreasoning attack upon the system of skip-stop operation. In it there are both merit and public advantage.
>
> The Stotesbury-Mitten management above all things desires to avoid and reduce fatal and other accidents to the minimum. Certainly no one will believe that this management would either do or permit to be done anything likely to kill, maim or injure anyone. Human impulses forbid. And to answer some who question all motives, no matter how good their intent, business sense would interpose to stop any practice which led to heavy damage costs.
>
> Before this skip-stop matter can run to worse confusion and with a desire to clarify the matter in the minds of the thinking public, this further statement is made and with it the announcement that the management has arranged to do that which, it is believed, will demonstrate the entirely frank position of the company in the matter.
>
> 1. The skip stop was inaugurated here, as elsewhere throughout the United States, at the urgent request of the Fuel Administration as a war measure to save coal.
>
> 2. In practice the skip stop, when fully worked out, which can be done only after sufficient time to rearrange and readjust car operation to secure best results, accomplishes two things: (a) Reduces the total cost of providing street railway service, and (b) Enables service to be performed in a way to carry all car riders faster and so save their time, without putting more than very trivial inconvenience upon anyone.
>
> 3. The skip stop as it has been put into effect as a war measure should be continued as a peace measure for the economic advantage and gain of the car riders of Philadelphia.
>
> 4. The management of the Philadelphia Rapid Transit, recognizes its duty to provide street railway service at the minimum possible cost to the car riders—of whom there are now 2,250,000 daily—must contend for the skip-stop system as an operating measure for the public good.
>
> 5. As it has so far worked out here, the skip stop has produced important economies which are standing in a large way to hold down the rate of fare in Philadelphia.
>
> 6. Notwithstanding all this, safety comes first, and if savings in transportation cost, gains in time, and generally improved service can be had only at expense of life and limb in Philadelphia, then the Philadelphia Rapid Transit Company management would say safety first and act accordingly. But, as the records show, the skip stop has not killed and hurt Philadelphians. Knowing this to be so, knowing also that the skip stop will be worth more than $1,000,000 per annum to the car riders of this city and that it benefits them in several ways, the Philadelphia Raipd Transit Company management will submit the whole matter, in all its phases and with all ascertained or ascertainable facts, to a committee composed of the following:
>
> Chairman, Public Service Commission
> President, Chamber of Commerce
> Provost, University of Pennsylvania
> Mayor of City
> President, Select Council
> President, Common Council
> Archbishop Dougherty
> Bishop Rhinelander
> Rabbi Krauskopf
> Mrs. Rudolph Blankenburg, Civic Club
> Mrs. Judge Martin, State chairman of the Women's Committee of the Council of National Defense
> Mrs. Henry Jump, Philadelphia County chairman of the Women's Committee of the Council of National Defense
> Chairman MacNeille, United Business Men's Association
> A representative of Philadelphia daily newspapers

Business Men Discuss Reconstruction

War Service Committees of Chamber of Commerce Meet at Atlantic City—Railway Affairs Considered on Dec. 4 and 5

THE "War Emergency and Reconstruction Congress," conducted under the auspices of the United States Chamber of Commerce and made up of committees of American industries and others, met in Atlantic City, Dec. 3 to 6. Some 4000 delegates were present and the congress was still in session as this paper goes to press. The program included addresses by men prominent in the industrial field as well as group meetings of the different industries.

Electric railways formed a part of "Related Group No. 5, Public Utilities and Electric Railroads," which met on the evening of Dec. 4, and also a part of "Major Group No. 2, Heat, Light and Power, Public Utilities," which met on Dec. 5.

Any resolutions passed or other action taken of special interest to electric railways at the final meetings of the congress on Dec. 6 will be reported in next week's issue of this paper.

THE MEETING ON DEC. 4

At the meeting on Dec. 4, the chairman was H. L. Doherty and the scheduled speakers were Philip H. Gadsden, Charleston, S. C., J. B. McCall, Philadelphia, and W. H. Gartley of Philadelphia. The meeting was attended by about sixty leading representatives of the electric railway, light and gas interests in the country.

Mr. Gadsden's subject was the imperative need of the electric railways for greater income if they are to give adequate service and an improved form of franchise or basis of working relation with the community served. Among other things, Mr. Gadsden said:

"The public utilities have been officially declared by the President of the United States to be essential to the nation's life but independently of this official recognition, the dependency of the nation upon the facilities and service rendered by them has been fully recognized. These facilities constitute the very base of our industrial, commercial and social life. Never has the reliance of the nation, as a whole, upon them been greater than during the war. In any discussion of peace problems, in any convention called to adopt plans for readjustment, it is inevitable that public utilities should have a prominent place in the program."

Taking up the matter of income for the electric railways in the country, Mr. Gadsden said: "A tabulation of the income accounts of 388 electric railways, representing over 63 per cent of the electric railways mileage of the United States, shows a falling off in net income of 82 per cent for the first six months of 1918 as compared with the corresponding period of 1917. Many of the companies are facing an actual operating deficit in spite of the increases in gross receipts." He then explained that before a company can justify an increase of its rates it must first show that for a longer or shorter period it has suffered loss under the existing rates, which loss cannot be compensated for by the new rates. In any other business the manager is able to provide against increases in cost by promptly advancing his selling price. But the public utility must stagger along under inadequate rates for months until its credit is destroyed, its service impaired, its equipment deteriorated, and it has become obvious to the community that it is on the brink of destruction before its case has been sufficiently made out to justify an increase in its rate.

"Of all the problems of readjustment which the nation will have to meet and solve," he said, "none will be more serious or more difficult than that presented by the public utility. In the light of our experience as emphasized by war conditions, it is manifest that to insure the efficient operation of these companies, there must be a re-casting of the entire basis of the relationship existing between them and the communities they serve. In view of the disastrous experiences of electric railways during the war, it is not reasonable to suppose that they will be able to attract, in the future, the private capital necessary for their further development. The fact that the public has been willing to permit this great industry to stagger on under the burdens of the war, with inadequate relief in the way of increased rates, while exposed to the full brunt of the extraordinary increases in cost of labor and material, raises a question of fundamental equity and fair dealing. The public must be brought to realize that their interest in the electric railways of the country is greater than that of the stockholders or bondholders, and that if the electric railways are to continue to discharge their essential service, the public must, in some way, guarantee an adequate return upon the capital invested."

Speaking further along these lines Mr. Gadsden said: "What is needed at this time is a thorough and impartial study of the whole question of electric railway franchises, with the end in view of establishing the industry on a wholesale, economic basis which will guarantee continued efficient service to the public. Such a study should be made primarily from the standpoint of the public interest—what is best for the communities served. It is a national problem and not one for the owners of the railways alone, or chiefly."

J. B. McCall, president of the Philadelphia Electric Company, spoke optimistically of the future of public utilities. He also stated that the 800 employees of his company who had gone to war, nearly all of whom were in service abroad, would find instant employment on their return.

On motion of J. W. Lieb of the New York Edison Company a resolution was unanimously adopted favoring similar action by all industrial corporations.

W. H. Gartley of the United Gas Improvement Company spoke of the use and importance of gas in war service. Other speakers were W. R. Addicks of New York; P. J. Kealy of Kansas City; Henry G. Bradlee of Boston; R. W. Perkins of Norwich, Conn., and the chairman.

The importance of favorable waterpower legislation was then discussed by Mr. Lieb, Calvert Townley and Mr. Doherty.

On motion of Mr. Gadsden a resolution was adopted recommending that a committee be appointed by the Chamber of Commerce of the United States to study the question of local transportation as it relates to rates, franchises and investment and report its recommendations in the manner provided for in the constitution of the Chamber of Commerce.

MAJOR GROUP MEETING OF DEC. 5

The major group meeting of Dec. 5 was held at the Chelsea Hotel with J. W. Lieb of the New York Edison Company as chairman. Constructive use of capital, thrift and economy in the conservation and development of our great national resources were its outstanding features. Unanimous approval of a resolution favoring immediate water-power development in this country was registered.

John W. Lieb recounted in his opening remarks the need of returning soldiers so far as practicable to their former places in industry, the advantage of promoting technical and industrial research and the necessity of considering some method of relief for the electric railroad industry if it is to serve the public in the face of rising costs.

W. W. Nichols, Allis-Chalmers Company, pointed out that in the United States 56 per cent more power is used to aid every workman in production that in Great Britain. Mr. Nichols urged that the development of our resources for power would make it possible for America to meet world competition in world markets.

Throughout all the various technical addresses, a distinction was drawn between the serious conditions of the street transportation systems of the country and the relatively good conditions of the electric light and power plants.

Mark L. Requa, of the Fuel Administration, pointed out that our industries were on a basis to export as never before. "America," he said, "must compete with economy and thrift in Europe." Trade, he continued, will be controlled only by satisfactory service and terms, acting under a just administration by a league of nations. Government supervision in some form is inevitable, but government supervision must be on such a basis that it will leave industry to execute the plans agreed upon.

Mr. Requa offered as a solution of our national problems, first, the principle of a national budget, second, that members of the cabinet sit in the House of Representatives and be answerable to the House of Representatives for their actions, and, third, that a United States Board of Trade endowed with the dignity of the Supreme Court be established as a method of proper government supervision.

The Subway Sun brings the message to women employed by the Interborough Rapid Transit Company that there will still be work for them when the men come back from war. A similar message has gone from the Railroad Administration offices in Washington to the 100,000 women added to the payrolls of the American railroads since the United States entered the war.

No Excuse for Prevailing Pessimism

With Darkest Days Behind, the Electric Railway Industry Should Seize the Opportunity for Reconstruction Along Service-at-Cost Lines

BY P. J. KEALY
President Kansas City (Mo.) Railways

AT THE annual meeting of the American Electric Railway Association a resolution was introduced which would put the Association on record as recommending to member companies the turning over of their properties to the municipalities, urging full co-operation with public authorities to this end. This resolution, which has created much discussion, was not adopted. In lieu thereof a resolution was passed to the effect that if the industry was to continue to render efficient public service a radical revision of electric railway franchises should be made. A committee has been appointed to make a careful study of the franchise question and other reconstruction problems.

Why should the electric railway industry of the United States, after having fought through the bitterest part of its struggle and carried a burden which no other industry could have successfully sustained, now raise the white flag and unconditionally surrender? Are the operators willing now to admit that the case is hopeless?

There has been an accumulation of pessimistic opinion about the whole situation that has enshrouded the entire subject with crape, and which has brought about a condition comparable to mental paralysis on the part of many of those responsible for the operation of properties. Simply because the desired end has not been reached the attitude has crystallized into one that nothing can be done, and the great advances we have made in the past three years are minimized in comparison with the general depression of the entire industry.

MARKED PROGRESS HAS BEEN MADE

Advances have been made. For one thing, in almost every city of any size in the United States we have broken away from the shackles of the 5-cent fare. We have overcome the public thought of connecting an electric railway ride with a nickel. We have awakened a large part of the public to the fact that the price of service must be measured by its cost. We have stirred up the slumbering class consciousness of the electric railway industry until we are beginning to get something like co-operative action. We have awakened the interest of the various state commissions and demonstrated to them that relief must be given. We have so hammered home the service-at-cost principle that many cities are already turning to it as a solution of the traction problem, most notably Boston and Cincinnati. We have so impressed the various governing bodies and the public that the electric railway industry is the "sick man of business" that already we have aroused interest to an extent that business physicians are turning their attention towards a cure.

There has been nothing to show any necessity for taking the industry out of the hands of those who by bitter experience have become skilled in its development and management and turning it over to the political pack which has been howling at its flanks for the last twenty years. There is nothing to indicate that the easiest way out is the best way, nor can we as operators justify ourselves to our stockholders or relieve ourselves from our responsibility by sidestepping the problem and deserting the ship.

CONDITIONS POINT TO SERVICE-AT-COST PLAN

We are conducting an essential industry—essential in peace as well as in war. Our American cities are based on rapid and convenient transportation, and to date nothing has appeared which will supplant the electrically-propelled track-operated unit. The only other solution would be buses, and until the varied nature of municipal downtown districts is changed, it is useless to contemplate any means of transportation which will increase congestion. So we can start with this fundamental that electric railway transportation is a present essential and a necessary one for years to come. We know that the public must pay for this service either directly or indirectly. We also know that this obligation to pay the cost of the service carries with it as a corollary the right to have some supervision over the service-giving company. We have a body of trained men whose life has been passed in the development of the industry. We have invested about six to seven billion dollars of the public's money. All the necessary elements are present and their combination leads to the service-at-cost theory, which of course involves public co-operation.

Service at cost embodies the following essential elements: (1) An agreed valuation; (2) a fair return on capital invested, which necessarily implies a capitalization in proportion to the valuation; (3) supervision of security issues; (4) economic management, and (5) a rate of fare which at all times will meet all proper charges and pay this fair return.

The plan, like every other, has its limitations, and it finds the greatest one in the fact that the electric railway industry is only a monopoly up to a certain point. When this is reached, of necessity that part of the cost which cannot be secured from fares will have to be met as in Boston by some form of general tax or by other means yet to be suggested.

The question to-day is not so much one of attracting the capital for future investment as of stabilizing and saving the investment now made. The industry is to-day and has for some time been giving service below cost until its credit has gone and it is unable to secure funds for capital additions or even for the upkeep of the existing property, which means of course the dissipation of the present investment. Undoubtedly, therefore, one of the first essentials in the improvement of the situation is the re-establishment of confidence on the part of the public as well as of the investor.

ELECTRIC RAILWAYS MUST BE REMOVED FROM POLITICS

In connection with public education we must find some method of putting a stop to those irresistible individuals who make use of the prevailing prejudice to ride into office by making unwarranted accusations.

This involves the removal of the electric railway industry from politics. It can be done, as has been demonstrated by the telephone companies. That service is probably used more frequently daily by a larger number of individuals than use the electric railway, but in many communities telephone officials are unknown.

The public service commissions have not helped to remove railway properties from politics to the extent that was presumed at their creation, although they have been a great aid. They have helped the situation more than the Interstate Commerce Commission did the steam railroads. Upon return to private management the steam railroads companies will probably be placed under the jurisdiction of an interstate commerce commission with amplified powers, which will be coupled with some form of responsibility. Perhaps some of the unwarranted attacks made upon our companies by municipal authorities could be stopped by giving these authorities some responsibility in the management, a plan which with modifications has been worked out in a few communities. If the city's chief executive could be made *ex officio* a member of the electric railway board of directors, this would to an extent curb vicious and unjust statements by estoppel.

STEPS TO BE TAKEN

There is nothing in the situation to show that at this time a municipality can operate more cheaply than is being done under private operation. If the industry has become bankrupt under efficient management by men who have spent their lifetime acquiring experience, it certainly could not be helped if turned over to the tender mercies of those who know nothing of it. The situation boils itself down to this:

1. Municipal ownership and operation have nothing to offer that cannot be secured under private management on the service-at-cost plan.
2. A closer class consciousness must be developed in the industry, and in doing this its security holders should be organized.
3. A national advertising campaign should be conducted similar to that of the American Telephone & Telegraph Company and the steam railroads.
4. Local franchises must be amended so as to make possible the adoption of service-at-cost methods.
5. The entire subject must be transferred from its local significance into that of a national problem.

There is no real excuse to-day for the prevailing pessimism throughout the industry. We have passed through the darkest days, and the opportunity is here for an improvement which will for all time place the industry on a solid footing—something it has lacked from its inception.

Coal Price and Zone Restrictions May Be Lifted

Bituminous coal production and distribution have reached such a satisfactory point in relation to demand that the United States Fuel Administrator is contemplating the possibility of abolition of all price and zone restrictions on bituminous coal on Dec. 15.

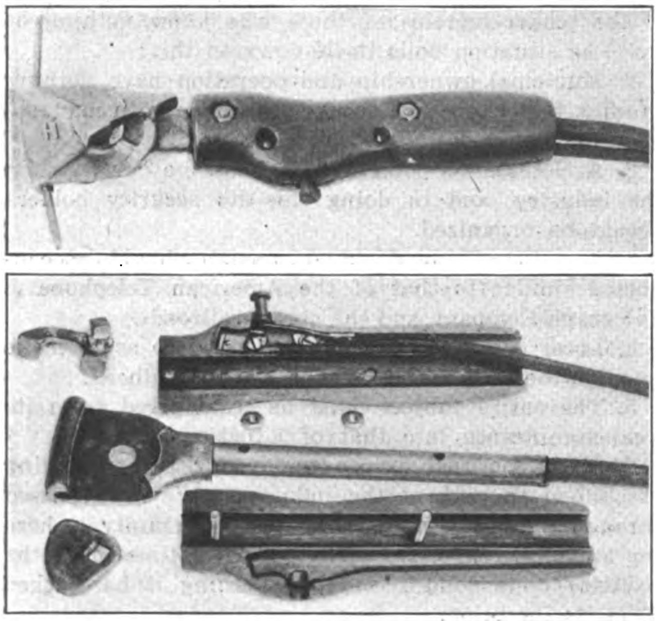
Anthracite distribution remains a problem that will require the active attention of the Fuel Administration for an indefinite period, Dr. Garfield said. Other branches will so far have completed their work by Jan. 1 that only a nucleus of their organizations will be necessary after that date.

Improved Arc-Welding Tool Facilitates Changing Electrodes

IN ARC WELDING, a considerable portion of the operator's time is consumed in changing welding electrodes. Therefore, the lack of a suitable welding tool is a distinct disadvantage. Up to the present time a large variety of welding tools have been developed and placed on the market. The oldest forms consist of spring tongs which have to be spread apart by an instrument similar to an off-set screwdriver, when it is desired to insert the electrode and release it. The type in most common use employs a strong compression spring. If this spring is strong enough to hold the electrode when it freezes to the work so that the electrode cannot be pulled away from the tool, it requires considerable strength to operate it, and therefore it is not always well suited where women operators are employed.

A new type of holder being placed on the market by the Arc Welding Machine Company, New York, was designed to make the operation of changing electrodes absolutely definite. It also permits any amount of pull, in case the electrode freezes to the work.

The welding current enters at the rear end of the composition handle and passes along the shank to the head of the tool, and from there directly into the electrode. There are no joints in this tool except where the cable is soldered into the shank, therefore, heating due to contact resistance cannot occur. There is a relatively large contact surface between the electrode and the holding head, which precludes any possible heating at this point. The electrode is clamped by a spiral segment operated by a lever. Any attempt to pull out the electrode, results in tightening the grip of the segment which is made of case-hardened steel. This welding tool is covered by patents.



ARC WELDING ELECTRODE HOLDER AND DETAILS

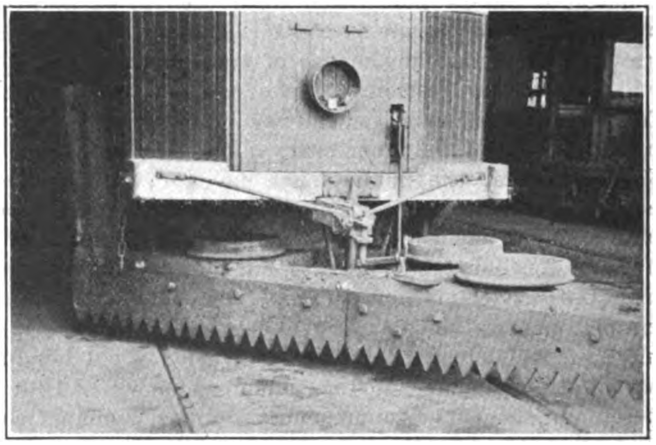
The trigger shown in the illustration is intended for remote control employed with the closed-circuit system, manufactured by the Arc Welding Machine Company, Inc. Whenever this holder is used on other systems, the trigger can be omitted.

Effective Ice-Removal Attachment for Small Snowplow

By A. F. Rexroth

Master Mechanic Harrisburg (Pa.) Railways

DURING the winter of 1917-1918, snow and ice conditions were the most severe ever experienced in this section, and the removal of the accumulations between the rails was a great problem with us. The ice not only caused the equipments to be overworked but produced great damage to gear cases. To remove it we first tried a disk harrow, but this proved a failure. Next at the suggestion of P. F. Gerhart, our electrical engineer, we tried the attachment shown in the accompanying illustration.



ICE CUTTING ATTACHMENT FOR SNOW PLOW

This form of ice scraper was made up of steel plates ⅜ in. x 14 in. in size. Saw-tooth points were cut with an acetylene torch along the lower edge and the plates were then bolted to one of our standard plows. Additional weight was added by using three 21-in. car wheels. We found the device very satisfactory. The best results were obtained by using two plows coupled together at the same time. These were followed by a sweeper which cleaned out all the snow and loose ice cut by the plows. On occasions when conditions were unusually severe it was necessary to use a four-motor equipment for a pusher.

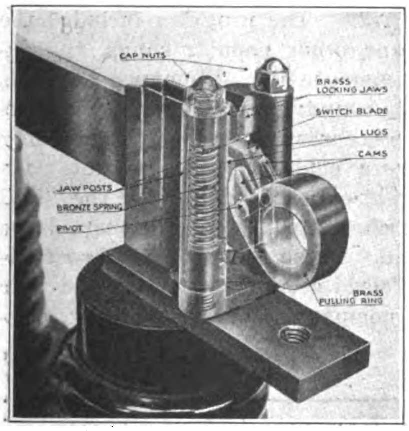
Army Engineers Develop Gasoline Substitute

According to information made available by the division of research and development of the engineering division of the United States Army, officers engaged in research work in that division have perfected a fuel which is said to be superior to gasoline. It is practically scentless and tasteless, and the products of combustion are cooler than those from gasoline. The "Liberty fuel," as it is termed, is made from kerosene by a chemical process and distillation and it can be substituted for gasoline for any purpose without special apparatus or change in engine or carburetor.

The process has been devised by Capt. Edwin C. Weisgerber of the division of research and development and Major O. B. Zimmerman. It is stated that arrangements have been completed for making the fuel available in the near future.

New Type Switch Lock Prevents Blade Opening by Electrical Expulsion Forces

A NEW type of switch lock known as the "Franklin" positive lock has recently been placed on the market by the Philadelphia Electric Company supply department. The switch blade is held in its closed position my two brass locking jaws which project inwardly over the blade. Each jaw is mounted on an upright steel post about which it may be rotated by means of a pulling ring. To open the switch a hook is inserted in the pulling ring and a pull of the hook rotates the jaws against the action of two springs inside the posts. The bridge over the switch blade is thus opened and the blade may be withdrawn. The locking jaws are beveled at the top so that the switch may be closed readily by pushing it past the jaws. When the blade is entirely closed the springs return the jaws with a strong, vigorous snap.

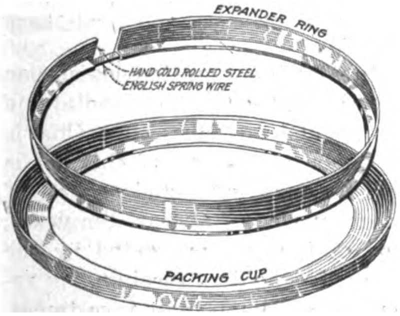


CONSTRUCTION DETAILS OF POSITIVE LOCK FOR KNIFE SWITCH

Disconnecting switches with "Franklin" positive locks are furnished in capacities of from 300 to 2000 amp. and with either front or back connected switches. Cable terminals are supplied up to and including 1200 amp.

Air-Brake Cylinder Packing Set Developed as a War Measure

THE war has compelled the development of many devices and materials to meet the demands of the railway engineering field. Materials have been sought to take the place of those that have been commonly used but which are not now available. The demand for leather and the resulting increased cost of this material during the past year have been so great that its use in many services has been made almost prohibitive. The quality which can be obtained has also suffered, so that the most rigid inspection is necessary before it can be used where it is required for holding air, as in air-brake service. Any initial leakage causes unnecessary work of all brake parts, and continuous operaton of compressors and in turn involves a waste of fuel. The natural porosity of leather made it difficult to maintain the high cylinder efficiency required. The old-fashioned leather cup, coupled with the mechanical limitations of a round wire expander ring, made air leakage a necessary evil.



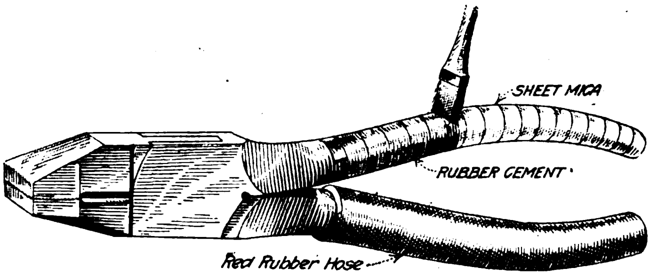
AIR-BRAKE CYLINDER PACKING SET

A packing set recently placed on the market by the H. W. Johns-Manville Company and shown in the accompanying illustration, consists of an asbestos packing cup and a slip-type expander ring. The construction of the cup makes it air-tight, proof against heat, pressure and condensate. It does not become porous in service, and when used with the expander ring gives a flat bearing surface four times that of a round ring and practically eliminates air leakage.

Insulating Plier Handles in the Shop

IN ORDER to make safe the work on live wire with pliers, manufacturers have placed on the market a line with insulated handles. Some shopmen prefer to insulate their own tools, especially for work on very high voltage. The accompanying illustration shows a very successful method of insulation which can be conveniently applied by the man in the shop.

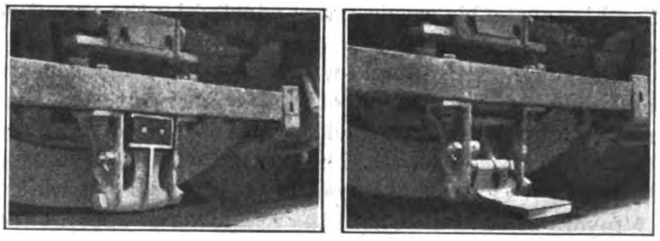
The handle, first shellacked, is wound tightly with mica cut in strips. A coat of rubber cement, of the kind used for repairing auto tires, is applied and while the cement is soft a piece of red rubber hose with ⅛-in. wall is slipped over the handle. The cement facilitates the putting on of the hose, and finally hardens and holds it firmly in place.



PLIERS WITH INSULATED HANDLES

By using red rubber the insulated pliers can be quickly picked out of a drawer full of miscellaneous tools. The end of the rubber tube is finally vulcanized to protect the handle.

Contact Shoe With Renewable Wearing Plate



CONTACT SHOE IN RAISED AND RUNNING POSITION

IN THE accompanying illustrations are shown a form of over-running third-rail contact shoe used by one of the lines composing the Lehigh Valley Transit Company. This shoe has a steel insert which can be readily replaced when worn and this prevents the scrapping of the entire shoe casting. The wearing piece is held in place by two rivets.

AMERICAN ASSOCIATION NEWS

Committee on Reconstruction Meets at Atlantic City

THE members of the committee on reconstruction of the American Electric Railway Association met at Atlantic City on Dec. 4, at the time of the congress there of the War Service Committees of American industries. Those present were P. H. Gadsden, chairman; Henry G. Bradlee, Boston; P. J. Kealy, Kansas City; H. H. Crowell, Grand Rapids, and E. W. Wakelee, Newark, N. J. The program for the coming year was discussed but the committee has made no announcement for publication.

New American Executive Committee Holds First Meeting

A MEETING of the American Association executive committee was held in New York on Dec. 3. On the recommendation of the American Electric Railway Association War Board it was decided to discontinue this board but to provide a committee to maintain Washington headquarters for the present, this committee to be known as the committee on national relations. The committee was authorized to make the arrangements necessary to retain W. V. Hill in the service of the association, together with the necessary clerical assistance, and to continue the Washington office until such time as it may be deemed to have fulfilled its mission. It was the feeling of the executive committee that the association and the industry need representation at Washington during the transition from a war to a peace basis. Immediately after the appointment of the committee was authorized President J. H. Pardee announced the appointment of the members of the war board as the members of the committee on national relations.

The executive committee accepted with great reluctance the resignation of E. C. Faber, who for about a year has at considerable personal sacrifice devoted more than one-half of his time to the work of manager of the War Board. He will return about Jan. 1 to the Aurora, Elgin & Chicago Railroad, through whose courtesy the contribution of his time and ability was made possible. A resolution of thanks to Mr. Faber for his invaluable services was adopted by the executive committee.

The question of the mid-winter meeting was discussed and it was the sentiment of the members present that a one-day conference should be held at a time and place to be determined later. The matter will be submitted to the entire executive committee by letter ballot which, if favorable, will authorize the president to appoint the necessary committees to handle the arrangements.

Members of the executive committee and the war board in attendance at the meeting were J. H. Pardee, New York City; Philip J. Kealy, Kansas City, Mo.; R. E. McDougall, Rochester, N. Y.; Charles L. Henry, Indianapolis. Ind.; H. G. Bradlee, Boston, Mass.; P. H. Gadsden, Charleston, S. C.; L. S. Storrs, New Haven, Conn., and E. B. Burritt, New York City. Messrs. Gadsden and Bradlee were present especially to represent the war board, of which Mr. Storrs is also a member. S. M. Curwen, E. W. Rice, Jr., and James H. McGraw of the executive committee were represented by G. M. Haskell, F. H. Gale and H. H. Norris respectively.

Stag Get-Together Meeting at Toledo

AFTER interruption of activities due to the influenza epidemic the Toledo joint company section held a social meeting on Nov. 29. The program included the singing of patriotic and other popular songs, the exhibition of the Westinghouse film "Romance of Rails and Power" and a six-round boxing bout. "Smokes" and simple eatables were served during the meeting and thrift stamps were sold to those present. On Nov. 20 the section held a benefit dance for the "Rail Light Orchestra" which netted $40. Another dance will be held on Dec. 18. These social events are especially helpful as the Toledo section represents the four branches of the local company's service—railway, electricity, gas and heat.

LETTER TO THE EDITORS

Guarantee, Not Method of Fixing Fares, Made Stock Valuable

COMMONWEALTH OF MASSACHUSETTS
PUBLIC SERVICE COMMISSION

BOSTON, MASS., Nov. 27, 1918.

To the Editors:

You will, I am sure, permit me to correct a misapprehension which is likely to be created by the article by Ivy L. Lee, which appeared in your issue of Nov. 23. In speaking of recent legislation in Massachusetts, Mr. Lee said:

> Under this legislation people in Boston, for instance, have been paying a 7-cent fare and they have been doing it without complaint. It may be that they will have to pay a 10-cent fare, but they know that the increase, whatever it may be, will come because it is a necessity of the service and not for the enrichment of stockholders. The legislation has, however, in the service-at-cost plan, provided for the stockholder and has rehabilitated the credit of the Boston Elevated, so much so that its preferred stock has been sold over the counter at par, and its common stock and bonds have both notably increased in value.

As a matter of fact the Boston Elevated legislation provided for a form of public operation. It contains a service-at-cost plan for regulating fares, but this is merely incidental. The essential feature of this act is that practically the entire management and control of the company is placed, for a period of at least ten years, in the hands of a board of trustees appointed by the Governor of the State, the stockholders receiving in return a certain guaranteed return upon their investment. The State assumes responsibility for this return, and it will be paid no matter what the earnings of the company may be. If the earnings are insufficient, the deficiency will be met by the State and apportioned among the cities and towns in which the company operates. It is clearly this guarantee which made it possible to sell preferred stock at par and which increased the market value of common stock and bonds, and not the service-at-cost plan. JOSEPH B. EASTMAN, Commissioner.

Recent Happenings in Great Britain

Liverpool Typical of Conditions That Exist Generally in British Isles—Wage and Bonus Awards Attract Attention

(From Our Regular Correspondent)

The chairman of the tramways committee of Liverpool, speaking at the concluding meeting of the municipal year held recently, said that the traffic returns of the undertaking for the past nine months (the tramway year does not end until Dec. 31) had exceeded all previous records as regards total receipts, number of passengers carried, and car-mile earnings. Confronted with many obstacles almost impossible to surmount, restricted by the shortage of materials and deprived of many employees by the war, the management had had to overcome difficulties hitherto unknown in municipal tramway operation.

In referring to the matters of overcrowding and the rushing to board cars at the principal terminus at the Pierhead and some of the principal stopping places in the city, the chairman said that the problem thus presented seemed to be insurmountable. In prewar times, say in 1913, about 50,000,000 fewer passengers were carried on a greater number of cars than at present, and these were operated by an efficient and permanent staff, but owing to the extraordinary conditions prevailing it was impossible to secure material for repairs and upkeep, to say nothing of the inability to get new cars.

PLANS FOR QUEUE LOADING

The question of providing queues at the Pierhead and other places in Liverpool had not been forgotten, but until the Pierhead terminus was reconstructed the institution of such a system was impossible, while queues at city stations were impracticable until further facilities for carrying the people were provided. Owing to the extraordinary increase of the cost of labor and materials, and to the fact that Liverpool was carrying the average passenger nearly 3 miles for 1d., a revision of the stages was considered necessary, and the amendment was being put into operation.

The number of employees who had left the service at Liverpool to join the forces was 2290. Of this number information had been received that more than 200 had been killed in action. Since Jan. 1, 1918, free passes to the military and nurses had been granted to the number of 3,103,007, equal to £14,532, while the total since the commencement of the war was 16,643,050, equal to £77,945. The operating results in Liverpool are reviewed on page 1022.

The tramway department of the London County Council has distributed a bonus of £1,614 among its drivers and conductors. This sum represents half the price of fuel for power saved during the quarter ended Sept. 25 and is awarded in connection with a scheme for inducing the men to co-operate in the economizing of fuel and light. During that period 1175 tons of coal were saved—a reduction of nearly 5 per cent on the average consumption. The cars ran 12,110,824 miles at a consumption of 26,142,671 units of electricity, effecting a saving of 1,348,899 units. The offer is renewed for the present quarter, during which it is hoped that even greater economies will be effected.

INCREASED PAY FOR WOMEN

By an award of the committee on production the wages of the women employees of the Bradford Corporation Tramways are to be advanced 2s. a week. This is the result of the representation of the Bradford Corporation war wages committee to the committee on production for its interpretation of certain points in dispute. The interpretation is that women are entitled to only 2s., plus the 3s. received last June. The award raises their pay to 18s. above pre-war rates. The women contend that they ought to have at least 21s.

At a recent meeting of the tramways committee of the Bradford Corporation a tentative report was submitted showing the results of the six months of the financial year from April 1 to Sept. 30, in comparison with the results of the corresponding period of the preceding year. The receipts in 1918 were £243,280, as compared with £203,592 for 1917, an increase of £39,688. This is largely accounted for by the fact that during four months of the half year just closed increased fares have been charged. The number of car-miles run decreased from 2,858,344 to 2,573,434, or 284,910. The number of passengers carried decreased from 42,893,176 to 40,136,206, or 2,756,970. The receipts per car-mile have risen from 16d. to 21.18d. Against this increase of earnings, however, must be set an increase in wages from £90,695 in the half year ended Sept. 30, 1917, to £114,072 for the similar period of 1918, or £23,377. Of this increase, £5,275 is accounted for by a larger total payment to dependents of fighting men. In the half year ended September, 1917, the amount for war allowances was £9,943; during the last half year it went up to £15,218.

STOCKTON TO PURCHASE RAILWAY

The Corporation of Stockton has decided to exercise the right of purchase of that portion of the Middlesborough, Stockton & Thornaby Tramways in the borough, and to co-operate with Thornaby in doing so. It has also been resolved that in connection with the purchase and subsequent working of the system it be suggested to the Thornaby Corporation that the financial proportions of the two boroughs be Stockton three-fourths and Thornaby one-fourth.

The Glasgow Corporation has adopted a recommendation of the tramways committee that as an experiment a special car be run on the route between Glasgow and Uddingston for the conveyance of parcels. This proposal has been made in view of the recent recommendation of the Road Board that to relieve the traffic on railways and by petrol-driven vehicles on roads, arrangements might be made for carrying parcels on tramways. The corporation has Parliamentary powers to act as a carrier of parcels.

The Town Council of St. Helens has confirmed a minute by the Parliamentary committee authorizing the tramway sub-committee to negotiate with the tramway company for an extension of the lease for a period not exceeding five years. The present lease, which is for twenty-one years, expires in October next year.

In continuation of the arrangement brought into force last August for maintaining fares at a level sufficient to meet the expenses brought about by the payment of war bonuses and increased prices for materials, certain fares have been increased on the District and all the tube railways in London. There has also been an increase in certain season ticket rates on all the tube railways. As expenses increase further revisions in fares will have to be contemplated.

MR. WILKINSON AND MR. POTT CHANGE

R. H. Wilkinson, tramway manager of the Huddersfield Corporation, has been appointed general manager of the Bradford Corporation Tramways in succession to C. J. Spencer. Mr. Wilkinson, who has been the tramways manager and engineer at Huddersfield for fourteen years, for four years previously held a similar position at Oldham, and was two years in the service of the Liverpool Corporation. He has had mechanical, electrical and marine engineering experience. The salary at Bradford is £800 a year.

A. H. Pott has resigned the managership of the Metropolitan Electric Tramways and the London United Tramways to take a position under the tramways committee of the Board of Trade. The two tramway companies have, however, been able to retain Mr. Pott's services as consultant. C. J. Spencer, the late manager of the Bradford Corporation Tramways, has been appointed to fill the vacancy created by Mr. Pott's resignation.

The Parliamentary committee of the Newcastle Corporation has issued a report on the electric power supply proposals of the government committees. The report is against the conclusions of the committees, on the ground that private monopolies will be maintained, and public services may pass into private hands. A statement, giving reasoned objections, prepared by the town clerk, will be submitted to other authorities on the Northeast Coast area, with a view to joint representations being made. A. C. S.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Labor Board Needed

Mr. Taft Believes that Future Labor Situation Demands National Body Like War Labor Board

In response to the question whether the activities of the War Labor Board should be considered at an end after the settlement of pending cases, the Secretary of Labor after conference with President Wilson has advised the board that it is deemed necessary for the board to continue in action until peace shall be declared by the President after the ratification of the peace treaty.

In a current signed article in the Philadelphia *Public Ledger*, William Howard Taft, one of the joint chairmen of the War Labor Board, states that the conclusion of the President is wise. Indeed, Mr. Taft continues, the experience of the board justifies the conclusion that a board of somewhat similar jurisdiction should be created either by the President or by law as an instrumentality for the peaceful settlement of industrial disputes during the period of readjustment after the war, if not thereafter. The board, it is said, should be constituted, as the present one is, of representatives of organized labor, chosen or nominated by organized labor, and of representatives of the employer group, chosen or nominated by the associations of that group. Then, if such can be found, there should be put upon the board other men of intelligence, with no predilection for either side.

In regard to the general labor situation Mr. Taft speaks in part as follows:

> Organization of labor has become a recognized institution in all the civilized countries of the world. It has come to stay, it is full of usefulness and is necessary to the laborer. It shows serious defects at times and in some unions. These are an apparent willingness to accept benefits enforced through a fear of lawlessness, a disposition to use duress to compel laborers to join unions, and efforts to limit output, and create a dead level of wages. There are evils that as the unions grow in wise and intelligent leadership we may well hope are being minimized.
>
> Much can be done by employers in anticipating just demands of employees. Workers have had too many instances of holding back of employers until they are forced to do justice. Too many employers seek to justify failure to raise wages by pointing to their welfare work for their employees. This is of a paternal character, and impresses the workers with the idea that they are being looked after as wards and not treated as men capable of exercising independent discretion as to their welfare. They are apt to give the employees the idea that it is a generous concession they are making out of the goodness of their hearts, and that they are not merely yielding a right for a *quid pro quo* for what they receive.
>
> Of course those individual laborers who do not see the advantage to them of the group system have a right to stay out and must be protected in doing so. But whether we will or not, the group system is here to stay, and every statesman and every man interested in public affairs must recognize that it has to be dealt with as a condition, to be favored in such a way as to minimize its abuses and to increase its utility.
>
> The workingmen of the country, since the war began and the importance of their group action has been emphasized by the requirements of the war, have been given a sense of power in their united action which we must recognize and deal with. Of course, they may abuse this power, and, if so, they may find that they are not the entire community. But if under level-headed leadership they do not push it to an excess, they will be able to do much for their members and indeed for the community at large. The junkers and the hunkers on both sides must stand aside and will be set aside if common sense prevails. The danger from Bolshevism is far greater than from reaction to the Bourbon type of employment. The intelligent, conservative leaders of the labor movement should be encouraged. Their difficulties in dealing with their extreme constituents should be recognized.

Favors Buses for Buffalo

Edward G. Connette, president of the International Railway, Buffalo, N. Y., favors motor transport service for Buffalo. He opposes the so-called jitney lines, but favors motor bus lines patterned after those of Fifth Avenue in New York City. He believes that buses would do well in Buffalo as supplemental to the city railway lines.

Mr. Connette says he was about ready to start motor bus service when the United States entered the war. When money is again reasonably available, he may put the plan through.

The fare would have to be 5 or 10 cents according to the distance. An electric railway transfer would be worth 5 cents on the bus line. Fifty buses would be needed on Delaware Avenue alone.

Compliments of Mr. Neal

The Boston *Post* made the election of J. Henry Neal to the presidency of the Boston Elevated Railway the subject of its leading editorial in the issue of Nov. 22. The *Post* said:

"The election of J. Henry Neal as president of the Boston Elevated Railway is a recognition on the part of the trustees of ability and faithful service. As auditor for a number of years, Mr. Neal gained a knowledge of every phase of the road's affairs not equaled by that of any other man. He has been a close student both of theory and practice, and this should stand him in good stead in his new position.

"One of the gratifying things about the selection is that Mr. Neal has come up from the very bottom of the ladder to the top by his own merits and no other causes. He began as a boy in the shops and he worked his way along with the honorable ambition to become a high official of the road, as he now has. He furnishes a striking example of the opportunity for advancement open to hard work and intelligence."

Oakland Mayor for M. O.

Commissioners Reject Proposal, but Mayor Insists on It Going on Ballot in Spring

John L. Davie, Mayor of Oakland, Cal., has come out for municipal ownership of the lines of the San Francisco-Oakland Terminal Railways in Oakland. In furtherance of his ideas he recently had a resolution introduced before the City Commissioners instructing the city attorney to take the steps necessary to place the matter on the ballot to be voted by the people at the election in May. An effort was made to have the resolution acted upon at the time of its presentation, but the commissioners voted against this so as to have an opportunity more carefully to consider the matter.

Later the commissioners refused to put the question on the ballot. The Mayor then announced that he would invoke the initiative in order to get the matter before the voters.

COMPANY STATES ITS ATTITUDE

W. R. Alberger, vice-president and general manager of the railway, has addressed the Mayor in part as follows:

"The board of directors of the San Francisco-Oakland Terminal Railways has instructed me to assure you, and through you the people of the city of Oakland, that our company will be perfectly willing to sell its railway properties to the city at a fair valuation to be fixed either by the State Railroad Commission or by a jury, whenever the people desire to take over the properties.

"While the company that I represent would welcome an expression of opinion by the voters of the city on the question of the purchase of our properties, we feel that the voters at the same time should be given the opportunity to express their opinion on the proposed resettlement franchise."

Mr. Manly Succeeds Mr. Walsh

The resignation of Frank P. Walsh, as joint chairman of the National War Labor Board has been accepted by President Wilson, and Basil M. Manly has been appointed to fill the vacancy. William Harmon Black, Mr. Walsh's alternate on the board, also resigned, but was reappointed as alternate.

In accepting Mr. Wash's resignation President wrote that he was "compelled, in justice to the cogent and almost imperative professional reasons you give, to consent to your retirement from the high position whose duties you have administered with such judgment, tact and robust integrity."

Wages Advanced in Nine More Cases

Committee on Public Information Gives Out Text of Various War Labor Board Awards Previously Announced

The full text of the nine wage awards, preliminary notice of which was published in the ELECTRIC RAILWAY JOURNAL of Nov. 23, has been released by the Committee on Public Information. In these decisions the War Labor Board has awarded to motormen and conductors minimum and maximum wage rates of 38-42 cents an hour for the city lines in Syracuse and Auburn and 43-48 cents an hour for the lines in Cincinnati and Denver, and rates ranging from 38 cents to 48 cents an hour for interurban employees. In three cases the interurban wage rates allowed were 41-45 cents an hour.

In each award where other employees were involved, the same percentage of increase as in the case of the trainmen was granted up to the limits of 42 or 42½ cents an hour. It was stipulated further that such increases should not operate to increase the wages of men receiving union-craft rates.

In all cases except that of the Cincinnati Traction Company, which has a flexible-fare clause in its franchise, the board urged the necessity of the fare question being reconsidered by the proper authorities. In the Lewiston, Augusta & Waterville decision it added these words: "We desire to point out to the riding public the absolute necessity of continuing the patronage of the past, if the company is to continue to give any service upon its lines. A public service corporation must be supported by the public, and if that support is withdrawn the company must of necessity either cut down its service radically or else cease its operations altogether."

Abstracts of the various awards, and also an earlier one for Dayton, follow:

SYRACUSE & SUBURBAN RAILROAD. SYRACUSE, N. Y.

New Wages for Motormen and Conductors: First three months, 38 cents an hour; next nine months, 40 cents an hour, and thereafter, 42 cents an hour.

Time of Award: Effective as of Aug. 5, for the duration of the war, with opportunity for the reopening of the case at six months intervals beginning May 1, 1919. The company has until Feb. 1 to make back payments.

EMPIRE STATE RAILROAD CORPORATION, SYRACUSE, N. Y.

New Wages for Motormen and Conductors: City lines first three months, 38 cents an hour; next nine months, 40 cents an hour, and thereafter, 42 cents an hour; interurban lines—first three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter, 45 cents an hour.

New Wages for Other Employees: The wages of employees (other than motormen and conductors) which have been submitted to the board for fixation shall be increased by the same percentage as the maximum of the wage scale paid to motormen and conductors on the city lines is increased by this award; provided, however, that if this increase does not bring the wage of any adult male employee up to a minimum of 42 cents an hour, he shall be paid this minimum for up to not more than ten hours' work per day. Where women are employed in the same classification as men, they shall receive equal pay for equal work. The foregoing provisions shall not apply to employees who already are receiving union-craft rates, or operate so as to increase their wages beyond such rates.

Time of Award: Effective as of Aug. 12, for the duration of the war, with opportunity for the reopening of the case at six months intervals beginning May 1, 1919. The company has until Feb. 1 to make back payments.

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

New Wages for Motormen and Conductors: First three months, 39 cents an hour; next nine months, 41 cents an hour, and thereafter, 43 cents an hour.

New Wages for Other Employees: The wages of employees (other than motormen and conductors) which have been submitted to the arbitrators for fixation shall be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased by this award, the percentage increase to be applied to the wage rates set forth in the agreement between the company and the Amalgamated Association and not to the wage rates as increased since the date of this agreement; provided, however, that if this increase does not bring the wage of any adult male employee up to a minimum of 42½ cents an hour, he shall be paid this minimum for up to not more than ten hours' work per day. Where women are employed in the same classification with men, they should be paid for equal work. The foregoing provisions shall not apply to employees who already are receiving union-craft rates, or operate so as to increase their wages beyond such rates.

Time of Award: Effective on Nov. 20, for the duration of the war, with opportunity for the reopening of the case at six months intervals beginning May 1, 1919.

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

New Wages for Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter, 45 cents an hour.

New Wages for Other Employees: Same as in the case of the Lewiston, Augusta & Waterville Street Railway.

Time of Award: Effective as of Nov. 20, for the duration of the war, with opportunity for the reopening of the case at six months intervals beginning May 1, 1919.

EAST ST. LOUIS, COLUMBIA & WATERLOO RAILWAY, EAST ST. LOUIS, ILL.

New Wages for Motormen and Conductors: First three months, 41 cents an hour; next nine months, 43 cents an hour, and thereafter, 45 cents an hour; freight motormen, 48 cents an hour.

New Wages for Other Employees: Wages of employees (other than motormen and conductors) which are before the board for fixation shall be increased for the same percentage that the maximum of the wage scale paid to motormen and conductors is increased by this award; provided, however that if this percentage increase does not bring the wage of any adult male employee up to a minimum of 42½ cents an hour, he shall receive this minimum, and provided further that where women are employed in the same classification as men, they shall receive equal pay for equal work.

Time of Award: Effective as of July 15, for the duration of the war, with the opportunity for the reopening of the case at six months intervals beginning April 1, 1919. The company has until Feb. 1 to make back payments.

AUBURN & SYRACUSE ELECTRIC RAILROAD, SYRACUSE, N. Y.

New Wages for Motormen and Conductors: City lines—first three months, 38 cents an hour; next nine months, 40 cents an hour, and thereafter, 42 cents an hour; interurban lines—passenger service, 44 cents an hour, and express and freight service, 47 cents an hour.

New Wages for Other Employees: Same as in the case of the Empire State Railroad Corporation.

Time of Award: Effective as of Aug. 5, for the duration of the war, with the opportunity of reopening the case at six months intervals beginning May 1, 1919. The company has until Feb. 1 to make back payments.

CINCINNATI (OHIO) TRACTION COMPANY

New Wages for Motormen and Conductors: First three months, 43 cents an hour; next nine months, 46 cents an hour, and thereafter, 48 cents an hour.

New Wages for Other Employees: Same as in the case of the Empire State Railroad Corporation, except that the minimum is placed at 42½ cents an hour.

Time of Award: Effective Nov. 21, for the duration of the war, with the opportunity for the reopening of the case at six months intervals beginning May 15, 1919. The company has until Jan. 1 to make back payments.

DENVER (COL.) TRAMWAY SYSTEM

New Wages for Motormen and Conductors: First three months, 43 cents an hour; next nine months, 46 cents an hour, and thereafter, 48 cents an hour.

New Wages for Other Employees: Same as in the case of the Empire State Railroad Corporation, except that the minimum is placed at 42½ cents an hour and no clause in regard to women is present.

Bonus Paid for Elapsed Time: Where the elapsed time consumed by swing runs exceeds thirteen hours, an addition of pay shall be allowed as follows: For the fourteenth hour, fifteen minutes; for the fifteenth hour, thirty minutes; for the sixteenth hour, forty-five minutes, and for the seventeenth hour and each successive hour, one hour. These allowances are to be applied to successive periods of one-half hour each; less than one-half of such a period is to be neglected and more than one-half is to count as allowed time for the full allowed period.

Time of Award: Effective as of Aug. 24, for the duration of the war, with the opportunity for the reopening of the case at six months intervals beginning May 15, 1919. The company has until Feb. 1 to make back payments.

DETROIT (MICH.) UNITED RAILWAY

Wages of Car Inspectors and the Like: The wages of car inspectors, controller men, pitmen and pitmen helpers shall be increased by 20 per cent, provided, however, that if this percentage increase does not bring the wage of any adult male employee up to a minimum of 42½ cents an hour, he shall receive that minimum, and provided further that where women are employed in the same classification as men, they receive equal pay for equal work.

Time of Award: Effective as of June 1, for the duration of the war, with the opportunity for the reopening of the case at six months intervals beginning Feb. 1, 1919. The company had until Dec. 1, 1918, to make back payments.

DAYTON (OHIO) STREET RAILWAY

New Wages for Motormen and Conductors: First three months, 41 cents; next nine months, 43 cents, and thereafter, 45 cents.

New Wages for Other Employees: Minimum wage of 42½ cents an hour. Women employed in the same class of work as men shall receive equal pay for equal work. This award does not apply to employees receiving union-craft rates or increase wages beyond such rates.

Recognition of Union: The evidence discloses no interference with the right of employees to join the union. The railway, however, is under no obligation to recognize, deal with or contract with the union.

Time of Award: Effective as of June 24, for the duration of the war. The company has until Feb. 1 for back payments.

Jersey Men Free Agents

The Public Service Railway, Newark, N. J., has issued the following statement to its employees:

"The employees shall also understand, once and for all, that they are always free to join any organization they choose and may remain members of such organization as long as they like, always provided, however, that no act by any employee will be tolerated by the company or the public which directly or indirectly interferes with the continuance of that safe, convenient and adequate service required by law of the company, its officers and employees."

Cleveland Men Out on Strike

Contend that Company Broke Agreement Under Which Women Were to Have Been Replaced on Dec. 1

Motormen and conductors of the Cleveland (Ohio) Railway almost to a man left their cars at 5 o'clock on the morning of Dec. 3. They had voted the preceding night to take this action unless the company removed the 160 women conductors before that hour. Both J. J. Stanley, president of the Cleveland Railway, and George Radcliffe, general manager of the company, informed the representatives of the union that the company would refuse to discharge the women until ordered to do so by the War Labor Board. About 2000 men are involved in the strike.

CONFLICT OF AUTHORITY

The strike grew out of the news received in Cleveland on Nov. 30 that the National War Labor Board had ordered the railway to retain its women conductors until a final decision is made on the controversy over their employment. The Secretary of Labor had extended the time for their quitting their places on the cars to Dec. 1. The company decided to abide by the instructions of the War Labor Board and the women operated their cars on Dec. 2.

W. M. Rea, secretary of the local branch of the Amalgamated Association, at once announced that a demand would be made upon the company to dismiss the women, and, in the event the demand was not complied with, he said a vote would be taken by the members on a strike to enforce the demand.

Fred Telschow, president of the local branch of the Amalgamated Association, in a statement made after the strike was declared, said that the action was the result of the failure of the Cleveland Railway to live up to an agreement with the union. He charged that the company, through Mr. Stanley, had refused the demand of the men to remove the women conductors from the cars on Dec. 1, and disposed of a request that the cars be heated by telling the men that it was a question of heating cars now or later on.

GENERAL MANAGER EXPLAINS

George L. Radcliffe, general manager of the railway, said that the company was acting under orders of the National War Labor Board in refusing to discharge the women. The board instructed the company on Nov. 30 to retain the women, pending a decision to be rendered by it later on. The board also fixed working conditions and a wage scale and asked the union not to insist upon action until a further ruling could be made. Mr. Radcliffe said that the company would comply with the ruling of the board, when it is received.

From his office in Detroit, W. D. Mahon, president of the Amalgamated, issued a statement saying the company had not complied with its agreement in regard to the employment of women. There was nothing left for the men but to strike, he said.

Mr. Rea insisted that the union does not recognize the jurisdiction of the National War Labor Board in this case. He contends that there is no need of employing women and insists that the company's purpose in doing so is to disrupt the men's organization. The union men argue that both the company and its employees agreed to leave the matter to the Secretary of Labor, who sent two agents to Cleveland to make an investigation. These investigators reported against the use of the women and recommended that they be replaced by Nov. 1. Subsequently the time was extended until Dec. 1. During the interval the matter came before the War Labor Board.

Mayor Harry L. Davis, after endeavoring to bring the company and the men together on some kind of agreement to delay the strike, went to Washington, where he will ask the War Labor Board to render a decision as to the employment of women at the earliest possible moment.

After he had gone Director of Public Utilities Farrell made a proposition of mediation to Secretary Rea, but this was refused. Both Mr. Farrell and A. L. Faulkner, representative of the Secretary of Labor in the Cleveland district, advised the men to go slow in precipitating a strike over this question at the present time.

WOMEN PROTEST TO WASHINGTON

Mrs. Laura Prince, chairman of the Association of Women Street Railway Employees, sent a communication to the War Labor Board on the morning of Dec. 3, in which she said that the members of the union are in contempt because of disobedience of the injunction which had been issued.

All the men were asked to take their cars out when they arrived at the stations Tuesday morning. When it was found that almost all of them refused, schools of instruction were established at the stations and advertisements were inserted in the papers for men and women to act as drivers and conductors. It was announced that until persons who may apply for positions are properly drilled, no cars will be operated.

The employees of the Cleveland Railway were to start voting at 1 p.m. on Dec. 5 on ending the strike. Two resolutions were to be presented to the men. Under one of these, adopted by the Council, that body understands that the women conductors now in the employ of the company will be released from their positions on Jan. 3. The other is about the same tenor, except that the date is fixed at March 1. The latter was adopted at a meeting in the Mayor's office on Dec. 4 with President Stanley of the railway, representatives of the union and Mayor Davis and his cabinet present. The women conductors withdrew from the meeting and will rest their case with the War Labor Board. The strike was settled late on Dec. 5 when the men accepted the plan for dismissing the women by March 1.

Buffalo Problem Unsolved

A Myriad of Counselors Again Makes for Confusion by Advancing Conflicting Plans

After months of wrangling the railway problems of Buffalo, N. Y., are still unsolved. Dozens of plans have been suggested by members of the City Council, and agreements on some of the plans have been reached between the municipal authorities and the International Railway, but very little real progress has been made. Referendum petitions signed by more than 12,000 voters have been filed with the City Council asking for the repeal of the Council's resolution which waives certain franchise restrictions and allows the Public Service Commission to fix a reasonable rate of fare.

COUNCIL INACTIVE

Although an agreement was reached on Nov. 13 between the municipal authorities and the company whereby all pending litigation would be dropped and the so-called Massachusetts plan of electric railway operation and control would be put in effect, no action has been taken by the Council to repeal its former resolution and adopt the Massachusetts plan. Unless the Council does repeal its former resolution, a referendum must be held early in February on the question of whether or not it shall be repealed.

Some members of the City Council have recently suggested as a solution of the problem a plan for the city to acquire the railway properties. Before municipal ownership could become a fact, action would have to be taken by the State Legislature at its session this winter. The talk so far has been of purchase by the city through the exchange of city bonds for railway securities as a basis of payment.

Edward G. Connette, president of the railway, has assured members of the City Council that directors of the corporation are ready to accept any sort of a plan that will insure them a return on their investment. Mayor Buck favors the so-called Massachusetts plan.

Other members of the Council are fostering a bill which they aim to have introduced into the Legislature this winter which would amend the State constitution so as to exempt from debt limits of cities, the money raised by bond issues the proceeds of which are invested in a public utility that is a direct revenue producing agent. A measure of this kind would permit the city to buy the company's properties without regard to the matter of exceeding the city's debt-making limits.

The City Council has been told that the Buffalo lines of the International Railway are now being operated at a daily loss because of the payment to the company's platform employees of the wage award of the War Labor Board. In a public announcement the company urges the Council to adopt some plan whereby the railway can continue operation at a fair return.

Representatives of some of the foremost industries of Buffalo, N. Y., have organized a permanent committee known as the All-for-Buffalo committee to launch an educational publicity campaign showing the need of the company for additional revenue through higher fares. Counsel has been retained.

P. F. Sullivan on War Labor Board

P. F. Sullivan, president of the Bay State Street Railway, Boston, Mass., has been chosen for membership on the National War Labor Board as the alternate to L. A. Osborne, vice-president Westinghouse Electric & Manufacturing Company. Mr. Sullivan is now sitting as the representative of the electric railway industry in pending cases.

News Notes

Engineering Societies Establish Employment Bureau.—The Engineering Council has decided to establish at once an employment bureau to aid engineers who have been in military service to find suitable positions. The four secretaries of the founder societies are the board of managers. Walter V. Brown is secretary. The war committee of the technical societies has been abolished.

New Franchise Settlement Ordinance Committee in Chicago.—Plans have been revived for a new ordinance for the surface and elevated lines in Chicago. Objectors to the franchise which was defeated at the recent election have expressed a willingness to discuss the situation with a view to compromise. A new sub-committee of the local transportation committee of the Council will begin hearings at once.

167 Wage Increases for Union Men.—During the first half of 1918 divisions of the Amalgamated Association of Street & Electric Railway Employees of America to the number of 167 received increases in wages. Thirty-two of these received two increases. The increases do not include those secured through submission of cases to the National War Labor Board. These statements are contained in the proceedings of the recent semi-annual meeting of the general executive board of the Amalgamated Association.

Utilities Bill Proposed for Texas.—A public utilities bill will be urged during the forthcoming session of the Legislature of Texas, which will convene on the first Monday in January. The bill proposes to place all utilities, including city railways and interurbans under jurisdiction of the State Railroad Commission, its jurisdiction to extend to the matter of fixing rates, determining valuations, the issuance of securities and the building of new lines. Such a bill was offered in the last regular session, but failed to pass.

Increase for Kentucky Employees.—The South Covington & Cincinnati Street Railway, Covington, Ky., has announced that employees will receive the same proportionate wage increase as that specified by the War Labor Board in the case of the employees of the Cincinnati Traction Company. The action of the company was voluntary, as the War Board did not include the Covington company in its decision. which provided that Cincinnati men should receive from 42½ to 48 cents an hour, instead of 31 to 37 cents.

Industrial Insurance Ruling.—In a recent test suit brought by the Spokane & Inland Empire Railroad and the Washington Water Power Company, Spokane, and the Yakima Valley Transportation Company, the Supreme Court ruled that electric railways doing interstate business in conjunction with a city railway system under a form of organization that does not permit a segregation of employees engaged on intrastate and on interstate business are not liable for the payment of premiums for state industrial insurance and their employees cannot claim benefits of the latter.

Purchase Ordinance to Be Drawn.—The City Council of Seattle, Wash., has instructed Corporation Counsel Walter F. Meier to prepare an ordinance authorizing the city to close the purchase of the railway property of the Puget Sound Traction, Light & Power Company. The last obstacles in the way of clearing title to the property are being cleared up. The company has submitted to the Council a tentative agreement to turn over the property and place the $15,000,000 of utility bonds in escrow to be withdrawn as the liens upon the property are reduced. This proposal will be incorporated in the ordinance authorizing the city to complete the deal.

Minneapolis Seeks M. O. Advice.—The city attorney of Minneapolis, Minn., has been instructed by the Aldermen to ascertain what steps are necessary to take over the property of the Minneapolis Street Railway, included in the system of the Twin City Rapid Transit Company. It is generally believed by the members of the sub-committee of the City Council committee on street railway matters and extensions that enabling legislation will be required to carry out any plan of municipal ownership if such a course is decided upon as advantageous to the city. It was expected that C. B. Gould, the city attorney, would present his report to the committee members on Dec. 3.

Buffalo to Pay Back Wages.—The War Labor Board announced on Nov. 26 that the settlement regarding wages arrived at some time ago with regard to wages and terms of service for the employees of the International Railway, Buffalo, N. Y., is retroactive to June 1, 1918. The board is asked to determine the date upon which the company is to pay the back wages due the employees under the agreement. The amount of this back pay is considerable, amounting, according to the agreed-upon testimony, to about $250,000. The board finds that the company should be allowed until April 1, 1919, to make the payments, unless it is enabled to charge an increased fare prior to that date. In this event the company should be allowed sixty days in which to make its payments after the increased fare goes into effect.

Directed to Hasten Improvements.—The Board of Public Utility Commissioners of New Jersey has directed the Trenton & Mercer County Traction Corporation, Trenton, N. J., to carry out by Dec. 20 certain improvements recommended in a decision rendered by the board on Sept. 24. The commission wants better discipline of the platform men; says that much of the unsatisfactory service still exists; that some of the cars are not in proper condition; that suitable fire protection has not been installed at the carhouses, and that the company does not maintain schedules. Repairs already made by the company include rear markers on suburban cars, the improvement of carhouses, work on new signal system and repair work to tracks. The company is also succeeding in its effort to prevent passengers riding on platforms. The present order was made because of dissatisfaction expressed by the Trenton City Commission with progress made by the railway.

Programs of Meetings

Investment Bankers' Association

The Investment Bankers' Association of America announces that on account of a fresh outbreak of influenza in St. Louis the seventh annual convention, which was to have been held on Dec. 9, 10 and 11 in St. Louis, has been transferred to the Hotel Marlborough-Blenheim, at Atlantic City, on the same days.

Central Electric Railway Accountants' Association

A. C. Van Driesen, president of the Central Electric Railway Accountants' Association, has found it necessary to postpone the meeting which was to have been held in Fort Wayne, Ind., on Dec. 13 and 14, 1918, to Feb. 14 and 15, 1919, at Fort Wayne. The program for the postponed meeting will be issued later.

Financial and Corporate

Set Adrift Again

Utilities Must Arrange to Finance Themselves, Probably by Short Term Bond Issues

At a meeting of the board of directors of the Essential Industries Finance Corporation in New York on Dec. 1 it was decided to dissolve that company immediately. The action of the board was brought about by the decision of the War Finance Corporation in Washington that there is no longer necessity of the Washington organization financing public utilities because of the signing of the armistice.

NEW COMPANY SHORT-LIVED

The Essential Industries Finance Corporation was brought into existence during the latter part of the month of September to act in emergencies in financing public utility corporations during the period of the war. The first financial transaction undertaken by the corporation was that of the Portland Railway, Light & Power Company, Portland, Ore. The arrangement made with that corporation was to purchase $4,750,000 of notes to be rediscounted by the War Finance Corporation at 6 per cent.

The negotiations were about to be consummated when the armistice between the Allies and Germany was signed and officials of the War Finance Corporation decided that as the corporation was formed purely as a war financing agency, it would not be warranted in going ahead with further financial transactions with corporations. The Portland negotiations were thereupon terminated.

ORGANIZATION OF COMPANY

Prior to the formation of this company Governor Harding of the Federal Reserve Board appointed a committee of Wall Street bankers to work out a plan for the purpose of affording financial relief to public utility companies. This committee consisted of James W. Wallace, chairman; Charles H. Sabin, Albert H. Wiggin, Thomas W. Lamont and Frederick Strauss. This committee after discussing the matter at considerable length tentatively decided upon the formation of a company with a capital of $100,000,000 which in turn could borrow $300,000,000, making a total of $400,000,000 which would have been available for the purpose.

These plans, however, were not consummated and it was finally decided to organize the Essential Industries Finance Corporation to begin in a comparatively small way and then with increased business to increase the capital from time to time until the limit feasible under the war finance act had been reached. The company was incorporated under the laws of New York State with E. V. R. Thayer, president of the Chase National Bank, as its president and Frederick Strauss of J. & W. Seligman & Company and Gehard M. Dahl, vice-president of the Chase National Bank, as vice-presidents.

According to the *Wall Street Journal* it is expected that Congress will be asked to extend the life of the War Finance Corporation and clothe it with authority to aid companies in the reconstruction period. Bankers do not look for the War Finance Corporation, in view of its policy followed heretofore, to extend further aid to public utility companies. Of the many requests made to the corporation for financial aid by public utility companies few were granted, and in most cases the corporation extended part of the advance requested, making the loan contingent upon the company's security holders or bankers raising the balance.

In regard to the future financing of utilities the *Wall Street Journal* says:

"Bankers who handle the fiscal affairs of utility companies believe that their requirements will be met with issues of short-term notes and ten-year 6 per cent bonds. Notwithstanding all of the elaborate machinery created to aid the public utility companies to secure accommodations they must now as before look to the investing public for funds. The credit machinery has failed to achieve the purposes for which it was created."

Another Christchurch Record

The Christchurch (New Zealand) Tramway in the year ended March 31, 1918, again established a record in the matter of earnings. These amounted to £160,682, an increase of £10,186 over those of the preceding year. As compared with 1913-1914, the last pre-war year, the earnings in 1917-1918 increased £19,503.

The gain in revenues, however, was nearly all swallowed up in increasing operating expenses, which at £94,813 were £8,571 more than in 1916-1917. The traffic expenses, owing to the increased mileage run and to wage increases, were £5,267 more than in the previous year, and the maintenance expenses were £4,334 higher, principally on account of the increased cost of materials.

The surplus for the last year amounted to £5,685 as compared to £5,191 for the year preceding. On a capital expenditure of £721,186, the last year's surplus, after adequate provision for depreciation, represented a profit of less than 1 per cent.

The revenue per passenger was 1.782d. in the last year as compared to 1.821d. for the year before, while the working expenses were 1.101d. and 1.077d. respectively. The average revenue per car-mile in the two years was 13.968d. and 14.280d., and the operating expenses per car-mile 8.242d. and 8.163d. respectively.

War Traffic Helps Liverpool

Corporation Tramways in 1917 Carried 40,000,000 More Passengers Than in Pre-War Days

The Liverpool (England) Corporation Tramways has been having heavy war traffic to handle. In the calendar year 1917 the increase in passengers as compared to pre-war days was 40,000,000, due to the 50 per cent advance in steam railway rates, the reduction or elimination of certain steam railroad service, and the increase in local shipping and munitions work in the district served.

As compared to 1916, the passenger traffic rose from 15,205,899 to a total of 172,842,494, and the receipts £80,435 or 9.8 per cent to £818,756. The average earnings per car-mile for 1917 amounted to 15.56d. as compared to 13.97d. for 1916, a gain of 1.59d. for the year.

The operating costs in 1917 amounted to £575,267, an increase of $57,231 or 11 per cent. This left a gross profit of £270,378, a gain of £21,838 or 8.8 per cent. This profit was apportioned as follows: Interest, £50,401; sinking fund and repayment of loans, £52,734; renewal and depreciation reserves, £42,243, and contribution in aid of general taxes, £125,000. The net profit for the year was £167,243, a gain of £21,272 or 14.5 per cent.

The following statement shows the classes of traffic from which the company's revenues are obtained:

Value of Ticket	Number Sold	Per Cent of Total
1d	147,593,889	85.4
2d	22,665,083	13.1
3d	2,411,966	1.4
4d	163,993	0.1
5d	7,563	....

A summary of the principal figures applicable to the Liverpool tramway system for 1916 and 1917 is given in the accompanying statement:

COMPARATIVE RETURNS OF LIVERPOOL CORPORATION TRAMWAYS FOR CALENDAR YEARS 1916 AND 1917

	1917	1916
Total revenue	£845,645	£766,576
Operating cost (including rentals)	575,267	518,036
Gross profits	£270,378	£248,540
Interest and sinking fund	103,135	102,569
Net profit	£167,243	£145,971
Reserve for renewals and depreciation	£42,243	£20,971
Contribution in relief of taxes	125,000	125,000
Earnings per car-mile	15.56d	13.97d
Operating cost per car-mile	10.88d	9.79d
Interest and sinking fund per car-mile	1.96d	1.94d
Total charges per car-mile	12.89d	11.73d
Average fare per passenger	1.137d	1.124d
Length of track operated (miles)	124	124
Operating ratio (per cent)	68.02	67.50
Percentage of gross profits to capital expenditure	13.1	12.0

Boston Trustees Report

Show Results for Four Months Under Five-Cent Fare for First Month and Seven Cents for Rest

The 8-cent fare for the Boston (Mass.) Elevated Railway, referred to in the ELECTRIC RAILWAY JOURNAL for Nov. 30, went into effect on Dec. 1. The board of trustees operating the company under the public control act issued a statement pointing out that the company fell short of its required revenue by $2,741,000 for the period from July 1 to Nov. 1. A 5-cent fare prevailed during July and a 7-cent fare was in effect during August, September and October.

The cost of the service as defined by statute includes operating expenses, maintenance, fixed charges, a provision for depreciation and absolescence and dividends on the invested capital. War conditions have enormously increased the cost of operation, and by reason of the shortage of labor the service has been necessarily impaired and provided on an unpreventable increase in cost.

The increase in the cost of labor decreed by the War Labor Board has advanced the operating cost more than $3,000,000 yearly. The trustees believe that $2,000,000 annually should be allowed for depreciation, and the law requires the payment of $1,360,220 in dividends.

The 7-cent fare produced an increase of only 23 per cent in gross earnings during August. During the period of the influenza epidemic the revenue fell off so that an average of only 9 per cent increase was obtained. The trustees considered fixing a fare above 8 cents, but deferred putting it into effect.

A study of the zone system of fares with reference to Boston conditions is being made by Prof. Albert S. Richey, Peter Witt and the Boston company itself, and the results of this investigation will be considered by the trustees of the company as soon as the reports are available.

The trustees are keenly alive to the necessity of providing for adequate and satisfactory service and have already ordered new cars and equipment, which, when received and installed, will materially improve conditions. More dependable and satisfactory service is also anticipated with the return of more normal industrial conditions.

The income of the system for the four months from July 1 to Oct. 1, during which it has been under public control, is concretely expressed in the following table:

From 5-cent fares in July	$1,525,548
From 7-cent fares in August, September and October	5,326,483
Total from fares	$6,852,031
From special cars, etc.	45,859
From advertising privileges at stations, etc.	97,619
From other companies for use of tracks, etc.	16,627
From rent of buildings, etc.	23,243
From sale of power, etc.	12,209
From interest	32,255
Total income	$7,079,847

The total income from all sources for the corresponding four months of 1917 was $6,520,576.

The total cost of service, exclusive of dividends for the four months of control under public management, has been $9,397,239 as against $6,559,335 for a similar period in 1917. A factor in this extra cost is the increased labor payments which were brought about through the decree of the National War Labor Board.

Another important factor in the cost of service has been the payment for rent of the Dorchester Tunnel. The payment of dividends provided for under the act totaled $424,240 during this time, making the total cost of the service in accordance with the legislative act $9,821,479, as against $6,977,225 last year, an increase of $2,844,254. The deficiency, therefore, between the income and cost of service for these four months from July 1 to Oct. 1 amounts to $2,741,631.

The trustees also submit the following comparative table of income from fares:

	1918	1917
July	$1,525,538	$1,570,856
August	1,915,260	1,544,354
September	1,722,738	1,533,629
October	1,688,495	1,639,196
Four months	$6,852,081	$6,288,035

New South Wales Makes Better Showing

The year ended June 30, 1918, was one of improvement for the New South Wales (Australia) Government Railways & Tramways. Instead of the deficit of £412,253 for 1917 there was a surplus of £11,919 for the last fiscal year. In 1917 the steam railways showed a deficit of £394,064 and the tramways one of £18,189, but in 1918 the steam deficit was reduced to £28,916 and the tramway deficit was turned into a surplus of £40,835.

The tramway earnings in the last fiscal year were £1,992,641, a falling off of £15,898 or 0.80 per cent from those of the year before. It is estimated that a strike cost £150,000 in revenue. The operating expenses at £1,603,260, however, showed the greater decrease of £88,107 or 5.2 per cent. The result, therefore, was an increase in the balance from £317,172 in 1917 to £389,381 in 1918, and this gain was only to a limited extent cut into by the rise in interest payments from £335,361 to £348,546.

Increased fares on the city and suburban lines from Aug. 8, 1917, produced £90,000 of added revenue, and £3,700 was secured from other fare increases. It is estimated that the fares now in force will yield an increase of £100,000 for the year ended June 30, 1919, but this sum will be exceeded by the rise in wages, interest and other expenses of the system.

The number of passengers carried was 255,740,808 in 1918 as compared to 295,303,714 in the preceding fiscal year. The car mileage in the two years was 21,762,244 and 25,361,992 respectively.

Abandonment Discussed

Brockton & Plymouth Street Railway Puts Its Affairs Up to Local Communities

Owing to adverse financial conditions the directors of the Brockton & Plymouth Street Railway, Plymouth, Mass., recently voted to authorize the officers of the company to cease operation. Nov. 23 was set as the last day on which cars would be run.

The company operates 24.3 miles of equivalent single track and on Jan. 1, 1918, served an estimated population of 26,600. The road was opened for traffic in 1900 and up to 1917 had a yearly balance for reserves, replacements and dividends varying from a maximum of $19,026 in 1906 to $215 in 1916.

In 1917 the company failed to earn its operating expenses and taxes by $463, its gross earnings being $124,316. The deficit for the year was $15,217, and the road is about $1,000 behind its operating expenses and taxes so far in 1918. A 6-cent fare is in effect and two one-man cars are operated in addition to other types.

The 1917 interest charges were $14,754. There are $295,000 issued in bonds and $405,000 in preferred and common stock authorized and outstanding. The franchise term is unlimited.

Letters were recently sent to the Selectmen of the various towns in which the company operates and to other interested parties, notifying them of the situation. Finally a meeting was held to see what could be done to keep the road in operation.

The local authorities present appeared desirous of doing everything possible to assist the road. After extended discussion it was decided that town meetings should be called to see if citizens would vote favorably under the provisions of Chapter 288, Acts of 1918, which authorize towns to contribute to the cost of operating and fixed charges of street railways a sum not greater than $1 per $1,000 of the preceding year's assessed valuation.

It was also proposed at these town meetings that Chapter 293, Acts of 1916, authorizing the licensing of motor vehicles for carrying passengers for hire be accepted (an act regulating jitneys).

It was understood in a general way that the town authorities should support any application for an increase in fare which the company might decide upon. A 10-cent fare in place of the present 6-cent fare was spoken of as the most likely increase sought. It was also suggested that a representative from each town, probably one of the Selectmen or someone nominated by them, should go on the company's board of directors, the board being enlarged for that purpose. In order to give the townspeople time to investigate and act it was agreed to attempt to run the road thirty days longer.

Notices have been posted stating that cars will run through to Dec. 28.

Financial News Notes

Toronto Two-Year Notes Sold.—William A. Read & Company, New York, N. Y., are advertising as already having been sold an issue of $1,000,000 of Toronto (Ont.) Railway two-year 6 per cent gold notes due on Dec. 1, 1920.

Yazoo Municipal Line Discontinued—The Yazoo (Miss.) Municipal Railway is no longer being operated. The equipment was sold for salvage. A 100-kw. a.c. machine has been removed from the municipal light plant and a 500-kw. G. E. turbo-generator is being installed instead.

Owners Enjoined from Dismantling Road.—The Supreme Court of Ohio recently issued an injunction restraining R. Barman and others who own the street railroad at Mount Vernon, formerly operated by the Mount Vernon Railway, from taking up the tracks. They purchased the property at court sale and then announced that the tracks would be removed.

Mr. Warner in St. Louis.—Notice was given on Dec. 2 of the dissolution that day of the firm of Warner, Tucker & Company, Boston, Mass., by mutual consent. The members were Robert L. Warner, Randolph F. Tucker and Thomas B. Sweeney. Mr. Warner was recently elected vice-president of the United Railways, St. Louis, Mo., to succeed Murray Carleton. Mr. Warner is now located in St. Louis.

Receiver for Evansville Railways.—The Evansville (Ind) Railways, which operates 60 miles of electric railway between Evansville, Mount Vernon, Rockport and Grandview, Ind., has been placed in the hands of a receiver on petition of the Pittsburgh Trust Company. The company is said to owe interest aggregating $1,330,000 on its bonded indebtedness since January, 1917. The line from Evansville, Ind., to Henderson, Ky., is not involved in the proceedings. W. A. Carson, vice-president, has been named receiver.

Authorized to Issue $300,000 of Bonds.—The Public Service Commission for the Second District of New York has authorized the Black River Traction Company, Watertown, N. Y., to execute to William A. Waddingham of Watertown, as trustee, a mortgage on its property to secure $500,000 of first mortgage thirty-year bonds. The company is also authorized to issue $300,000 of bonds under the mortgage and to issue $180,000 in common stock. The proceeds of the securities authorized, $480,000, are to be used to pay outstanding accounts which were payable on Dec. 31, 1917.

Wants to Suspend for Winter.—The Great South Bay Ferry Company, Freeport, N. Y., which operates the Sea Shore Municipal Railroad, has requested permission from the Freeport Village Board to adopt its "winter's schedule," which means the suspension of the road until next Decoration Day. In the written communication to the village, Elven Edwards, receiver of the company, stated that the road had passed the most successful period in its history. Since Oct. 1 the line has been running week-ends only and is patronized mostly by the fishermen. The road is about 2 miles long. It serves a Long Island "summer colony."

Wants to Suspend Goshen Lines.—The Common Council of Goshen, Ind., referred to a committee for investigation and report a petition filed by the Chicago, South Bend & Northern Indiana Railway asking permission to discontinue city service in Goshen and to remove its track on Lincoln Avenue from Fifth Street east to Eighth Street and on Eighth Street from Lincoln Avenue south to Douglas Street. Representatives of the company intimated that they would be willing to give daily service on the Main Street line from Goshen College to a point west of the Chicago-Detroit Bag Company plant, a distance of about 3 miles, on which route is Oak Ridge Cemetery. The track over this route is used by the Chicago, South Bend & Northern Indiana Railway and the Winona Interurban Railway.

International Railway Defaults Interest.—In view of the non-payment of interest due on Nov. 1, 1918, on the refunding and improvement 5 per cent gold bonds of the International Railway, Buffalo, N. Y., Charles W. Beall, of Harris, Forbes Company, New York; Francis E. Frothingham, of Coffin & Burr, Boston, Mass.; Arthur Perry, of Arthur Perry & Company, Boston, Mass., and Richard B. Young of E. H. Rollins & Sons, New York, at the request of the representatives of a large amount of the bonds, have consented to act as a committee under a protective agreement dated Nov. 18. That the company would be unable to meet the Nov. 1 interest payment was announced in the ELECTRIC RAILWAY JOURNAL for Nov. 9, page 853. Labor troubles and wage increases were the principle contributing factors to the default. The Bankers' Trust Company, New York, N. Y., is the depositary. Holders of the 4 per cent bonds of the International Traction Company, which owns the entire stock of the International Railway, and is in turn controlled by the United Gas & Electric Corporation through ownership by that company of 60 per cent of its common stock, have also appointed a committee for the protection of their interests. On this committee is T. E. Mitten, president of the Philadelphia (Pa.) Rapid Transit Company and formerly president of the International Railway.

Electric Railway Monthly Earnings

BATON ROUGE (LA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$21,909	*$12,466	$9,443	$3,899	$5.544
1m., Sept., '17	19,710	*9,919	9,791	3,601	6,190
12m., Sept., '18	254,584	*132,758	121,826	45,383	76,443
12m., Sept., '17	227,917	*112,537	115,380	42,507	72,873

BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$9,506	*$8,824	$682	$1,424	†$742
1m., Sept., '17	11,699	*11,032	667	1,259	†592
12m., Sept., '18	109,543	*119,534	†9,989	16,423	†26,412
12m., Sept., '17	124,645	*122,916	1,729	14,231	†12,502

CAPE BRETON ELECTRIC COMPANY, LTD., SYDNEY, N. S.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$46,026	*$35,161	$10,865	$6,535	$4,330
1m., Sept., '17	39,805	*25,628	14,177	6,551	7,626
12m., Sept., '18	501,334	*365,570	135,764	78,368	57,396
12m., Sept., '17	443,606	*274,101	169,505	78,701	90,804

CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$50,941	*$30,564	$20,377	$11,785	$8,592
1m., Sept., '17	52,596	*33,253	19,343	11,564	7,778
9m., Sept., '18	416,826	*276,227	140,599	104,273	36,326
9m., Sept., '17	409,407	*250,536	158,871	105,146	53,725

COLUMBUS (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$95,027	*$60,939	$34,088	$33,018	$1,070
1m., Sept., '17	91,872	*39,153	52,719	31,101	21,618
12m., Sept., '18	1,190,906	*512,334	678,572	389,197	289,375
12m., Sept., '17	1,037,936	*396,824	641,112	349,619	291,493

LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$216,052	*$150,571	$65,481	$35,888	$29,593
1m., Sept., '17	167,622	*105,687	61,935	35,187	26,748
9m., Sept., '18	1,633,750	*1,162,523	471,227	325,290	145,937
9m., Sept., '17	1,332,785	*891,423	441,362	311,527	129,835

NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$226,617	*$156,595	$70,022	$9,584	‡$51,433
1m., Sept., '17	252,877	*130,137	122,740	29,126	93,614
12m., Sept., '18	3,127,135	*1,849,825	1,277,310	340,722	‡1,051,588
12m., Sept., '17	2,270,221	*1,307,559	962,662	349,647	613,015

PENSACOLA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$47,385	*$33,319	$14,066	$8,453	$5,613
1m., Sept., '17	31,397	*17,491	13,906	7,803	6,103
12m., Sept., '18	459,326	*301,834	157,492	97,014	60,478
12m., Sept., '17	326,874	*189,832	137,042	93,312	43,730

SAVANNAH (GA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$101,467	*$73,741	$27,726	$25,163	$2,563
1m., Sept., '17	82,258	*57,223	25,035	24,207	828
12m., Sept., '18	1,127,456	*765,577	361,879	299,133	62,746
12m., Sept., '17	926,005	*614,589	311,416	288,264	23,152

TAMPA (FLA.) ELECTRIC COMPANY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$91,614	*$53,086	$38,528	$5,149	$33,379
1m., Sept., '17	79,666	*46,236	33,430	5,067	28,363
12m., Sept., '18	1,034,038	*602,326	431,712	61,942	369,770
12m., Sept., '17	1,007,242	*554,845	452,397	53,294	399,103

* Includes taxes. † Deficit. ‡ Includes non-operating income.

Traffic and Transportation

Thirty-one Fare Increases

Association List Shows This Gain in Period Approximately from Oct. 15 to Nov. 15

According to a compilation made by the information bureau of the American Electric Railway Association, thirty-one additional fare increases have been made since the preparation of the preceding list, which brought the changes up to about Oct. 15. This was published in the ELECTRIC RAILWAY JOURNAL of Nov. 9. The present supplementary list extends the time for about a month. It is as follows:

City	Population	Nature of Increase
Buffalo, N. Y.[1]	468,558	Five to 6 cents.
Washington, D. C.	363,980	Reduced rate tickets abolished.
Indianapolis, Ind.	271,708	Reduced rate tickets abolished; 1-cent charge for transfer, 1-cent rebate.
Providence, R. I.	254,960	Central 2-mile zone, 5 cents; outer zone, 1¾-miles, 5 cents; 5 cents for each 1¾ miles thereafter; 1 cent for transfer.
Winnipeg, Can.[2]	136,035	Reduced rate tickets abolished; workingmen's tickets, six for 25 cents, instead of eight for 25 cents; children's tickets, seven for 25 cents, instead of ten for 25 cents.
Houston, Tex.[3]	112,307	Five to 6 cents.
Terre Haute, Ind.	66,083	Reduced rate tickets abolished.
Holyoke, Mass.	65,286	Zones shortened.
Mobile, Ala.	58,221	Five to 6 cents.
Atlantic City, N. J.	57,660	Zone unit increased from 5 to 6 cents.
Montgomery, Ala.	43,285	Five to 6 cents.
Galveston, Tex.	41,863	Five to 6 cents.
Pittsfield, Mass.	38,629	Zones shortened. Two cents charged for transfers at certain hours.
Austin, Tex.[3]	34,814	Five to 6 cents.
Beaumont, Tex.[3]	27,711	Five to 6 cents.
Oak Park, Ill.	26,654	Five to 7 cents.
Muskegon, Mich.	26,100	Cash fare 5 to 6 cents.
Vicksburg, Miss.	22,816	Five to 7 cents.
North Adams, Mass.	22,019	Zones shortened. Two cents charged for transfers at certain hours.
Cicero, Ill.	19,974	Five to 7 cents.
Winona, Minn.	19,714	Five to 6 cents.
Owensboro, Ky.	17,784	Five to 7 cents.
Eureka, Cal.	14,684	
Lake Charles, La.	14,447	
Adams, Mass.	14,214	Zones shortened. Two cents charged for transfers at certain hours.
Anniston, Ala.	14,112	Five to 6 cents.
Ishpeming, Mich.	12,448	Five to 7 cents.
Ashland, Wis.	11,594	Five to 7 cents; six tickets, 40 cents; children, 3½ cents.
Maywood, Ill.	10,529	Five to 7 cents.
Tuscaloosa, Ala.	10,488	Five to 7 cents.
Red Bank, N. J.	7,398	Five to 6 cents.

[1] Subject to referendum.

[2] Application of company for 6-cent fare under consideration.

[3] Agreed to by city authorities, but not yet in effect.

Up to the closing of the list ninety cities or more than half of the 158 cities in the United States with a population of 40,000 or more, were paying higher electric railway rates in one form or another. In fifty-one of the remainder, applications are now pending for relief. Of the entire number, there are only seventeen in which no fare increase applications are pending.

Of the cities having a population of more than 100,000, forty are paying increased fares. In twenty-three cities applications are pending, and in only four, all of less than 130,000 population, is there no present movement toward a higher fare.

Portland Suburban Rates Increased

A reduction of service and an increase in fares, are remedies provided by the Public Service Commission of Oregon for the Portland Railway, Light & Power Company on its interurban lines out of Portland for meeting losses due to the period of depression before the war and advancing costs of labor and material since the war. The order covers the Bull Run, Oregon City, Cazadero, Montavilla and Troutdale lines.

The commission refuses to make such an increase in fares as would give to the company a 6 per cent return on its investment, stating that such would lay an undue burden upon the patrons of the company, but states that "we have therefore prescribed rates which it is believed will produce only sufficient revenue to meet the increased cost of labor and material used in the operation of the interurban lines as compared with costs of two years ago."

Fares from Portland to the terminals of each line will be as follows: Cazadero, 90 cents; Canemah Park, on the Oregon City line, 25 cents; and Oregon City, 25 cents; Troutdale, 30 cents; Bull Run, 70 cents. Fares for short distances, such as from Canemah Park to Oregon City, from Faraday to Cazadero or from Troutdale to Multnomah Farm, will be 6 cents, the same fare as prevails on the Portland end, on such lines as from Portland to Golf Junction.

The commission, in its order, deprecates the issuance of transfers between interurban and city lines.

New schedules are imposed for commutation, ten-ride and other similar classes of low-rate fares.

The commission does not specifically point out wherein the company should reduce its service.

The commission, in arriving at a decision to increase the rates, finds, after examination of the financial condition of the various lines, that if the interurban lines had been owned by a separate corporation the carrier would have been unable to meet fixed charges after paying operating expenses.

The decision of the commission was rendered on Nov. 22. The order to the company was made effective from Dec. 1.

Kansas City Case Lost

Federal Court Refuses Injunction to Prevent City Interfering With Eight-Cent Fare

At Kansas City, Mo., on Nov. 25 three federal judges heard the presentation of the request of the Kansas City (Mo.) Railways for an injunction to restrain State and municipal bodies from interfering with the company in complying with the War Labor Board's findings with reference to wages and fares. The company sought to put into effect an 8-cent fare with two tickets for 15 cents. Its contention was that on the strength of the award of the War Labor Board in the wage case, in which higher fares were recommended for the company, it ought to be permitted to put an increase in fares in effect without local interference. To prevent legal interference from public authorities the company sought, before installing the new fare schedules, to obtain an injunction from the Federal Court.

On Dec. 3 the court handed down its decision. It refused the injunction and said in part:

> But what is the meaning and effect of the award of the National War Labor Board? Does it threaten the immediate confiscation, or any confiscation, of the property or revenues of the railways company? That award does not order the payment of wages it prescribes, either now or at any specific time in the future. Not only this, but it clearly shows that it was not the intention of the board that the railways company should be required or expected to pay them, or any of them, until, first, a lawful increase of the rate of fare it might charge had been granted by the proper tribunals, and until, second, the financial ability of the company, which it expressly found was not then such as to permit it to pay them, should become such as to permit it, in the words of the board, "to meet the requirements of the award."
>
> These were and are conditions precedent to the taking effect of the award, and until these conditions are fulfilled, the award does not make, but expressly negatives, any requirement of the increase of wages specified therein. If these conditions should at some future time, during the continuance of the war, be complied with, then, but not until then, will any requirement of payment of the increase of wages specified in the award arise. As the precedent conditions, on a compliance with which, only, the award can take effect, have not been complied with, and the railways company is not and will not be required to pay the increased wages until they are fulfilled, there is no immediate threat of confiscation by such payment or requirement of payment, and this court is not now required to issue its injunction to prevent such confiscation.
>
> But it is contended that the power is granted and the duty is imposed upon this court to compel the fulfillment of the conditions of the effectiveness of the award, to enjoin any interference with the increase of the rates of fare and the improvement of the financial ability of the railways company, although no confiscation is imminent. But the primary jurisdiction to increase and regulate the intrastate rates of fare of this company (and most of its passengers are intrastate passengers) is conferred and the duty to exercise this power is imposed upon the State boards, and proceedings are pending therein to effect a compliance with the conditions precedent to the effectiveness of the award. In this state of the case, and in the absence of any violation or threat of a violation of any provision of the Constitution or laws of the United States, it is not the province or duty of this court to increase the rates of fare requisite to put the award of the War Labor Board into effect, and the application for temporary injunction must be denied.

The issues involved were reviewed in this paper on Nov. 9, page 858.

The order of the War Labor Board was to take effect on Dec. 1.

Courts Protect Illinois Property

In Three More Cases United States Courts Hold That Two-Cent Fare Law Confiscates Interurban Property

The tendency of Federal and State courts in Illinois to recognize that public utilities are affected by increased wages and operating expenses has been further manifested by three recent decisions giving relief to interurban electric railways from the operation of the maximum 2-cent fare law in that State.

On Nov. 29 Judge Landis of the United States District Court for the Northern District of Illinois entered a decree in the suit of the Aurora, Plainfield & Joliet Railway against the Attorney General of the State of Illinois and the members of the Public Utilities Commission of Illinois, holding that the maximum 2-cent fare law if applied to the company is confiscatory and in violation of the provisions of the Fourteenth Amendment to the Constitution of the United States.

While the commission had recognized that the company could not at the 2-cent rate earn a fair return on the fair value of its property, it was powerless to give relief because of the maximum-fare law. Hence the suit of the company under the doctrine of Smyth *vs.* Ames (169 U. S. 466) and the Minnesota Rate Cases (230 U. S. 352) which hold:

1. A railroad corportion is a person within the meaning of the Fourteenth Amendment declaring that no state shall deprive any person of property without due process of law.
2. A state enactment or regulation establishing rates for the transportation of persons or property by railroad that will not admit of the carrier earning such compensation as under all the circumstances is just to it and to the public would deprive such carrier of its property without due process of law and would therefore be repugnant to the Fourteenth Amendment.
3. While rates for the transportation of persons and property within the limits of a State are primarily for its determination, the question whether they are so unreasonably low as to deprive the carrier of its property without such compensation as the constitution secures and therefore without due process of law cannot be so conclusively determined by the legislature of the State that the matter may not become the subject of judicial inquiry.

The Attorney General and the Public Utilities Commission admitted that if the application of the statute fixing a maximum 2-cent fare does not result in a reasonable return upon the fair value of the company's property, then such application would operate to take the property of the company without just compensation and without due process of law. They called, however, for strict proof as to the result of operations in this particular case.

The decree of the court permits the company to put into effect a rate not exceeding 3 cents a mile and enjoins all State authorities from interfering with the company in operating under such rate.

MURPHYSBORO INJUNCTION MADE ABSOLUTE

The United States District Court for the Eastern District of Illinois recently granted an injunction to the Murphysboro & Southern Illinois Railway, restraining the officials of the State of Illinois from interfering with rates in excess of 2 cents a mile. At the request of the officials representing the various interests of the State, a similar paragraph to the one in the St. Clair County Circuit Court decree in the case of the Alton, Granite & St. Louis Traction Company (ELECTRIC RAILWAY JOURNAL, Nov. 16, page 903), was inserted in the Murphysboro decision directing that the company file an application with the Public Utilities Commission for authority to increase its rates not to exceed 3 cents a mile.

On Nov. 18 attorneys for the company appeared before the commission in support of their application in compliance with the decree of the court. The commission held that before it would take any action in the matter, it would request an opinion from the attorney general as to its jurisdiction in the matter. The attorneys for the railroad, therefore, appeared on Nov. 19 before the United States District Court (Judge English in chambers) and requested a modification of the decree to eliminate all reference to the commission. The court so modified the decree, making the injunction absolute and effective at once.

After the St. Clair County decision, it will be recalled, the commission entered an order authorizing the Alton, Granite & St. Louis Traction Company to put into effect fares predicated upon a basis of 3 cents a mile.

The Galesburg & Kewanee Electric Railway, Kewanee, Ill., has secured from Judge Fitz Henry of the United States District Court at Peoria, Ill., a decree authorizing an increase in the interurban rate to a basis of 3 cents per mile, and enjoining the State authorities from prosecuting the company for violation of the Illinois 2-cent fare law. This decree was rendered after a hearing at which the need of the company for increased revenue was fully set forth.

Metal Tokens in Milwaukee

On Dec. 1 metal tokens were substituted for the paper tickets previously in use on the city and suburban lines of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis. City fare tokens are sold at the company's office and suburban or zone tokens are sold on all suburban cars as heretofore.

The paper city and zone tickets outstanding are still being accepted for rides, but no more will be sold.

The substitution of metal tokens for paper tickets does not change the price. City fare tokens are 5 cents each—zone tokens 2 cents each, in packages twenty-five for 50 cents.

In announcing the change the company said:

"Metal tokens are adopted to replace paper tickets because the tokens are cleaner, less liable to loss, more easily handled—which means quicker loading of cars and less delay for passengers: and because of being indestructible, they can be frequently cleansed and sterilized. The tokens are made of aluminum, small and very light, and of distinctive design, so as to not be mistaken for metal money.

"We believe our patrons will like the change which is made in the interest of quicker, cleaner and cheaper service."

Rochester Plea Rejected

Company Denied Right to Charge Six-Cent Fare by Council Following Report of Law Committee

On recommendation of its law committee, the Common Council of Rochester, N. Y., on Nov. 26 by unanimous vote denied the application of the New York State Railways for permission to increase the fare on the Rochester lines from 5 cents to 6 cents. The ordinance adopted after the reading of the report of the law committee is as follows:

"The application of the New York State Railways for permission to increase its rate of fare in the city of Rochester having been considered by the Common Council and it having been found that the company is making a fair and adequate return upon the value of its property used in the city of Rochester, such application is hereby denied. This ordinance shall take effect immediately."

On motion of Alderman Bradley Carroll, chairman of the law committee, the following resolution also was adopted:

"Resolved, That the law committee be and it hereby is directed to inquire into the threatened decrease of service on the railway in Rochester and to take such action with reference thereto as it deems proper."

In its report to the Common Council recommending denial of the fare increase application the law committee declares itself to be convinced that "the company undoubtedly is making money in the city of Rochester."

On the subject of the company's revenue the committee says, further:

"The returns in this city have been so large for a number of years that they can be greatly reduced and still leave a fair return upon the investment."

In regard to the outside electric lines the committee has this to say:

"In these abnormal times it seems hardly fair to us for the people of the city to be called upon to assist the New York Central Railroad in financing the operation of the interurban lines."

The application of the company for financial relief was referred by the Council to its law committee some months ago. That committee proceeded to its work promptly. Under its direction M. & L. W. Scudder were engaged to examine the books of the company and to report as to the earnings of the company in the city of Rochester. Milo R. Maltbie was also employed to assist the committee. The accountants were instructed to report as to the amount received by the company from operations in the city of Rochester and as to the amount actually expended by it for such operations within the city.

Meanwhile, however, a committee of business men retained Price, Waterhouse & Company, public accountants, to inquire into the Rochester situation. This investigation was made because these men believed that the inquiry by the city officials was unfair to the company interests.

As noted briefly in the ELECTRIC RAILWAY JOURNAL for Sept. 28, page 594, the Price, Waterhouse & Company report indicated bankruptcy ahead for the company. The Scudder report, referred to in this paper for Aug. 31, held that the annual return on the capital invested was sufficient to make a 6-cent fare unwarranted. It is said that the reports differed in that one considered the Rochester lines as a whole while the other had to do only with the local Rochester city lines.

God Save the Commonwealth!

At the conclusion of a column review of the Boston (Mass.) Elevated Railway fare situation headed "God Save the Commonwealth!" in its issue of Dec. 3, the Boston *News Bureau* says that the only honest thing for the public managers of that property to do is to put a 10-cent fare into immediate operation. Then the managers may work out a more equitable zone system at their leisure. Nothing short of a 100 per cent fare increase, says that paper, is likely to produce the necessary 50 per cent increase in revenue. Some pertinent paragraphs from the *News Bureau* article follow:

> In four months, July to October inclusieve, the State of Massachusetts is already out of pocket $2,741,631. This deficit is at the rate of $8,224,895 for the year.
>
> In 1917 and again in 1918, because of war necessities, the entire State tax reached the record figures of $11,000,000. In 1916 the State tax was $8,000,000.
>
> Unless radical action is immediately taken, this venture into the railway business is going to cost the people of Massachusetts in taxes as much as the normal cost of all other State activities combined. The city of Pittsfield, for example, is likely to have the opportunity to pay into the State treasury twice as much as it did in 1916.
>
> The public management has now raised fares to 8 cents. That extra cent will be no more effective than a pea-shooter against the onrush of a dreadnought.
>
> The cost of service for the entire year 1917, including operating expenses, fixed charges and taxes, was in round figures $19,100,000. Based on the first four months, the cost of service for the first year under public management will be $28,200,000, an increase of $9,100,000.
>
> If no shrinkage in riding results from the 8-cent fare, now instituted, cost of service for the current eight months will exceed revenue by more than $1,000,000 without considering the $900,000 guaranteed in dividends.
>
> Everyone knows, however, that the increase in fare will reduce riding. If an increased fare of 40 per cent increased revenue but 20 per cent, an increase of 60 per cent is not likely to increase revenue more than 30 per cent. On this basis, cost of service for the current eight months will exceed revenues by nearly $2,000,000, and total deficit for the eight months will be nearly $2,900,000.
>
> Adding to this the $2,741,000 lost in the first four months the total indicated deficit for the year to be made up from the State treasury will be at least $5,600,000 on the basis of an 8-cent fare.

New Orleans Increase Sustained

Court Refuses Injunction to Labor to Prevent Fare Advance—City and Finance and War Boards Involved

Wilbert Black, president of the Central Trades & Labor Council, and other labor leaders have lost their fight to compel the New Orleans Railway & Light Company, New Orleans, La., to discontinue charging 6-cent fares.

The injunction suit of the labor leaders against the company was argued on Nov. 14, before Judge Cage in the Civil District Court of Louisiana, in New Orleans. Ex-Governor Hall appeared and argued upon the franchise which was presented by the attorneys for the company. Judge Cage announced that the arguments would be taken under advisement.

On Nov. 25 Judge Cage declared the 6-cent fare ordinance enacted by the Commission Council and put into effect by the company was legal, and refused the injunction to prevent collection of the increased fare.

The court, in its opinion, went into the matter at considerable length. Judge Cage held there is no violation of the provisions of either the Louisiana or the United States constitutions with reference to impairment of contracts. The action of the Commission Council in passing the ordinance increasing the fare from 5 to 6 cents was "a legitimate exercise of the governmental authority vested in the city of New Orleans, and is not prohibited by any provision of law or any constitutional provision, and that under it the company has the right to collect the 6-cent fare until further action by the Council."

In rendering his decision Judge Cage said in part:

> This suit is brought for the purpose of having Ordinance 5257 C. C. S., authorizing the New Orleans Railway & Light Company to charge a 6-cent fare, declared null and to obtain an injunction *pendente lite*, and in due course a perpetual injunction preventing that corporation from charging more than 5 cents.
>
> The plea in effect is that the fixing of the maximum fare of 5 cents in the franchise contracts between the city and the corporation are stipulations *pour autrui*, in favor of the individual inhabitants of the city.
>
> LEGISLATURE SUPREME
>
> This contention I consider absolutely unfounded. The sovereign legislative power of the State of Louisiana is vested in its Legislature. It is the duty of the sovereign to govern each and every portion of the State. It can retain all these powers, or it can create municipal corporations to which it can delegate its governmental functions to whatever extent it sees fit within certain localities.
>
> The city of New Orleans was incorporated by the Legislature for the purpose of exercising certain governmental functions which would otherwise have been exercised by the Legislature of the State, and every act performed by the municipal government is one performed in the interest of the whole city and for the whole State, and not for any individual.
>
> In the making of municipal administrative contracts for the creation and operation of a public utility, it is the duty of the municipal government to fix a rate of fare for the passengers, which, in its opinion, will be sufficient to produce revenue to an extent that induce private capital to be invested in the enterprise, and sufficient to pay a fair return thereon, and to keep up and maintain the utility, by the necessary repairs and renewals.
>
> At the time that these contracts were let, in the opinion of the municipal authorities a 5-cent fare was sufficient for that purpose, and for many years, and up to very recent times the 5-cent fare was sufficient to accomplish the municipal object—the maintenance of railway transportation.
>
> It was in no sense a stipulation in favor of the citizen, as against the public utility corporation, that it should transport him for 5 cents. If, now, it appears to the municipal authorities that the tax of 5 cents per passage, which it imposed upon the inhabitants of the city of New Orleans, is not sufficient to maintain the utility which it is the duty of the municipal government to maintain, then it has a right to increase the tax to 6 cents per passage unless there be some constitutional inhibition.
>
> It is plain that the plaintiffs in this case are not parties to the contract; that there was no stipulation in their favor which gives them the right to invoke the provisions of the State and federal constitutions forbidding the passage of laws impairing obligations of contracts.
>
> It is plain, under the showing made by the record before me, that a 5-cent fare, is inadequate to furnish the public transportation demanded by this community. Indeed, this condition is not peculiar to this city, nor to the defendant corporation.
>
> The action of the Commission Council was legitimate exercise of the police and administrative powers delegated to it by the State of Louisiana. The purpose of the ordinance is to raise that revenue which is required to support the public service of public transportation. It is a municipal necessity. It was not intended to be, nor was it such a releasing or extinguishment of an indebtedness, liability or obligation as is contemplated in Article 59.
>
> I conclude, therefore, that the action of the Commission Council in passing ordinance No. 5257 was a legitimate exercise of the governmental authority vested in the city of New Orleans, was *intra vires* and is not prohibited by any provision of law or any constitutional provision, and that under it the company has the right to collect the 6-cent fare, until further action by the Commission Council.
>
> The rule *nisi* will be recalled, and preliminary injunction prayed for be refused at plaintiff's cost.

The history of the New Orleans case is very interesting. The company applied to the War Finance Corporation some months ago for a loan. In its appeal it was backed up by the Mayor and other city officials, who said that such an advance as the company had requested was necessary to prevent interruption of railway service. The War Finance Corporation refused, however, to make the loan unless the city agreed to put a fare increase into effect at once. To this the city assented and in the belief that the city would carry out its promise the corporation advanced $1,000,000 to the railway.

After two months had elapsed the War Finance Corporation called upon the city to act in the matter. Labor started to protest against the fare advance. Thereupon the National War Labor Board, which had passed upon wages in New Orleans, announced that where organized labor opposed advanced fares recommended by the board in connection with increased wage awards to employees of public utility companies, the entire award would be suspended. Meanwhile the city passed the ordinance advancing fares. Labor then carried its case to Judge Cage and sought an injunction. He ordered the officers of the company to appear in court on Oct. 16 and show cause why the plea of labor to restrain the advance should not be granted. After several postponements the case finally came up for trial on Nov. 14.

Relief for New York State Railways

Company's Syracuse and Utica Lines Authorized to Charge Six Cents—Other Recent Increases

The New York State Railways was authorized on Nov. 26 by the Public Service Commission for the Second District to charge a 6-cent fare in Utica and Syracuse. As explained very briefly in the ELECTRIC RAILWAY JOURNAL for Nov. 30, page 989, the relief granted the railroad is to meet the emergency caused by abnormal conditions arising out of the present war. The new rates are to continue only during the war and while war conditions continue to exist. Application to reopen the proceeding may be made at any time after the signing of the treaty of peace.

SIX CITIES ASKED FOR INCREASES

The New York State Railways asked for an increased rate of fare in Rochester, Syracuse, Utica, Rome, Oneida and Little Falls. Rochester procured a writ of prohibition under which the commission, in the Quinby case, was forbidden to consider the question of fare rates in Rochester. Syracuse withdrew its objections, claiming that the question of the effect of franchises was not before the commission and no proof as to franchises was given. Utica, by formal resolution of its Common Council, waived franchise restrictions during the continuance of the war. No evidence was given as to rates in Rome, Oneida or Little Falls. The commission retains jurisdiction of the company's petition for further investigation and determination of such questions as may arise in those cities should such action be desired.

OPINION BY COMMISSIONER CHENEY

Commissioner Cheney wrote the memorandum which accompanied the commission's order. He said:

> While the method of the presentation of the case has been unusual on account of the emergency existing because of the immediate necessity of large increases of wages ordered by the War Labor Board, the commission believes that it has been put in possession of all the facts relating to the operation of the company necessary for the determination of the application, and that the rights of the communities affected have been carefully looked after by the authorities of those communities.

The New York State Railways operates four divisions—Rochester, Syracuse, Utica and Oneida—absolutely necessary for the successful prosecution of the business and social activities of the various communities. Many large manufacturing plants engaged in essential war work are located in the territory and it is held that the deprivation of transportation facilities is absolutely unthinkable. The commission holds that it is its duty to furnish any relief in its power when it appears that there is danger of such a result. In its memorandum the commission said:

> It is axiomatic that these facilities cannot be provided unless the income produced by their operation is sufficient to pay the cost thereof. The cost includes not only the operating expenses, but also the interest which must be paid upon the money which was borrowed to produce the plant with which the service is rendered; and in that statement we do not take into consideration the right to an adequate rate of return on the invested capital, which has been so often stated by the courts. Our consideration of this case has led us to the conclusion that we are not concerned here with the fixing of a rate which will give any real return on invested capital, but merely to fix such rates as will permit this company to tide itself along and meet the extra demands made upon it through the abnormal increase in the cost of labor and material; which rates should be continued in effect until with the coming of peace and the return to normal operating conditions, the matter can be investigated and rates fixed which will be just, not only to the public but also to the company.

The memorandum says there cannot be any just claim made that the value of the property used in the public service by the company does not equal the amount of the interest-bearing debt. In fact, it exceeds it by a large margin. There is no probability that the increased revenue necessary will be realized from increased traffic. The gross revenue for 1917 was less than in 1916, and for the first four months in 1918 there was a considerable falling off in travel from the corresponding months in 1917. The increase in revenue necessary to enable the road to continue in operation must come from an increase in fares. In this connection the commission says:

> Although this will cause annoyance and displeasure to the great body of people who will have to pay the increased fares, we have sufficient confidence in the fair-mindedness of the American people to believe that they are willing to pay the legitimate cost of the service which they require.
>
> If one line in a city system should be shown to be operated at a profit and another line at a loss, that does not necessarily mean that the rate should be increased on one line and not on another. The unit fare for electric railway riding in cities has become so firmly fixed in practice that it would cause too violent a disruption to adjust rates in that manner, even though it should be considered theoretically just. The most workable plan will probably be to treat each municipal system as a whole and let the lines located in the more populous sections help to carry those which for the time may prove to be unprofitable. Neither is it feasible to fix the limits by the geographical boundaries of the different municipalities. It is common knowledge that the actual limits of a community are not bounded by its geographical lines and that in the case of all our cities there is adjacent territory, peopled for the most part by those doing business in the city and all forming a part of the one community. In such cases it may be fairly said that it is an impossibility in practical operation to separate the accounts to show accurately the revenues, expenses of operation or even the investment in property used in the service.

The commission on Nov. 27 authorized the Albany Southern Railroad to file a new tariff of passenger fares and rules effective on Dec. 1, under which one-way fares will be at the rate of 2¾ cents a mile and round-trip fares double the one-way rate. The single-trip rate between Albany and Hudson is to be 77 cents. This is to be the maximum single-trip rate charged in the new rate schedule. Commutation books for twenty-five, forty-six and fifty rides are also provided. The new rates, in some instances, are in excess of present rates and in others there is a decreased rate. The new tariff will result in a standardization of rates, based on a mileage rate.

The commission has also authorized the Peekskill Lighting & Railroad Company to charge a 6-cent fare in Peekskill and the Putnam & Westchester Traction Company to charge 7 cents. The increases were permitted under amended franchises by the local authorities. The companies were also authorized to charge 2 cents for transfers in Peekskill. Prior orders authorizing fare increases are abrogated and the present orders are to remain in effect for a period of five years from Nov. 1, 1918, unless upon complaint made or investigation by the commission on its own motion it should be determined that conditions shall have so changed as to warrant a reduction or change in the fares.

City Protests Fare Raise

Petition of Chicago Surface Lines to Be Heard by Commission on Dec. 10

The hearing on the application of the Chicago Surface Lines to charge a 7-cent fare is scheduled before the State Public Utilities Commission on Dec. 10. The city law department filed its answer to the petition on Nov. 30, claiming that the commission is without jurisdiction to change or modify the rates of fare specified in the ordinances of the various companies. In its answer the city, through those in charge of its case, says:

> We deny that the lines are entitled to an increase. Each of the companies making up the lines has paid to its stockholders dividends based on grossly excessive valuations of the capital invested in the companies, so that during the expired portions of the present ordinances the stockholders have received very much larger returns than they would have been entitled to upon a fair and reasonable valuation of the capital invested. If it be true that during the period of the late war and for some time thereafter the profits made by the stockholders have been reduced, or even obliterated for the time being, it is only fair and just that the stockholders, in view of their previous excessive profits, should bear such temporary loss, and that the burden thereof should not be imposed on the traveling public.

The city also charged the railway companies with gross extravagance in the management of their affairs.

The attempt of radicals to stir up trouble over the fare situation was frustrated on Nov. 29 when the police arrested William Bross Lloyd, Socialist candidate for United States Senator at the recent election, and others, for causing a disturbance. These men rode through the downtown district in an automobile on which were displayed an American and a red flag. They were distributing circulars urging car riders to pay no more than 5 cents. The bills said: "Give this to a conductor and walk by him." "Strike for a 5-cent fare." "Let every automobile owner carry free all the passengers his car will hold. Make a 6-cent fare less profitable than a 5-cent fare. Demand the city establish municipal motor bus lines. Demand the city encourage the operation of jitneys."

Transportation News Notes

New Fare Collection Method.—The Burlington (Vt.) Traction Company installed the Rooke automatic register on its line on Nov. 13.

Seven Cents in Enid.—The Corporation Commission of Oklahoma has authorized the Enid Street Railway to charge a 7-cent fare, with four tickets for 25 cents.

Six Cents for Helena.—The State Board of Railroad & Public Service Commissioners of Montana on Nov. 18 granted the petition of the Helena Light & Railway Company for an increase in rates to 6 cents. The advance became effective on Dec. 1.

Yonkers Plans Fare Inquiry.—The Common Council of Yonkers, N. Y., appointed a committee of five of its members to make an investigation of the books of the Yonkers Railroad so as to determine whether the company is entitled to the increase in fare which it has sought to obtain.

Worcester May Ask More.—The Worcester (Mass.) Consolidated Street Railway has announced that the 6-cent fare which has been in effect on its lines since Aug. 1 has proved inadequate. No official announcement has been made that the company will seek a 7-cent fare, but it is reported that appeal will be made to the Public Service Commission for further relief.

Bangor Wants Six Cents.—The Bangor Railway & Electric Company, Bangor, Me., has asked the Public Utilities Commission to approve an increase of fares on its local and interurban lines. At present the local fare is 5 cents on all routes, while the interurban lines are divided into zones on each of which the fare is 5 cents. It is asked that each of these fares be increased to 6 cents.

Skip Stops to Go.—The City Council of St. Paul, Minn., has adopted as to form an ordinance repealing skip stops in that city on the lines of the Twin City Rapid Transit Company. The ordinance must still go before the Council for a formal vote. Final passage of the St. Paul ordinance cannot occur before Dec. 7. It is expected that skip stops will be abolished by Jan. 13.

List of Illinois Fare Increases.—The Illinois Electric Railways Association in Bulletin No. 8 has compiled a list of the fare cases decided and still pending during the period from Jan. 1 to Nov. 1. At the end of this period relief had been granted in most of the thirty-five cases which had been put before the commission. In only nine cases were the fare decisions still pending.

Fare Increases Suspended.—The Public Service Commission of Massachusetts has suspended until Dec. 15 the operation of increased fare tariffs scheduled to go into effect on Dec. 1, of the Holyoke Street Railway, the Norfolk & Bristol Street Railway and the Blue Hill Street Railway. The proposed increase in fare of the Taunton Street Railway has also been suspended until Jan. 1.

Six Cents Not Enough.—The Harrisburg (Pa.) Railways is said to contemplate increasing its fares from 6 cents to 7 cents. A director of the company is quoted as follows: "If the increase is opposed, there is only one other avenue left open to the company. This is the removal of the Linglestown, Oberlin, Rockville and other suburban lines. These lines are hauling fewer people than they did several years ago."

Fares at Massillon to Be Discussed.—A public meeting has been called for Dec. 10 at Massillon, Ohio, to discuss the request of the Northern Ohio Traction & Light Company for an increase in the rate of fare within the city limits. The rate is now 5 cents, but the company has asked for a rate based on the increased wages paid carmen and the higher cost of materials of all kinds. All citizens will be asked to take part in the discussion.

War Labor Board Advises Fare Increase.—Commissioners of Newport, Ky., have received a letter from the National War Labor Board, advising that an increase in the rate of fare be granted the South Covington & Cincinnati Street Railway. Wages have recently been advanced by the board and the latter states this and the heavy bridge tolls put the company in a position where it will be necessary to secure a higher rate of fare.

Vancouver Interurban Fares Increased.—The Public Service Commission of Washington has granted the application of the North Coast Power Company, Vancouver, Wash., for an increase in passenger fares between Vancouver and Sifton, and intermediate points. The fare between Vancouver and Sifton has been increased from 15 cents to 25 cents, with intermediate points raised proportionately. The local fare in Vancouver is unchanged.

Scranton Would Compromise Fares.—The Scranton (Pa.) Railway on Nov. 22 agreed to reduce its minimum fare to 7 cents if the city agreed to withdraw its complaint on the 8-cent tariff before the Public Service Commission. The city tried to effect a compromise on 6 cents. This was refused by the company. In March the company went to a 6-cent fare. On Sept. 15 it increased the fare to 8 cents. Vigorous opposition followed from the city.

St. Joe's Petition Includes Suburban Lines.—Brief mention was made in the ELECTRIC RAILWAY JOURNAL of Nov. 30, page 989, of the application of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo., to the State Public Service Commission for permission to increase fares in St. Joseph to 8 cents. In addition the company also asks for permission to advance the fare to Lake Contrary to 20 cents for the round trip. This is double the present round-trip fare. For a one-fare rate to or from Lake Contrary the proposed rate is 13 cents. The company further asks for 2 cents for transfers to the bus line at the end of the Frederick line.

Rochester Service Curtailed.—Electric railway service in Rochester, N. Y., was curtailed 20 per cent on Dec. 2. James F. Hamilton, vice-president and general manager of the Rochester (N. Y.) lines of the New York State Railways, says the action is necessary through the refusal of the Mayor and City Council to grant a 6-cent fare, as noted elsewhere in this issue. Mr. Hamilton says the company must cut its expenses so as to keep up its payments to bondholders. Besides the 25 per cent curtailment in service on all city lines, some routes will be turned into stub lines, cars operating only from suburban points to a given point and not running direct to the heart of the city.

Six Cents in Asbury Park.—A 6-cent fare on the lines of the Atlantic Coast Electric Railway, serving five zones in the shore section, including Long Branch, Asbury Park, Deal, Allenhurst, Ocean Township, Bradley Beach, Avon, Delmar, Spring Lake and Sea Girt, was authorized on Dec. 3 by the State Board of Public Utility Commissioners, acting on the petition of the company for an increase from a 5-cent to a 7-cent fare. The increase to 6 cents was conditioned by the company's acceptance of a stipulation that abrogation or modification of the rates permitted may be made if conditions indicated by operating results may warrant. Another condition of the increase is that the 6-cent fare shall include certain transfer privileges.

Inquiry Into Threatened Service Cut.—Proposed curtailment of service by the New York State Railways in Rochester, referred to elsewhere on this page, was a subject of an investigation which was begun on Nov. 29 by the Public Service Commission for the Second District at Rochester. The railroad advertised that on Dec. 2 it would reduce its service on all lines approximately 25 per cent, but it was immediately served with an order by the commission, on its own initiative, directing the railroad to show cause why the commission should not start a Supreme Court action for the purpose of having the threatened violation of the public service commissions law stopped. Under the law the railroad is required to furnish "such service and facilities as shall be adequate and in all respects just and reasonable." It was under this provision that the commission acted.

Carefully Drawn Service Order Recommended.—Milo R. Maltbie, New York City, formerly a member of the

Public Service Commission for the First District of New York, retained to advise the city of Minneapolis, Minn., on railway matters has recommended the establishment of a standard of service for all lines of the Twin City Rapid Transit Company. He says that such an order properly drawn could probably be enforced. It has been Mr. Maltbie's experience that service orders were the most difficult orders to enforce and that the tendency of the courts was to favor the public service corporations unless the intent of the order was absolutely clear. It was imperative that the city should have a schedule of operation before the issuance of any order. Simply to prescribe "adequate service" for the company would not get the city anywhere.

Defends Fare Increase.—The Warren & Jamestown Street Railway, Warren, Pa., on Nov. 29 filed with the Public Service Commission for the Second District of the State of New York its answer to the complaint against fare rates. The fares complained of, it is claimed, were approved by the Interstate Commerce Commission. It raises the question of jurisdiction of the State Commission where the Interstate Commerce Commission is concerned. The company says its fare schedule is based upon a mileage rate of 2½ cents a mile and fares are determined by zones, eleven in number, each 2 miles and constituting a 5-cent zone. The company denies that rates are not based upon distance traveled. It is claimed the 10-cent fare from Jamestown to Stillwater is not unjust or discriminatory and that the increased rate was due to increased cost of operation.

Lincoln's Third Appeal.—The third application of the Lincoln (Neb.) Traction Company for an increase in rates has been filed with the State Railway Commission. It asks for an additional 1-cent increase in fares either in or outside of the city limits, and a charge of 1 cent for transfers. This request, if granted, will increase the fare from 5 cents straight to 6 cents and an additional cent for transfer, making 7 cents for a trip that includes the use of a transfer. Transfers are now free. The first appeal of the company to the commission for relief through an increase in fare was made on April 3, 1917. Later the company filed a supplemental petition asking for an emergency rate. On Feb. 16, 1918, the commission denied the emergency rate. On June 17, 1918, the commission denied an increase in rates. This last decision was appealed to the Supreme Court of Nebraska. On Aug. 19, 1918, the company asked for an emergency rate as being necessary to avoid bankruptcy. On Aug. 31, the commission issued an order, effective Sept. 1, for a 5-cent fare on the entire system, and 6 cents between Lincoln and suburbs and between suburban points. From this order the company likewise appealed on the ground that the increase was too small. Both appeals will be argued soon before the Supreme Court

Personal Mention

Mr. Jackson Sails for England

He Will Study Particularly the Operation of the Zone System in the United Kingdom

Walter Jackson of the ELECTRIC RAILWAY JOURNAL sailed for England on the *Balmoral Castle* on Dec. 2 for an extended, detail study of electric railway operating conditions in the United Kingdom, more particularly on the relation of the zone fare to community development, the use of buses and trackless trolleys, methods of freight and package goods handling, etc. His studies of the zone fare will appear in a series of articles covering the widest possible variety and size of cities, so that American operators can better judge what the zone fare really is and does. He will also write on other phases of operation.

WALTER JACKSON

During the last sixteen years Mr. Jackson has made several trips to Europe in addition to his wide travels in America, for both the editorial and business activities of the paper. He has been commissioned to visit England again at this time because of the imperative need of American electric railways for exact information on the workings of the zone fare system. Thus his trip is another expression of the world-wide service which the ELECTRIC RAILWAY JOURNAL has always been glad to render to the industry.

Mr. Jackson has for some time had the title of business manager of the JOURNAL and performed the duties of of that office. He has, however, continued to give a part of his time to editorial work. At present the needs of the paper and of the field are such that he will largely give up his work in the business department, devoting more of his time to the editorial department.

L. B. West has been appointed auditor of the Pine Bluff (Ark.) Company, to succeed H. R. Harden.

N. Thomson has been elected president of the Bristol & Norfolk Street Railway, Randolph, Mass., to succeed C. D. Rogers.

R. H. May, formerly a member of the editorial staff of the Washington *Post*, has joined the Washington staff of this paper.

S. E. Huff has been appointed secretary of the Kankakee & Urbana Traction Company, Urbana, Ill., to succeed C. N. Clark.

George H. Jones has been appointed claim agent of the Scioto Valley Traction Company, Columbus, Ohio, to succeed N. E. Rees.

J. E. Lane has been appointed roadmaster of the Visalia Electric Railroad, Exeter, Cal., to succeed Murray Parsons.

E. G. Snider has been appointed master mechanic of the Fresno (Cal.) Traction Company to succeed A. P. Granger.

George J. Chaffee, secretary of the Evanston (Ill.) Railway, has also been appointed treasurer of the company to succeed J. J. Lewis.

Frank B. Fish has been appointed auditor of the Androscoggin Electric Company, Portland, Maine, to succeed E. J. Thompson.

Frank A. Lester has been appointed president of the Black River Traction Company, Watertown, N. Y., to succeed George Krementz.

McCabe Moore has been appointed treasurer of the Kansas City-Western Railway, Kansas City, Mo., to succeed S. D. Hutchings.

L. B. Hodgin has been appointed secretary of the Indiana Railways & Light Company, Kokomo, Ind., to succeed T. C. McReynolds.

T. D. McCarthy has been appointed roadmaster of the Waterbury Division of the Connecticut Company, to succeed H. F. Purrington.

E. C. Carpenter has been appointed claim agent of the Northern Ohio Traction & Light Company, Akron, Ohio, to succeed H. L. Ehler.

C. Lass has been appointed chief engineer of the Birmingham Railway, Light & Power Company, Birmingham, Ala., to succeed H. F. Cox.

F. R. Fowler has been appointed chief engineer of the power station of the Bridgeport Division of the Connecticut Company to succeed N. L. Chase.

P. L. Saltonstall, formerly treasurer of the Hartford & Springfield Street Railway, Warehouse Point, Conn., has been elected president of the company to succeed Nathan Anthony.

E. H. Rechberger has resigned as auditor and assistant treasurer of the Northwestern Ohio Railway & Power Company, Toledo, Ohio, and C. C. Cash has been elected to succeed him.

Robert L. Norton, for many years political editor of the Boston *Post*, has been appointed director of publicity of the Boston (Mass.) Elevated Railway, succeeding J. Harvey White, who retired from the company on Nov. 29.

Obituary

Major John Trumbull, formerly chief engineer of the Connecticut Public Utilities Commission, died recently in France following a surgical operation.

Martin W. Kern, for the past ten years mechanical engineer of the Narragansett Electric Lighting Company, Providence, R. I., died recently. Mr. Kern's former professional connections were with the Rhode Island Company at Providence and with Stone & Webster at Boston.

William Henry Hotchkiss, a director of the Niagara Gorge Railway, Niagara Falls, N. Y., died on Nov. 30. Mr. Hotchkiss was born in Bristol, Conn., in 1851. He was one of the largest stockholders in a Buffalo department store and was president of the Ellicott Square Company, owners of the city's largest office building. Mr. Hotchkiss is survived by his widow and two daughters.

Lewis W. Henry, superintendent and chief clerk of the Indianapolis & Cincinnati Traction Company, died at his home at Rushville, Ind., on Dec. 3, after an illness of about one week. Mr. Henry was born at Anderson, Ind., in 1880. He was educated in the schools at Anderson, at Howe Military Academy, DePauw University and at Swarthmore College. After leaving Swarthmore he spent some time in Washington during the term of his father, Charles L. Henry, the president of the Indianapolis & Cincinnati Traction Company, as Congressman. Mr. Henry then went to Germany to complete his studies. He was connected with the Chicago Telephone Company for some time. From January, 1912, to November, 1914, he acted as right-of-way agent for the Indianapolis & Cincinnati Traction Company, and from November, 1914, to May, 1917, was chief clerk to the president of that road. On May 10, 1917, he was appointed superintendent of the Indianapolis & Cincinnati Traction Company, which position he held up to the time of his death. Mr. Henry was interested in the work of the Central Electric Railway Association, and was an active member of the Central Electric Traffic Association.

Horace E. Andrews, New York, Dead

Was Head of New York State Railways and Former Head of Cleveland Railway—Had Many Business and Philanthropic Interests

Horace E. Andrews, president New York State Railways, Rochester Railway & Light Company, Mohawk Valley Railway and Schenectady Railway, died of pneumonia at his home in New York City on Dec. 1. He was ill but five days.

Mr. Andrews was born in 1863 in Cleveland, Ohio, where he laid the foundation of his career with the street railways of the city. As a preparation for engineering work he also attended the Sheffield Scientific School, Yale University, graduating at the age of nineteen. He then went to Germany for advanced study at the Freiberg School of Mines. Returning to his home city he became interested in traction work and in due course became president of the consolidated railways. During a period of nine years he waged a strenuous warfare on behalf of the local railways for franchise rights. This culminated in the formation of a syndicate, in which John J. Stanley was also interested, which bought out the conflicting financial interests and formed the present Cleveland Railway system. Of this Mr. Andrews was president until 1910, when he was succeeded by Mr. Stanley. The syndicate also became interested in properties in New York State where city railways in Utica, Syracuse and Rochester, together with interurban lines, were consolidated with the New York State Railways. An alliance was formed with the New York Central Railroad. Mr. Andrews became active head of the New York State Railways and of the Schenectady Railway, retaining until the time of his death an active participation in the technical as well as the administrative work of these properties.

HORACE E. ANDREWS

As would be expected of a man of his broad interests, Mr. Andrews' activities were not bounded by the companies of his special field. He was a trustee of Teachers' College, the Provident Loan Society and the Charity Organization Society in New York. From the beginning of the war he had been associated with the Red Cross and War Camp Community work. When the War Relief clearing house for France and the allies was organized he became chairman of the finance committee. All of this work he carried on in addition to the duties of the directorship in the New York Central, Michigan Central, "Big Four," Pittsburgh & Lake Erie and West Shore Railroads, the Missouri, Kansas & Texas Railway, and the Havana Electric Railway. His club affiliations also were varied and extensive.

Mr. Andrews' career speaks for itself. It remains only to add that his personality was inspiring to his associates and he was ever on the lookout for opportunities to develop them. It is probably only a coincidence, but it is a fact that, an engineer himself, he chose engineers in a considerable number of cases to discharge executive responsibility.

William T. Van Dorn, inventor, and founder of the Van Dorn Coupler Company, died at his home in Chicago, on Nov. 29, at the age of seventy-five years. It is believed that an automobile accident on Nov. 17 in which Mr. Van Dorn was injured was directly responsible for his death. Mr. Van Dorn was very well known in the electric railway field. Early in life he became a student of mechanics and while employed in the mechanical department of the earlier steam railroads gave a great deal of attention to the design of car couplers, and it is a matter of record that he was one of the originators of the coupler head which since has been made the M. C. B. standard. When the electric railways were first talked of Mr. Van Dorn had a vision of the future in store for the electric railway car. In 1885 he moved to Chicago, organized the Van Dorn Coupler Company and started manufacturing the Van Dorn coupler. Up to the time of his death Mr. Van Dorn was in active charge of the coupler business. During his life he was granted many patents on new car coupler ideas, and only recently he announced the perfection of a coupler which not only automatically connects cars mechanically but also connects the air and electric lines by the same operation. He also was the inventor of a steel end for freight cars and of a sub-floor for refrigerator cars which are in great demand. Herbert E. Van Dorn, oldest son, who in recent years has been closely associated with the business of the Van Dorn Coupler Company, will succeed his father as active head of the company.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Effect of Deliveries on Service

Example of How Poor Deliveries Made Operating Difficulties Acute on Prominent Eastern Road

The war has played havoc with deliveries to electric railways and service has been handicapped accordingly on many properties. By maintaining a larger reserve stock of supplies than usual, it has been possible to minimize the adverse effect of delayed shipments of material upon rolling stock maintenance; but in the power plant the situation has been more difficult. Where breakdowns of equipment have occurred, the inability of the operating company to secure spare parts has at times been very trying; and where plant improvements and reconstruction have been delayed by the failure of manufacturers to make their promised deliveries, the service has sometimes been very hard hit. Even the advantages of a high priority order have not always been realized in time to maintain good service.

With the coming of peace, deliveries are bound to improve greatly. None the less, an example of how poor deliveries made the operating difficulties of a large electric railway plant in New England acute are of interest. In August, 1917, the company was authorized to expend over $375,000 for replacements and additions to its power plant. Although 80 per cent of the load of the station was traction service, war industries entering the community demanded power from the plant, necessitating its thorough reconstruction and modernization. Orders were promptly placed and deliveries promised on a basis providing for the completion of the work by May, 1918. Old boilers, engines and various auxiliary apparatus had to be moved out, creating much confusion and temporarily depriving the plant of relay or breakdown capacity ordinarily available in case of trouble. One thousand horsepower in boilers was removed during the winter to provide space for a new battery of 1200-hp. rating but capable of carrying 300 per cent overload. The new boilers were due to be in on May 1, but were not actually on the line until Aug. 16. This delay was due to war conditions beyond the control of the company, including a scarcity of competent labor for erecting the boilers and stokers; delayed shipments of flues, piping, stoker parts, etc., and it was finally necessary to appeal to the government to release the steam piping for the main connections that had been built at a plant commandeered for war work.

A second 2500-kw. turbine scheduled for delivery by July 1 was received on Sept. 6, and its installation was seriously delayed during the fall by the non-arrival of condensing equipment purchased in May under a priority order. The first turbine of this size added was received in February and was expected to be in commission by April 1, but it was July 2 when the machine went into service. This was due chiefly to construction difficulties. In March a 3600-kw. turbine but four years old developed trouble, and repair parts were ordered on a high priority certificate. Delivery was expected by July 1. The material was actually received early in October. Meanwhile the unit was kept in operation only by great care, and was able to deliver but half its rated output, and with double its normal steam consumption.

Besides the loss of revenue and adverse effect on plant economy of many operating troubles, aggravated as they were by failure of manufacturers to make promised deliveries, the interruptions caused much unfriendly criticism of the company. Because of protracted deliveries the plant finally reached a point where only the day load could be satisfactorily handled, and in the peak hours it became necessary for a time to pull switches when the steam pressure got below normal, restoring connections after the normal pressure returned. The plant and the patrons of the railway were bearing burdens imposed by war conditions; but it would be hard to find a clearer case illustrating the close relationship between deliveries and service, or of the influence supplies of equipment can have on the operation of a road.

Brooklyn Must Purchase New Cars

Justice Benedict of the Supreme Court of Brooklyn on Dec. 5 handed down a decision granting a writ of peremptory mandamus ordering the Brooklyn Rapid Transit Company to purchase 250 new steel cars forthwith for its surface lines. Justice Benedict said that he would make the writ returnable on the first Monday in June. The decision involves an expenditure estimated at more than $2,000,000. It sustains an order made by the Public Service Commission for the First District to the company on Feb. 8, 1917. Following our entrance into the war the company insisted that it was impossible to secure the cars, as steel was needed for war work.

Supply Market Still in Unsettled Condition

While Present Buying Is Scarce, a Feeling of Quiet Optimism Prevails in the Industry

Since the signing of the armistice there seems to be a disposition all along the line among buyers to defer new commitments as far as possible. The general tendency is to strike a waiting attitude pending clearer views of future supplies and prices of materials. Lower prices seem plainly foreshadowed and uncertainty regarding the present unsetled state of the railways is not an insignificant element in the present hesitation.

In the electric railway trade, however, an underlying feeling of hope and optimism prevails. Quiet buying, though not in large quantity, has been steadily going on here and export business both for Europe and South America shows improvement. Mexico has also recently come into the market for trolley rails.

Equipment men all seem to be of the opinion that after three or four very lean years the electric railway situation is about due to get enough increases in fare to take care of financing new and absolutely necessary equipment and that by the spring new business along equipment lines will be brisk.

Special Rail Work Shows Little Activity

Present Market Conditions Quiet and Supplies Very Limited—Back to Normal in Four Months

The market for special rail work is at the present time almost at a standstill, although this is the season of the year when it is customary for the roads to place their orders for delivery in the spring. No work of this kind is attempted in the winter except in case of absolute necessity. Special rail producers report that as yet no orders have come into the market, but they are confidently looking forward to a greatly increased demand in April and May of next year.

The supplies of rail suitable for special work on hand are extremely limited, and in some cases where it was necessary substitute rail has been used. The producers state that stocks will be in normal condition as to volume in about four months. Prices on special rail work have shown advances of from 100 to 150 per cent during the past three years.

Market for Snow-Fighting Equipment Dull

Railways Apparently Waiting for First Storm—Sales of Car-Heating Equipment Improving

On account of the lateness of the season and almost daily predicted snow storms one might expect to find some active buying in the snow and sleet-fighting equipment market, but it is very quiet.

Railways seem to adopt the policy of waiting until the last minute before buying snow-fighting equipment, and then when the storm does come to telegraph the manufacturer to send on instantly so many hundred of this or that, and very often it is found the producer has not much in stock. Much better results and service would be forthcoming if these orders could be placed in advance of the season and to avoid emergency orders later.

Trolley car sleet wheel cutters and scrapers are in no demand, and one manufacturer stated that he had none in stock, another stated that he was carrying a limited supply against emergency which he would issue pro rata if the occasion demanded it.

Track brooms have, where made of rattan, advanced slightly in price; the demand is steady and supplies on hand normal. Switch cleaners, track scrapers and sanders are in normal demand and the supplies on hand are plentiful.

Electric car-heating apparatus is at this time in active demand and business is good, according to one of the largest manufacturers. Supplies on hand of most of the raw materials essential to the manufacture of heaters are good and deliveries can be made in three to six weeks. Here again the manufacturer states that if the railways would only place their orders in advance it would give the producer a chance to lay in the necessary supply of raw materials and he would gladly carry the product in stock until the specified date of delivery.

Prices of one line of heaters have advanced in the past eighteen months 110 per cent, 30 per cent of which has taken place in the last six months.

Coal Output Again on the Increase

Bituminous Production However Is Considerably Under Peak Reached in September

The record-breaking steady decline in the production of bituminous coal, from the high point of more than 13,000,000 tons a week, the last of September, to less than 10,000,000 tons, seven weeks later, came to an end the middle of November and in the week ended Nov. 23 production rose to nearly 11,000,000 tons, a gain of 12.5 per cent according to the regular report of the Geological Survey. The estimated production in the week of Nov. 23, 1918, was 10,931,000 tons, compared with 9,703,000 tons in the week of Nov. 14, and 11,187,000 tons, or 2.3 per cent less than in the corresponding week of 1917. The average daily output rose from 1,617,000 tons to 1,832,000 tons, but below the figure of 1,865,000 tons for the corresponding week of 1917.

The total production of bituminous coal and lignite, including coal coked, April 1 to Nov. 23, is estimated at nearly 400,000 net tons, a gain over the corresponding period of 1917 of 40,000,000 tons, or 10 per cent.

Reports of production and working time for the week of Nov. 16 show, for the first time this year, loss of production because of no market comparable to the loss because of transportation disability.

The transition in the comparatively short period of a few weeks, from a condition of car shortage to one of car surplus, is significant because indicative of the possibility of a reversal later, with a return of unfavorable conditions. This condition has been brought about by the accumulation of stocks, made possible by the heavy shipments during the past four months, the possession of which has taken the keen edge off the industrial demand, and by the fair weather for this time of the year that, while favoring transportation, decreases the consumption of coal.

The production of anthracite in the week ended Nov. 23 is estimated at 1,778,000 net tons, an increase compared with the week of Nov. 16 of 373,000 tons, or nearly 27 per cent, but 263,000 tons, or 13 per cent, below the corresponding period in 1917. The total production of anthracite, April 1 to date, is estimated at 65,358,000 net tons.

NEW YORK METAL MARKET PRICES

	Nov. 14	Dec. 5
Copper, ingots, cents per lb	26	26
Coppr wire base, cents per lb	28.75	28.75
Lead, cents per lb	8.05	7.05
Nickel, cents per lb	40	40
Spelter, cents per lb	8.65	8.75
Tin, cents per lb	74.50	72.50
Aluminum, 98 to 99 per cent., cents per lb.	†33.10	†33.10

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* No Straits offering. † Government price in 50-ton lots or more, f. o. b. plant.

OLD METAL PRICES—NEW YORK

	Nov. 14	Dec. 5
Heavy copper, cents per lb	22.50 to 23.00	21.00 to 21.50
Light copper, cents per lb	18.00 to 18.50	17.00 to 17.25
Red brass, cents per lb	22.00 to 23.00	21.00 to 21.50
Zinc, cents per lb	6.25 to 6.50	7.00 to 7.50
Yellow brass, cents per lb	14.00 to 15.00	13.00 to 13.50
Lead, heavy, cents per lb	7.25 to 7.50	5.75 to 6.00
Steel car axles, Chicago, per net ton	$41.52	$41.52
Old carwheels, Chicago, per gross ton	$29.00	$29.00
Steel rails (scrap), Chicago, per gross ton	$34.00	$34.00
Steel rails (relaying), Chicago, gross ton	$60.00	$60.00
Machine shop turnings, Chicago, net ton	$16.00 to $16.50	$16.00 to $16.50

ELECTRIC RAILWAY MATERIAL PRICES

	Nov. 14	Dec. 5
Rubber-covered wire base, New York, cents per lb	34	34
Weatherproof wire (100 lb. lots), cents per lb., New York	38.75 to 40.00	38.75 to 40.00
Weatherproof wire (100 lb. lots), cents per lb., Chicago	38.75 to 39.76	38.75 to 39.76
T rails (A. S. C. E. standard), per gross ton	$70.00 to $80.00	$70.00 to $80.00
T rails (A. S. C. E. standard), 100 to 500 ton lots, per gross ton	$67.50	$67.50
T rails (A. S. C. E. standard), 500 ton lots, per gross ton	$62.50	$62.50
T rail, high (Shanghai), cents per lb	4½	4½
Rails, girder (grooved), cents per lb	4½	4½
Wire nails, Pittsburgh, cents per lb	3½	3½
Railroad spikes, drive, Pittsburgh base, cebts per lb	4½	4½
Railroad spikes, screw, Pittsburgh base, cents per lb	8	8
Tie plates (flat type), cents per lb	*3¼	*3¼
Tie plates (brace type), cents per lb	*3¼	*3¼
Tie rods, Pittsburgh base, cents per lb	7	7
Fish plates, cents per lb	*3¼	*3¼
Angle plates, cents per lb	*3¼	*3¼
Angle bars, cents per lb	*3¼	*3¼
Rail bolts and nuts, Pittsburgh base, cents per lb	4.90	4.90
Steel bars, Pittsburgh, cents per lb	*2.90	*2.90
Sheet iron, black (24 gage), Pittsburgh, cents per lb	*5.00	*5.00
Sheet iron, galvanized (24 gage), Pittsburgh, cents per lb	*6.25	*6.25
Galvanized barbed wire, Pittsburgh, cents per lb	$4.35	*4.35
Galvanized wire, ordinary, Pittsburgh, cents per lb	*3.95	*3.95
Car window glass (single strength), first three brackets, A quality, New York, discount †	77%	77%
Car window glass (single strength, first three brackets, B quality), New York, discount	77%	77%
Car window glass (double strength, all sizes AA quality), New York discount	79%	79%
Waste, wool (according to grade), cents per lb	13 to 15	13 to 15
Waste cotton (100 lb. bale), cents per lb	12½ to 13	12½ to 13
Asphalt, hot (150 tons minimum) per ton delivered	$38.50	$38.50
Asphalt, cold (150 tons minimum, pkgs. weighed in, F. O. B. plant, Maurer, N. J.), per ton	$42.50	$42.50
Asphalt filler, per ton	$45.00	$45.00
Cement (carload lots), New York, per bbl	$3.20	$3.20
Cement (carload lots), Chicago, per bbl	$3.34	$3.34
Cement (carload lots), Seattle, per bbl	$3.68	$3.68
Linseed oil (raw, 5 bbl. lots), New York, per gal	$1.52	‡$1.63
Linseed oil (boiled, 5 bbl. lots), New York, per gal	†$1.54	‡$1.65
White lead (100 lb. keg), New York, cents per lb	14	14
Turpentine (bbl. lots), New York, cents per gal	64	64

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* Government price. † These prices are f. o. b. works, with boxing charges extra.

‡ Bid price, no quotation.

Franchises

Springfield, Mass.—The Springfield Street Railway has been granted an extension of time by the City Council of Springfield until Dec. 1, 1919, in which to construct its extension on upper Carew Street.

Columbus, Ohio—The East Linden Electric Railway has asked the City Council of Columbus for an extension of its franchise to Nov. 30, 1921. The company states that war conditions prevented construction work which would otherwise have been undertaken.

Hannibal, Mo.—Harry T. Lynch, Independence, Iowa, has asked the City Council of Hannibal for a franchise to construct a line to connect with the present tracks of the Hannibal Railway & Electric Company on Main Street near Lyon Street and to use the tracks of that company to Hueston Street, thence to construct its own line out West Broadway to Lefering Avenue, where it will again connect with the tracks of the Hannibal Railway & Electric Company and use the tracks of that road to its terminus, thence to construct a line to the city limits at a point known as the Captain Chamberlain place. Mr. Lynch is represented by M. R. Robinson, attorney, Lewiston, Ill.

Track and Roadway

Los Angeles (Cal.) Railway.—Work will be begun at once by the Los Angeles Railway on the construction of an extension on Eleventh Street to the Los Angeles High School.

San Diego (Cal.) Electric Railway.—Work has recently been begun by the San Diego Electric Railway on the construction of an extension to the local shipbuilding plant. It is understood that the government will finance the work, which is estimated to cost $50,000.

Ocean Shore Railroad, San Francisco, Cal.—New track will be built by the Ocean Shore Railroad on Howard Street.

Shore Line Electric Railway, Norwich, Conn.—Permission has been received by the Shore Line Electric Railway from the Public Utilities Commission of Connecticut for the construction of a short section of track in New London between Jefferson Avenue and Bank Street.

Washington, D. C.—The Public Utility Commission of the District of Columbia has authorized the Washington Railway & Electric Company to construct a double-track connection on Seventeenth Street, Northwest, between its tracks at Seventeenth and H Streets and those of the Capital Traction Company at Seventeenth Street and Pennsylvania Avenue, and in this connection has further authorized the company to issue $150,000 of bonds and to pledge the bonds as collateral for a loan of $125,000 from the United States Housing Corporation, the latter sum being the estimated present cost of the track extension.

Kansas City (Mo.) Railways.—The Kansas City Railways is considering repairs to the Inter-City Viaduct estimated to cost $18,000.

Somerville, N. J.—A new trolley line is proposed to extend from Somerville to Bernardsville, to develop the extensive holdings of the Schwartz-Hermann Steel Works north of Somerville and to open up the country further north. Louis Schwartz, president of the steel company, it is said, is interested in the construction of the line and is willing to capitalize the enterprise if a charter can be secured. Senator Clarence E. Case is representing the Schwartz interests and Joshua Doughty, Jr., has been consulted as an engineer.

Interborough Rapid Transit Company, New York, N. Y.—The Lexington Avenue subway line of the Interborough Rapid Transit Company from 188th Street and Third Avenue along 138th Street and northward on the Southern Boulevard to Hunts Point Road will be opened about the first of the year.

New York (N. Y.) Municipal Railway.—A contract has been awarded by the New York Municipal Railway to the General Railway Signal Company, Rochester, N. Y., for the installation of alternating-current block signals and interlocking on its line under ground; to be built in Sixtieth Street, New York City. This line extends under the East River to the Queensboro Plaza, Long Island City.

Sandusky, Ohio.—It is reported that a bridge across Sandusky Bay is to be one of the improvements for early construction. Such a bridge would be used for a public roadway and to carry electric cars. The Lake Shore Electric line between Cleveland and Toledo would thus be shortened 14 miles.

Ardmore, Okla.—It is reported that plans for the construction of an interurban electric railway from Ardmore to Oklahoma City, via Healdton, Fox Kilgore oil fields and Lindsay, about 110 miles, are under consideration by I. M. Putnam, general manager of the Ardmore Street Railway, and associates. A branch to Duncan is also proposed and it is contemplated to build an eastern extension to either Sherman or Denison, Tex.

Peterboro (Ont.) Street Railway.—An extension will be built by the Peterboro Street Railway from Charlotte to Patterson Street.

Seattle, Wash.—Thomas F. Murphine, superintendent of Public Utilities, has suggested the use of the city's Lake Burien street car line from Spokane Street to the Seattle North Pacific Shipbuilding Company's yard, as a means of solving the transportation question raised by the shipyard in a petition to the City Council. The company complains that transportation facilities to and from the plant are intolerable, and has asked for special service during the rush hour.

Power Houses, Shops and Buildings

Alabama Power Company, Anniston, Ala.—The administration building of the Alabama Power Company at Attalla was recently destroyed by fire, causing a loss of about $30,000.

Pacific Electric Railway, Los Angeles, Cal.—Plans have been prepared by the Pacific Electric Railway for the construction of a one-story brick and concrete substation, about 35 ft. x 50 ft., to be located at Seventh Street and Maple Avenue.

Southern Pacific Company, Los Angeles, Cal.—It is reported that extensive car and locomotive shops will be maintained at Sacramento by the Southern Pacific Company. The foundry will be the first building erected, and work will be begun as soon as the low land by the river is filled in.

Union Street Railway, New Bedford, Mass.—The new power plant of the Union Street Railway at Parker's Wharf, located directly south of the present station, is nearing completion. The new plant will eventually stand alone, although the old station will remain in use until such time as the new plant can take over the whole load. The equipment of the new station includes one 2000-kw. turbo-generator, one 1500-kw. turbo-generator and one 500-kw. turbo-generator, condensers, four 500-hp. boilers and other auxiliary apparatus.

Adirondack Electric Power Corporation, Glens Falls, N. Y.—A petition has been filed with the Public Service Commission for the Second District of New York by the Adirondack Electric Power Corporation asking for its approval of the operation of a high-tension line between its substation at Amsterdam and one between Little Falls and Herkimer. Franchises have been received from the towns of Amsterdam, Johnstown, Ephratah, Oppenheim, Manheim and Little Falls. The line is necessary to supply additional power to the Utica lines of the New York State Railways.

Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.—A new power transmission line from the Lowellville generating station of the Mahoning & Shenango Railway & Light Company to the mills of the Brier Hill Steel Company has recently been placed in operation by the company. It is built on private right-of-way and constitutes one of the most important industrial developments of the Mahoning Valley during the war period. The line will be of permanent industrial value to the district and will immediately afford improvement of electrical transmission in the Youngstown-Girard-Niles territory.

Washington Water Power Company, Spokane, Wash.—The expenditure of $3,000,000 for the construction of a Niagara power plant to place in service all the water of the Spokane River is being considered by the Washington Water Power Company. The plant will have a capacity of 40,000 hp., to be utilized for manufacturing purposes.

Rolling Stock

Toronto, (Ont.) Railway, it is understood, is extensively remodeling and repairing some of its older cars. It is also reported that the company is in the market for new cars.

Richmond Light & Railroad Company, New Brighton, S. I., N. Y., as reported in the ELECTRIC RAILWAY JOURNAL of Aug. 3, 1918, has not yet received the twenty new cars due Oct. 15, from the Cincinnati Car Company. This order was placed through the United States Shipping Board Emergency Fleet Corporation but has been held up for some reason and the company now states it does not know when delivery will be made.

Trade Notes

Chicago Pneumatic Tool Company announces the appointment of L. C. Sprague as assistant secretary of the company, with headquarters at 52 Vanderbilt Avenue, New York City.

Quasi-Arc Weldtrode Company, formerly of 107-109 Lafayette Street, New York, announces that owing to the necessity for largely increased space it has moved to its new offices, factory and laboratories at Atlantic Avenue and Warwick Street, Brooklyn, N. Y.

Metal & Thermit Corporation has announced that in order to take care of its rapidly growing business in Canada larger shop and storage facilities than were available at 103 Richman Street, West Toronto, are necessary. The new location is 15 Emily Street, Toronto.

L. E. Schumacher, who for the past eight years has been chief inspector of the Westinghouse Electric & Manufacturing Company at East Pittsburgh, Pa., has been promoted to the position of works manager of the Krantz Manufacturing Company of Brooklyn, N. Y., the latest subsidiary of the former company.

H. W. Johns-Manville Company, New York, announces the death of Charles F. Simms, for many years manager of its Omaha office. He is succeeded by S. E. Cole, who has been active in various fields of Johns-Manville endeavor, and lately has been acting as the company's "architects' representative" throughout the Middle West.

C. B. Hughes, who has been connected with the Minerallac Electric Company, Chicago, for six and one-half years, has been placed in charge of the sales of the insulating varnishes and wood-preservative oils of the Sherwin-Williams Company in the Middle Western district, with headquarters at Chicago. Mr. Hughes was sales manager of the Minerallac Electric Company.

New Advertising Literature

Electrical Engineers' Equipment Company, Chicago, Ill.: Leaflet on sphere-gap lightning arresters.

Copper Engineering & Equipment Company, Worcester, Mass.: New catalog containing figures and tables on forced-draft apparatus.

Chaplin Fulton Manufacturing Company, Pittsburgh, Pa.: Catalog describing the company's combined line of Vigilant feed-water regulators and steam specialties.

Dolph Manufacturing Corporation, New York City: A pamphlet containing a rather compact statement on insulation maintenance, showing how proper attention to insulation will keep motors out of the repair shop.

Hess-Bright Manufacturing Company, Philadelphia, Pa.: A 103-page board-bound book entitled "Hess-Bright Ball Bearings." The uses of these bearings are well illustrated, and a number of valuable tables are given on the proper bearings for different loads and speeds.

Lagonda Manufacturing Company, Springfield, Ohio: A twelve page folder describing multiple-filtration feed-water filter and grease extractor, with photos of various power-plant installations. A general catalog, X-4, giving full descriptions of the company's tube cleaners, accessories and other boiler room specialties, will be furnished upon request.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

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Don't Stop On the Skip Stop

THE skip stop, one of the great benefits produced by the war, seems threatened in many places. We told in last week's issue of the systematic plan of public education on the merits of skipping stops being conducted in Philadelphia because of some objections raised. Similar opposition to the skip stop has been reported this past week in Atlanta, Ga.; Alton, Quincy and Peoria, Ill.; Knoxville, Tenn.; Minneapolis, Minn; Springfield and Joplin, Mo., and other places. The claim is being made in those cities that now the war is over there is no need to save coal; hence the skip stop might just as well be discontinued. But this claim disregards every advantage of the skip stop except that of saving fuel. Actually, that is one of the least of the advantages. The main benefit is that there is increase in schedule speed without any increase in maximum speed and real rapid transit is given. In fact, skip stops were in use in a number of cities, notably Cleveland, long before there was any call for saving coal because of the war. There are always some who prefer old methods to new, simply because they are old, and the history of every reform is that it encounters opposition. We do not believe that any city which has given the skip stop a fair trial would go back to the old "stop-at-every-corner" plan if a census could be taken of all users. But in every city where the plan is followed there will always be some who will be offended because the cars do not stop at their corner, irrespective of the effect on the service if every corner is made a stopping place. In consequence some complaint must be expected. It is necessary to show the public that good service is possible only when the interests of all are broadly considered. A comparison of the distances between stopping points on different systems shows that popular acceptance of these distances is largely a matter of education. Now is the time to establish them on a scientific basis.

RESOLUTION

on Public Utilities adopted at the Conference of the United States Chamber of Commerce War Service Committees at Atlantic City last week

Public utilities have faced difficult problems, which have been accentuated by conditions arising out of war. The development and efficiency of such a utility as local transportation has immediate importance for every community. It is recommended that the Chamber of Commerce of the United States should appoint a committee to investigate and study the question of local transportation as it relates to the control of rates and service, franchises, taxes, the attraction of capital into the business, and such other questions as the committee may find pertinent. Such a committee should report its recommendations to the board of directors of the National Chamber, and the board should deal with them in accordance with the established procedure of the Chamber.

This resolution was suggested by the Committee on Readjustment of the American Electric Railway Association.

Automatic Substation Making Progress Step by Step

THE automatic substation is one of the few elements of the electric railway power system which is at present in a condition of rapid development. While the war has put the quietus on construction for the moment, the effect is only transitory because the forces which acted to bring the "automatic" into existence a few years ago are now more potent than ever. We refer primarily to labor scarcity and consequent high price. Even now, in spite of adverse circumstances, a great deal is being done to perfect and extend the scope of this useful device. One of the latest to be completed is the Rhode Island Company's substation at Oakland. It is the most ambitious one yet, in that it contains two units, either of which can take the bulk of the load, the other taking the fluctuations. Moreover, the design of this station is the result of an attempt to standardize automatic substation units generally for this property. In other words, it is part of a comprehensive power distribution scheme for the whole system. For this reason a leading place is given in this issue to an article on the Oakland plant by Walter C. Slade, superintendent of power and lines of the company. This article, like an earlier one by the same writer, is the outgrowth of a lecture delivered last spring before the Rhode Island Company section of the American Electric Railway Association. Mr. Slade then attempted to make the general scheme clear to the laymen present, and also to get them to visualize the operation of the several relays, switches, controllers, etc., which go to make up the control equipment. The plan followed in the lecture has been carried farther in the present article, and particular attention is directed to the way in which the important parts of the control have been photographed and labelled so as to make the wiring diagram more intelligible.

Neither Mr. Slade nor anyone else can make the automatic substation diagram so simple that it can be comprehended without a mental effort. He has, however, provided the means for minimizing this effort.

More Common Sense Needed in Buffalo

THE first default in bond interest directly due to an award of the National War Labor Board is reported from Buffalo, where the International Railway Company recently was compelled to pass its November installment. Thus the people of Buffalo have brought home to them a serious development of the fare situation, which may be traced to their unfavorable vote on the proposed rate increase in the referendum held some time ago.

Buffalo is not very different from any other large city, and the outcome there is alarming because it points to what one may look for in scores of other places. The International Railway Company was in need of more revenue before the War Labor Board added to its difficulties. Wages had to be advanced under that award, and when the people were asked to sanction a fare increase which had been approved by the City Council they refused to do so. Other remedies were then discussed, but according to the latest reports it will be many months before proper relief can be given.

Meanwhile one does not have to look far to see prospects of a receivership, with a heavy losss to investors and a period of inefficient service. The great need in Buffalo, as in many other places, seems to be for more common sense and less politics. The sooner the American people consider the utility problem without prejudice, the more quickly will conditions be adjusted in their real interest as well as in behalf of the long-suffering companies.

Poor Local Transportation Bad Advertisement for Any City

A GREAT deal has been said in the past by boomers for Buffalo about its advantages as a site for large manufacturing and distributing establishments. The advantages claimed have been that the city has cheap power and also excellent lake and rail transportation facilities. Both of these are good in their way, but there is another factor which those who contemplate the erection of a large industrial plant in a city are also sure to consider most carefully, especially where the industry which they propose to conduct is on the outskirts of the city. This is the quality of the local transportation facilities. If these are poor and workmen lose time in getting to or from their work, it is a factor which may settle the question of the erection of a plant in any particular city.

There is another way in which the financial condition of the local electric railway has a direct bearing upon the manufacturing prosperity of any city. The cars of the local traction property are the most conspicuous objects on its streets. If they are well painted and look up to date with the track and overhead system well maintained, they give an air of prosperity to a town as well as an evidence of broadminded treatment of invested capital there which nothing else will do. But if the contrary is the case, especially if the railway is known to be in bad condition because the citizens opposed a reasonable increase in fare, an unfavorable opinion of the town is apt to be raised. The needs of the electric railway for more liberal treatment have now been so widely heralded and so many cities have granted increases that failure so to act in the case of any city is noticeable. It is true that many railway companies have not all of the increase in fare which they need, but those communities which are showing a willingness to co-operate with the public utilities in working out their problems are certainly establishing a reputation for broad-mindedness and liberality when compared with those which take the opposite course.

Commissions Should Tell the Public Its Responsibility

VARIOUS commissioners in these days are speaking of a maximum price which the public will pay for electric railway service. This is a general observation which might be seriously misinterpreted by the public unless properly amplified.

The maximum fare which the public should be willing to pay—and the minimum fare which the railway should receive—is that one which through the combination of all rate-making factors is decided by the commission to be reasonable. Presumably what the commissioners intend to bring out by their references to the maximum price which the public is willing to pay is the fact that as fares are increased electric railway travel is reduced on account of more pedestrian travel, greater use of other vehicles and even a larger amount of staying at home. But what the car riders might infer is that the commissioners, in noting the reduction in travel, are thereby indorsing the idea, which many people have, that if enough of them think that a former fare is adequate, it should remain unchanged.

It would help greatly if the commissions should try to inhibit such a thought in the public mind by repeatedly giving voice to the facts, just as the War Labor Board has done in its wage decisions, that the cost of electric railway operation has greatly increased during the past few years and that it must be paid either through fares or through fares and taxes, if the service is to be maintained, and finally that if too many people stop riding at the increased fare, the enterprise will have to be abandoned altogether.

For such a publicity platform we commend for consideration the following paragraphs which the War Labor Board saw fit to use in connection with the recent Charleston (S. C.) and Lewiston, Augusta & Waterville cases respectively:

> If the public desires to retain its electric railways to a reasonable degree of efficiency, it must expect to pay more for the service rendered.
>
> We desire to point out to the riding public the absolute necessity of continuing the patronage of the past, if the company is to continue to give any service upon its lines. A public service corporation must be supported by the public, and if that support is withdrawn the company must of necessity either cut down its service radically or else cease its operations altogether.

The public, we believe, is willing to pay for what it gets when it knows that the price is fair. The work of education, however, will be handicapped if the public gets into its head the notion that any particular fare marks the limit of reasonableness in all cases.

More Attention Should Be Concentrated on Ballasting of Track

THE subject of ballast has been receiving a great deal of attention of late on the part of steam railroad engineers in connection with their efforts to make the tracks withstand the increasing loads. The Pennsylvania Railroad engineers, together with the committee on roadway and the committee on stresses in track of the American Railway Engineering Association, have conducted investigations of the subject which have developed a vast amount of authoritative information. They had to start from the beginning and develop methods and apparatus for tests, while many special pieces of track were constructed and the performance thereof carefully noted.

Intimately related to that of the ballast is the question of the bearing power of soils in the roadbed upon which the ballast rests. It is but a short time since a national classification and nomenclature of soils was presented by the United States Department of Agriculture in Bulletin No. 84. Meanwhile very few data have been available as to their bearing power under the conditions imposed in roadbed service where the question involved is in relation to action of soils immediately at or slightly below the surface, especially when alternately wet and dry. Once the bearing power of soils of various classes is determined for these conditions, there still remains the question of the relative ability of the various materials used for ballast, to transmit the loads to the soils. In addition to this there is the question of size and spacing of ties in relation to their ability to transmit the loads to the ballast. The action of rails as beams and the influence of the loads themselves upon all these variables are other points which must be taken into consideration.

Ballast has to some extent been considered a rather expensive luxury, a sort of necessary evil as it were, but the more the matter is studied the more definite becomes the conviction that, on the other hand, the lack of a sufficient quantity and quality of ballast is a much more expensive evil. In fact, within reason, it is becoming almost axiomatic that the greater the depth of the ballast, the less the cost of maintenance of track will be. It will be seen, therefore, that the forthcoming report of the committee on stresses in track is eagerly awaited by those who are interested in track construction, as it is expected that considerable valuable data will come to hand.

The early electric railways gave very little thought to the subject, and generally failed to benefit from the experience of their steam road brethren. As these roads increased in importance, however, they commenced to take pattern after them, and we now have plenty of evidence that the electric railway roadbed and ballast sections are tending to equal those of the steam roads. In 1916, the way committee of the American Electric Railway Engineering Association presented a report on ballast, wherein conclusions were given which called for a minimum depth of 8 in. under the ties for crushed stone or washed gravel ballast for main-line tracks and a minimum of 12 in. for bank run gravel and cinders. It is thought that these depths are none too great and that perhaps it may soon be advisable to consider whether they should be increased. Meanwhile, the committee did not present any conclusions in regard to roadbed sections, which are really quite as important as ballast depths. It is suggested that the committee on subjects should assign the subject of roadbed sections to the way committee for early consideration.

Mr. Walsh on the Future of Wages

THE Hon. Frank P. Walsh, recently joint chairman of the National War Labor Board, is entitled to his opinion—expressed a few days ago in a public statement—that labor must not be expected to return to the pre-war basis of wages and working hours. Neither should anyone object to his right to predict that there will be no return to the pre-war level of costs of necessities within five years at least.

As labor's representative in the joint chairmanship of this important board, Mr. Walsh might have been expected to speak for the maintenance of high wages for the working man. Employers with the proper public spirit undoubtedly will be glad to indorse this sentiment, with the proviso that means are at hand to make possible the continuance of a high standard of living for the laborer. But no industry, perhaps, will be so handicapped as the electric railways in meeting the standard of 72½ cents an hour, based on an eight hour day, which Mr. Walsh believes to be a satisfactory wage minimum.

Mr. Walsh was speaking of general industry, not of electric railway conditions. If he had had the latter in mind he would have modified his reference to the eight-hour day because of the fact recognized in Mr. Walsh's own electric railway decisions that no one has yet been able to devise operating schedules in which an eight-hour shift can be utilized economically to meet the peak-load requirements. Therefore, desirable as an eight-hour working day may be in other industries from a humanitarian standpoint, it cannot be generally adopted by these public utilities without adding a prohibitive burden to the cost of hauling passengers.

Assuming, then, that organized labor might be satisfied with a ten-hour day at 58 cents an hour to give the equivalent of 72½ cents for eight hours, the question arises as to how the average electric railway could pay even such a wage. In the past few years this item of operating expense has increased for the average company from 26 to 40 per cent of the transportation revenue.

This of course applies to the companies which have not been allowed to increase their revenues by the collection of higher fares. In a lesser degree it will apply to many of the companies which have been so favored. Therefore, unless the public authorities take some action looking toward higher receipts or lower expenses it will not be practicable to continue paying wages even at the maximum of 48 cents an hour which the War Labor Board has established during recent months for many of the larger utility companies' platform men.

Mr. Walsh may be right in his prediction of continued high wages and high cost of necessities, but both of these matters will be settled in the end by the law of supply and demand. Labor will have the satisfaction, however, of knowing that the same economic factors which would tend to reduce wages would tend to reduce also the cost of living, so that the relation between the two will be largely unchanged.

A Two-Unit Automatic Substation

The Rhode Island Company's Substation at Oakland Illustrates the Latest Practice in This Important Field—Author Goes Into Economics of Automatic Substation Application

BY WALTER C. SLADE
Superintendent of Power and Lines The Rhode Island Company,
Providence, R. I.

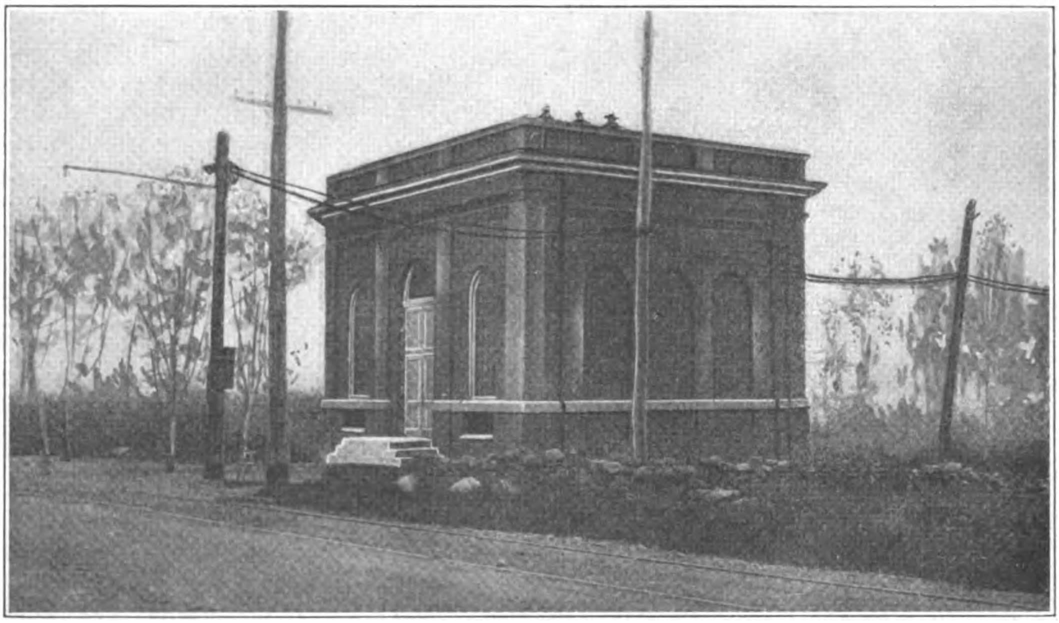


FIG. 1—TYPE OF AUTOMATIC SUBSTATION BUILDINGS—HARMONY SUBSTATION

THIS article describes recent developments in the automatic control of railway substation equipment on the system of The Rhode Island Company, and is devoted mainly to an account of the first two-unit rotary converter automatic station wherein two machines are arranged to run singly or in parallel as required by load conditions. This two-unit station, at Oakland, R. I., employs one of the two systems of automatic control mentioned in an article in the ELECTRIC RAILWAY JOURNAL of Oct. 12, 1918.

LOCATION OF THE TWO AUTOMATIC SUBSTATIONS IN THE GENERAL DISTIBUTION SYSTEM

Thus far two automatic substations have been built and put into operation on this property. One is located at Harmony on the Chepachet line and is supplied with 60-cycle energy at 11,000 volts, purchased from the Narragansett Electric Lighting Company. This suburban line was formerly fed from a booster circuit supplied from the Olneyville substation of The Rhode Island Company.

Due to the distance of the site of the Harmony automatic station from the Olneyville substation, and further due to the small capacity required, it was determined that the fixed and maintenance charges on an extension of the 25-cycle transmission system to Harmony were so great that 60-cycle energy could be purchased at Harmony from the central station more cheaply than could the 25-cycle energy be delivered at the same point. The station would have been the only load on the 25-cycle extension and it is but part of the load on the 60-cycle circuit. The central station power was cheaper even though the rate was based on a service charge plus an energy charge, a condition which counteracted in part any saving in power bills, although there was an actual saving in energy possible, due to automatic shutdowns.

The substation building is identical with the two-unit building at Oakland, the second automatic substation referred to, but contains only one 300-kw., 600-volt d.c. rotary converter at present. The booster is still retained and can be substituted at any time for the substation, although to the detriment of service on the road as the end of the line is nearly 16 miles distant.

The Oakland station is on the suburban line to Pascoag, which extends westerly about 14.4 miles from Woonsocket. The substation is 4.25 miles from the end of the line by the feeder circuit (5.4 miles by the track) and 4.75 miles from Slatersville, which is near the neutral point between the substation and Woonsocket power supplies. The road has many curves and grades, and some sharp curves on grades. A booster in the Woonsocket power station of the Blackstone Valley Gas & Electric Company formerly supplied energy for the road, and an excessive quantity of feeder copper was used between Oakland and Woonsocket. Now energy is purchased at the switchboard in Woonsocket (in accordance with the terms of an old contract) and is transmitted at 25 cycles and 13,200 volts over transmission wire installed and owned by The Rhode Island Company.

The building contains two 300-kw., 600-volt d.c. rotary converters. One machine is required practically continuously during an eighteen-hour day, but the other machine is called upon to operate only at the morning and evening peaks for short periods. However on Saturday afternoons and Sundays, when the riding from the mill towns through which the road passes is much heavier, both machines operate for long periods continuously. A compromise was necessary in selecting the capacities of the machines. One machine serves as a stand-by at least 75 per cent of the time and, with certain modifications in schedule, the road could be kept in operation all of the time should any accident occur to one of the units. At the same time the average efficiency of the rotary converter is greater than the efficiency of a somewhat larger machine would have been.

The locations of the Oakland and Harmony automatic substations, with reference to the various suburban lines and their sources of energy supply in northern Rhode Island, are shown in detail on the accompanying map. Possible locations of additional automatic substations are also indicated. When market conditions are favorable for further developments, it has been considered possible that the city of Pawtucket, shown on the map, which is now served by a 3000-kw. manually operated substation, may be served to greater advantage by several automatic substations. Also at a later date the construction of an automatic substation in the city of Woonsocket would work in with the general scheme.

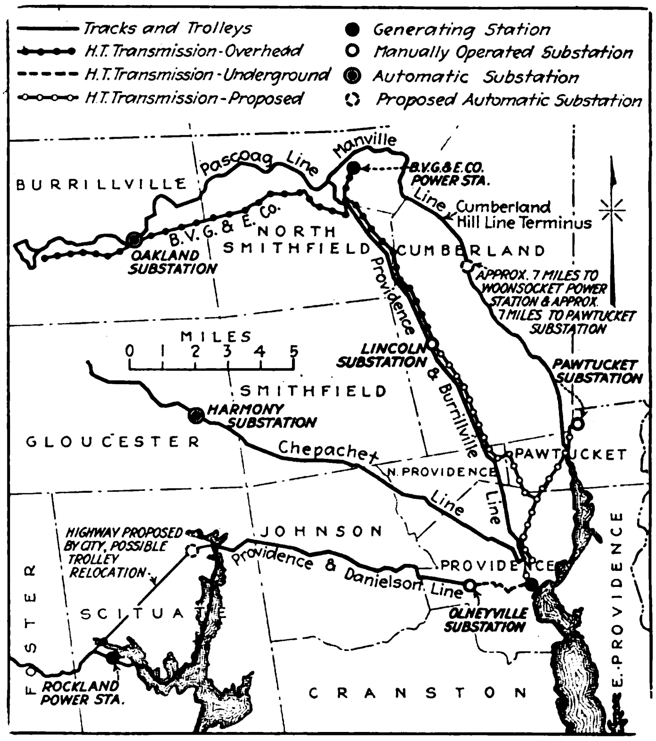
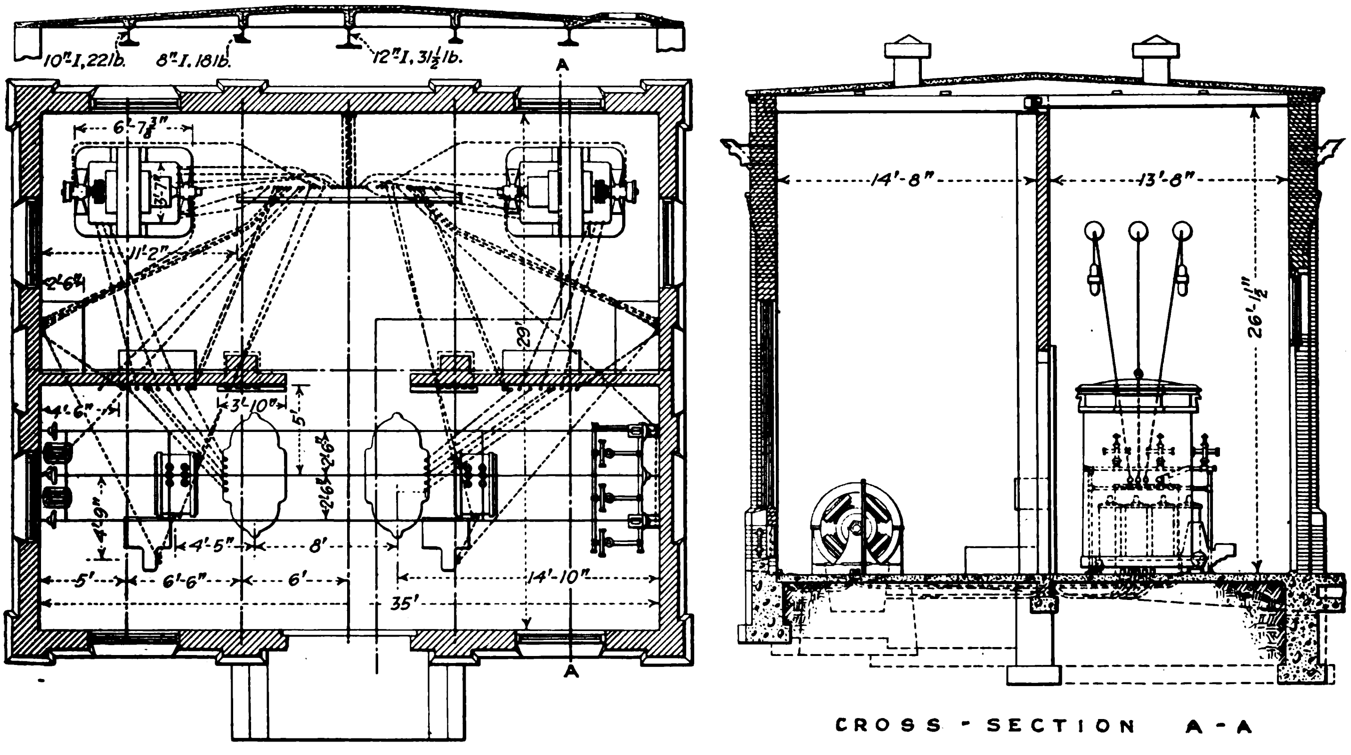

Tracks and Trolleys
H.T. Transmission - Overhead
H.T. Transmission - Underground
H.T. Transmission - Proposed
Generating Station
Manually Operated Substation
Automatic Substation
Proposed Automatic Substation
BURRILLVILLE
Pascoag Line
Manville
B.V.G.&E.CO. POWER STA.
Cumberland Hill Line Terminus
Line
B.V.G.& E. Co.
NORTH SMITHFIELD
OAKLAND SUBSTATION
CUMBERLAND
APPROX. 7 MILES TO WOONSOCKET POWER STATION & APPROX. 7 MILES TO PAWTUCKET SUBSTATION
MILES
0 1 2 3 4 5
Providence
LINCOLN SUBSTATION
Burrillville Line
PAWTUCKET SUBSTATION
SMITHFIELD
HARMONY SUBSTATION
GLOUCESTER
Chepachet
N. PROVIDENCE
PAWTUCKET
Line
JOHNSON
HIGHWAY PROPOSED BY CITY, POSSIBLE TROLLEY RELOCATION
Providence & Danielson Line
PROVIDENCE
OLNEYVILLE SUBSTATION
FOSTER
SCITUATE
ROCKLAND POWER STA.
CRANSTON
E. PROVIDENCE

FIG. 2—MAP SHOWING SUBURBAN TROLLEY ROADS AND POWER SUPPLY IN NORTHERN RHODE ISLAND

Within a few years it will be necessary to dismantle the Rockland power station which serves the Providence and Danielson trolley line. This will be done when the new reservoir of the Providence water supply, which is outlined on the map and which will inundate a considerable portion of the trolley road, requiring its relocation, has been completed. If this road is then served by one or two automatic substations, a single


10" I, 22 lb.
8" I, 18 lb.
12" I, 31½ lb.
A
6'-7⅞"
3'-7"
11'-2"
2'-6¾"
29'
4'-6"
3'-10"
5'
2'-6"
2'-6"
4'-9"
4'-5"
8'
5'
6'-6"
6'
14'-10"
35'
A
14'-8"
13'-8"
26'-1½"

FLOOR PLAN

CROSS-SECTION A-A

FIG. 3—PLAN AND CROSS-SECTION OF BUILDING—OAKLAND SUBSTATION

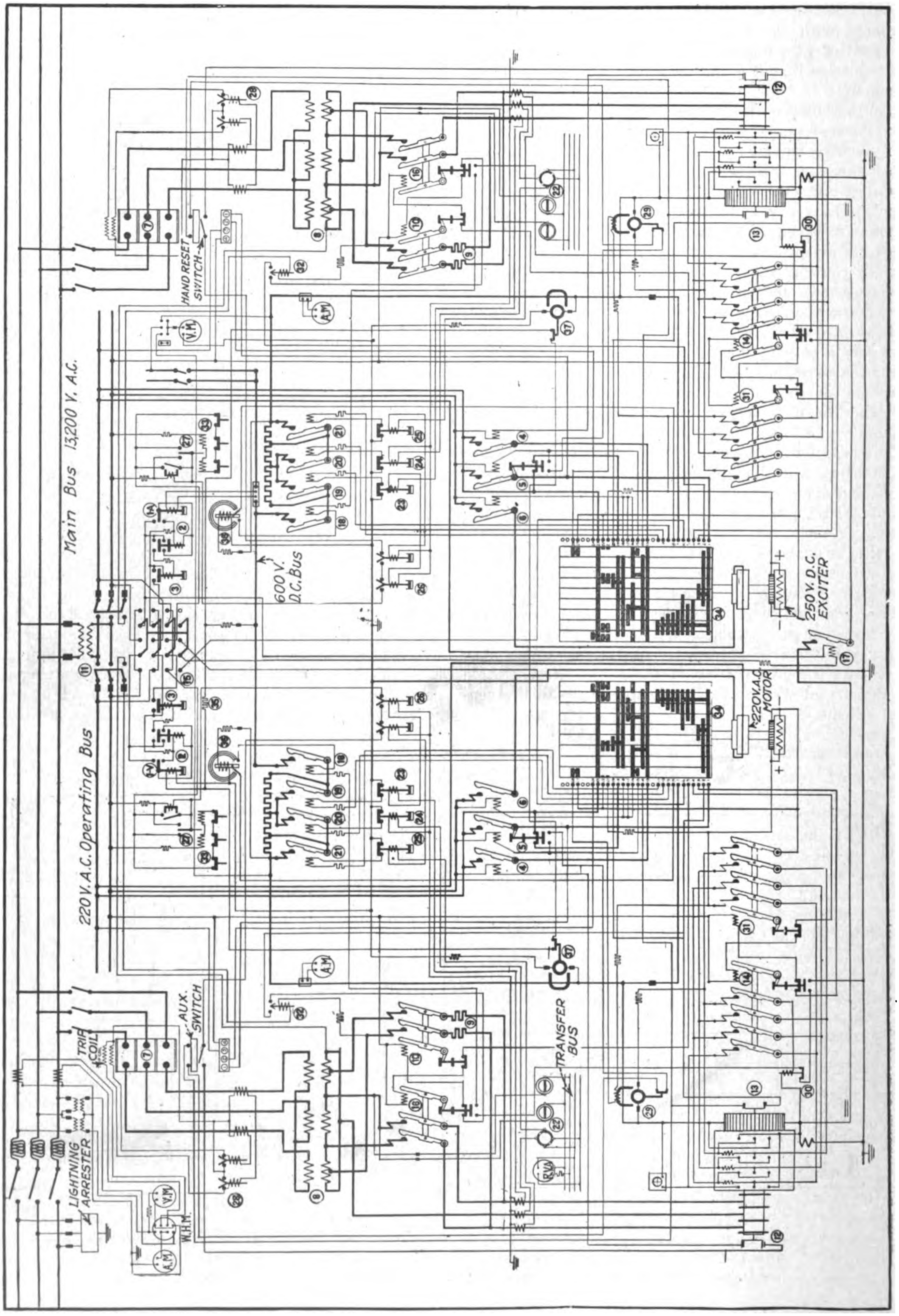

Main Bus 13,200 V. A.C.
220 V. A.C. Operating Bus
600 V. D.C. Bus
HAND RESET SWITCH
AUX. SWITCH
TRIP COIL
LIGHTNING ARRESTER
W.H.M.
A.M.
V.M.
TRANSFER BUS
250 V. D.C. EXCITER
220 V. A.C. MOTOR
+
−
1A
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
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FIG. 4—WIRING DIAGRAM FOR OAKLAND SUBSTATION

inspector in caring for these stations with time for other duties, will be able to replace seven men now employed at the power station.

WHY AUTOMATIC CONTROL WAS ADOPTED FOR OAKLAND AND HARMONY

The Oakland and Harmony substations had to be built to meet the demands of increased and adequate transportation service. The construction of the former allowed about 186,000 lb. of copper in the form of feeder wire to be removed. Nearly 20 miles of insulated 500,000-circ.mil wire in excellent condition became available, and already a part of this has been sold for use elsewhere at a price much above the scrap value. Judging from sales already made, including sales of wire for scrap only, it now appears that a net credit, depending on the market conditions, of from $42,000 to $48,000 should be realized. No wire was removed on the Harmony line. However, when the booster is not used, about 5 miles of 500,000-circ.-mil feeder is now available for increasing the capacity of the distribution to a section where the voltage was low at times.

Automatic control was adopted mainly because of assured saving in operating labor. Incidentally a small amount of saving in the power bill for the Harmony station was possible. The fact that the two substation sites are only 9½ miles apart by State highway (5¾ miles by air line) made it possible to treat the apparently independent developments as a single one in regard to inspection, labor and maintenance expense. Each station stands in an isolated position with relation to both Providence and Woonsocket. Taken together, the inspection required by the three equipments is sufficient to justify keeping an inspector in the vicinity of the stations continuously. As the equipments in the group are relatively close together, the inspector could take care of an additional station if not too distant. He is provided with a Ford automobile for traveling between the two stations for his daily inspection duties.

The original estimates indicated that an annual saving in labor of inspection expense over the labor of substation operators required for manual operation would have been slightly over $3,000. This saving was, of course, to be offset materially by the fixed charges on and the cost of operating and maintaining the automobile; also it was decreased by the fixed charges and the cost of maintaining that part of the equipment in the two stations additional to the equipment that would have been required for purely manually operated stations. The automobile cost was taken at $600 annually, and $1,800 was assumed for fixed charges and maintenance of the purely automatic part of the equipments.

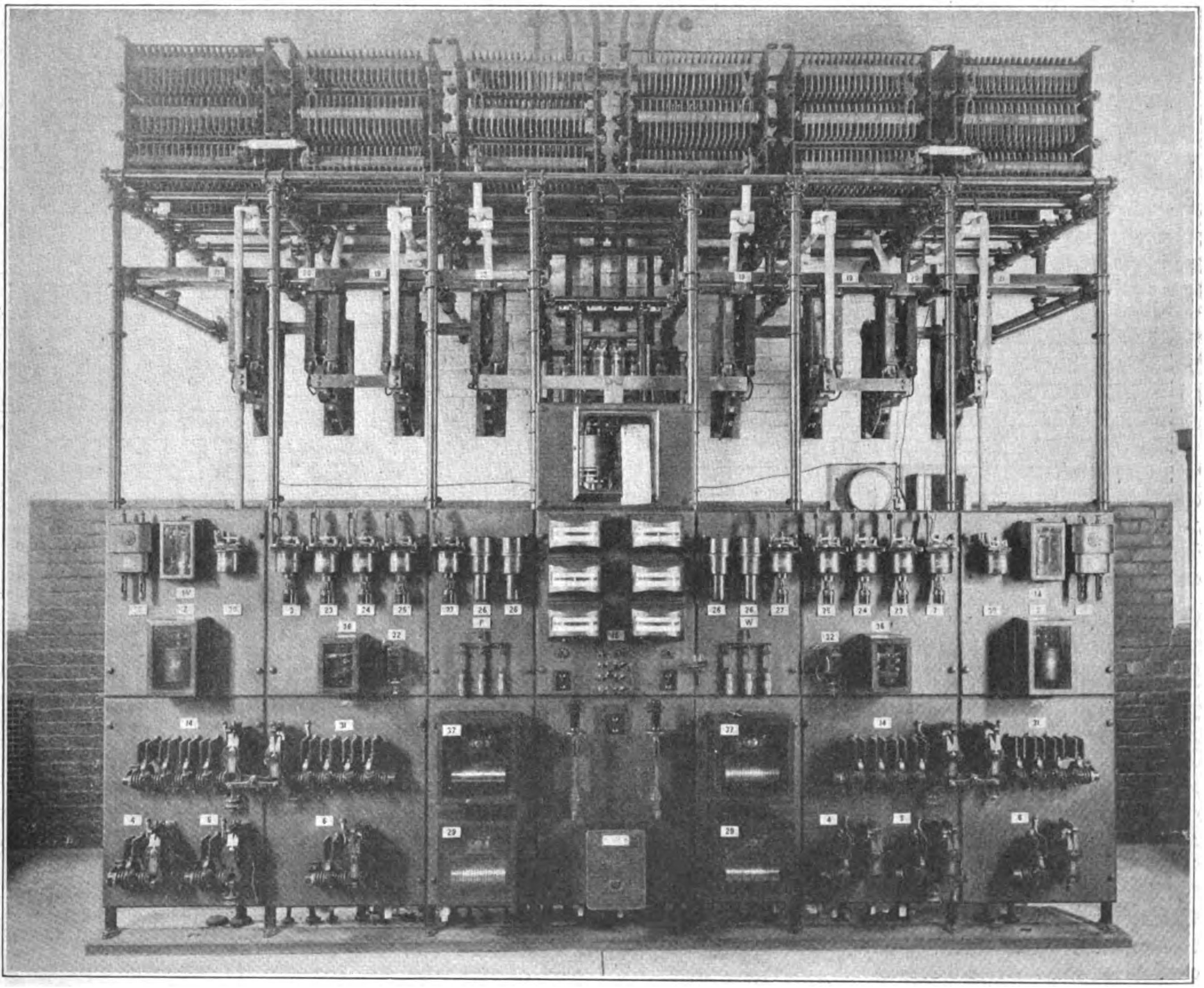


FIG. 5—SWITCHBOARD FOR TWO UNITS IN OAKLAND SUBSTATION

The total of these costs, $2,400, would allow at least a net saving of $600 per year through the automatic operation of the two stations. As it turned out, however, considerably increased wages are being paid substation operators at present on the basis of an award by the National War Labor Board. The inspector now receives $35.70 per week. The payroll for the operators required for manual operation would have called for a total expenditure of about $117.70 per week. Two operators at Oakland and one at Harmony would have been required. The saving in labor alone at present is therefore estimated at about $4,264 per year, and the net saving is correspondingly increased to roughly $1,800 per year.

The figures given do not, as stated, include $200 or $300 of expense that will be saved in power through automatic operation of the Harmony substation. At present the Harmony line is being operated on a two-hour schedule part of the day, which was not previously anticipated and which is accordingly being taken advantage of. Thus the total shutdown time will equal 35 to 40 per cent of the time that the station would have been in service if manually operated. As the two stations have been in operation only for a few months, it is at present impossible to check estimates previously made with definite results obtained at this time.

CONSTRUCTION COSTS FOR THE DEVELOPMENT DESCRIBED

Both automatic substations were built at the same time. An approximate separation of the total capital expenditure of $74,100 is made herewith, with particular reference to the Oakland substation. As previously mentioned, a credit of as much as $48,000 may be realized through the sale of copper wire that has been removed from the Pascoag line. Further, a credit of possibly $2,500 may be realized through the sale of the equipment purchased for a temporary substation at Oakland that was constructed for manual operation during the period of construction of the automatic station. These credits will reduce the total capital expenditure to a net estimated figure of $23,600. The data are given in Table I.

The expenditures for temporary manual operation were required because of uncertain deliveries on the new equipment caused by the war. It is interesting to note that the credit on the Oakland substation will be sufficient to pay for the construction of both substation and transmission line.

SPECIAL FEATURES OF CONSTRUCTION IN THE AUTOMATIC SUBSTATION BUILDINGS

It was considered advisable to standardize as far as possible upon a type of substation building for automatic operation. Accordingly a building was constructed of a type adapted entirely to housing the substation equipment, with no provisions for the comfort of an operator, such as a heating plant, toilet facilities, additional floor space, etc. It was considered further that it would be advisable to provide for a two-unit building so that it would be possible, as was done at Oakland, to install a machine of a capacity sufficient to handle, without much overload, all of the service except at brief peak loads.

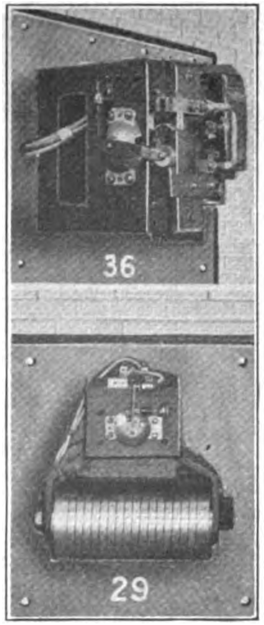
It appears to the writer that as a rule it is wise to plan buildings for housing automatic substation equipment of sufficient size to accommodate two units of equal capacity although the initial installation would call for but a single unit. The building required for a single unit need cost but little as compared with the buildings formerly built for manually operated stations, and the provision at the time of construction of sufficient building space to accommodate a second unit would be inconsiderable in view of the ease with which the power supply could be increased at later date if necessary. Few installations in urban service would not be subject to growth, and doubtless the majority of installations on interurban lines would in time require increased capacity. This point of view is based upon a broad generalization and circumstances would always indicate the actual requirements.

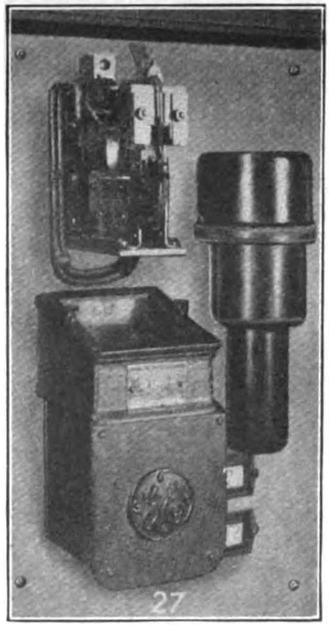
A photograph of the Harmony substation building is given in Fig. 1 while a cross-section of the Oakland substation building, showing also the location of equipment, is given in Fig. 3. It will be noticed that space has been economized in all ways, allowing, however, sufficient room for dismantling any of the equipment for making repairs. Provision for handling the equipment before installation was accomplished by utilizing I-beams in the roof structure for supporting chain falls hung from trolleys which are moved on these beams. Fig. 11 shows how the starting and running contactor panels were set into the middle wall of the station to economize space. The height of the building was required to allow the core of the transformer to be removed within the building if desired. It was cheaper to extend the building than to build a waterproof pit. Incidentally, ample radiation space is provided in the building and ventilation is effected very efficiently by a combination of roof ventilators and adjustable shutters set at the base of the building in openings protected by grating and screening.

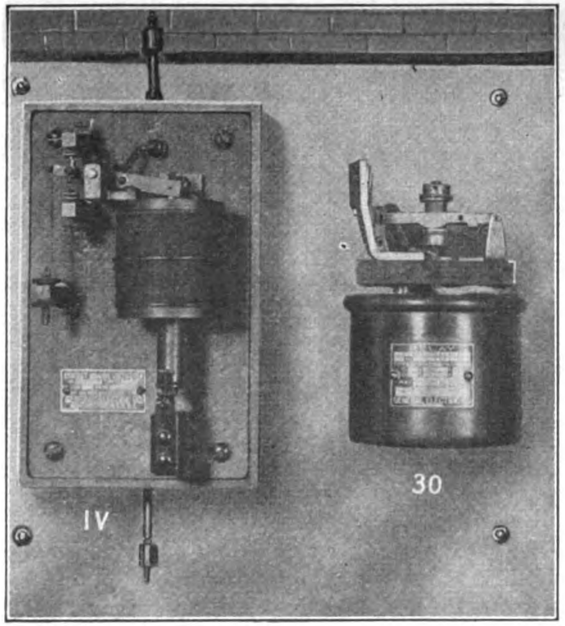
The building is entirely of fireproof construction and it has no basement. The foundations, floor and roof are of concrete and the walls of red brick with stone trimmings. All high-voltage equipment is confined to one room, which is separated from the other room by a middle wall with sliding firedoors. The floor of the room in which the transformers are located is sloped toward the front door of the building where there is a narrow rectangular basin covered with grating and provided with a drain leading to a dry well outside of the building. In case of accident to a transformer, resulting in the expulsion of burning oil, the

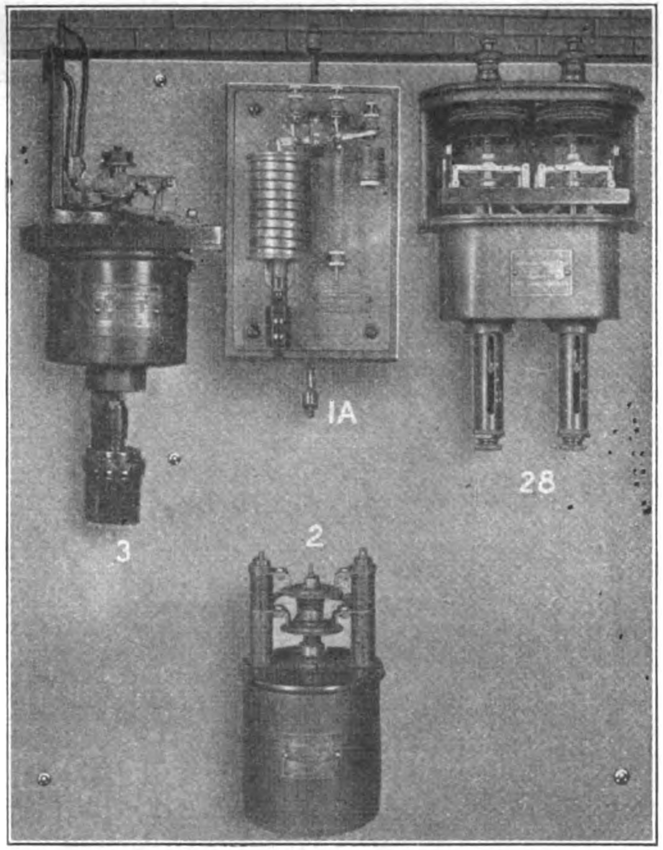
TABLE I—COST OF GENERAL DEVELOPMENT

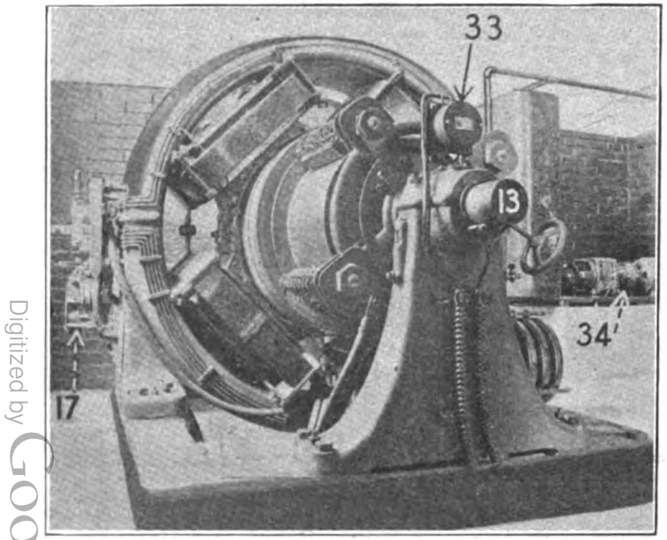
Land for Oakland station	$300
Building, conduits and furnishings	8,500
Equipment installed	22,500
Total	$31,300
Transmission line, No. 3 copper wire installed, right-of-way, etc.	$14,000
Total of above	$45,300
Half of engineering and miscellaneous expense chargeable to complete development	$3,000
Total chargeable to Oakland	$48,300
Total chargeable to Harmony	21,600
Expended for temporary manually operated station at Oakland	3,900
Expended for temporary manual operation at Harmony	300
Total expenditure	$74,100
Net expenditure (estimated maximum)	$29,600
Net expenditure (estimated minimum)	23,600

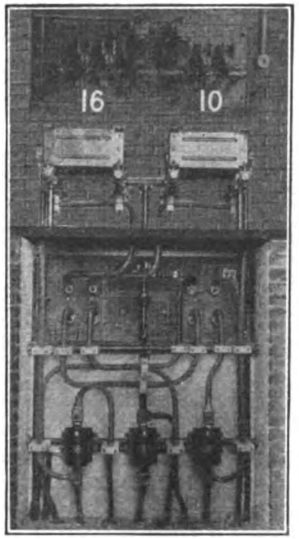


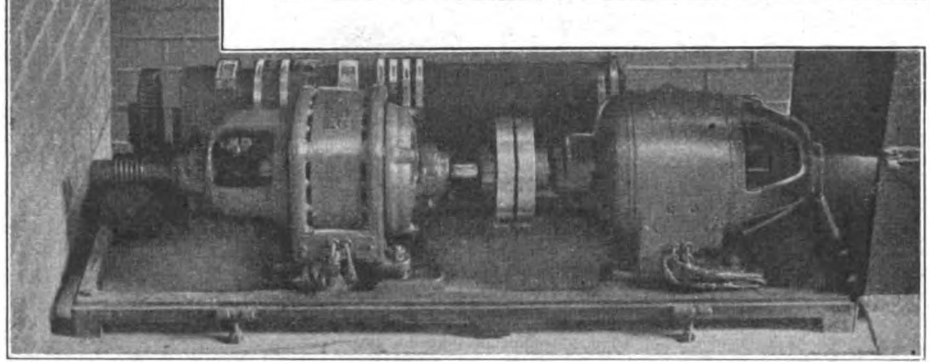












Details of Control Equipment, Oakland, R. I., Automatic Substation

(Upper row, Figs. 6 to 9; lower row, Figs. 10 to 12)

Fig. 6—Reverse current relay (29) and polarized relay (36)
Fig. 7—Low voltage relay (27) as shown on wiring diagram
Fig. 8—Contact-making voltmeter (I-V) and rotary converter field relay (30)
Fig. 9—Contact-making ammeter (1-A), relay (2), master relay (3) and overload relay (28)

Fig. 10—Rotary converter showing mounting of bearing thermostat (33), speed-limit switch (13) and equalizer contactor (17)
Fig. 11—(Above) Starting (10) and running (16) A. C. contactors showing mechanical and electrical interlocks. (Below) Back view of panel showing wiring and starting resistance
Fig. 12—Motor-controller-exciter set

oil will quickly drain away from the room. It is impossible for the oil to find its way into the rotary converter room, a condition which would, if it occurred, cause a spread of the damage. The windows are large and are fitted with opaque wired glass which gives a desirable but ample diffused lighting of all of the equipment within the building.

Both buildings, which are identical in construction, were designed and built under the supervision of H. W. Sanborn, chief engineer of the company.

EQUIPMENT IN OAKLAND SUBSTATION

The Oakland substation is at present operating from energy transmitted over a 13,200-volt transmission line. The equipment is, however, designed to allow the station at a later date to be operated from a 25-cycle, 11,000-volt transmission line. The equipment was supplied and installed by the General Electric Company. The detail parts of the equipment included are as listed in Table II.

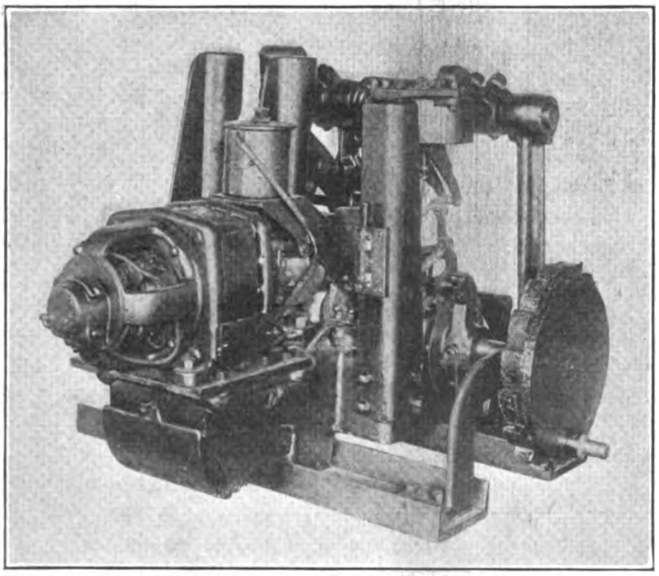


FIG. 13—A. C. MOTOR OPERATED MECHANISM WITH SOLENOID CLUTCH FOR OPERATING OIL SWITCH

One of the most valuable instruments in the metering equipment is a curve-drawing watt-hour meter which is installed to measure energy input to the station. An instrument of this kind should by all means be provided in every automatic substation. At the same time the installation of indicating instruments should not be neglected.

The switchboard, shown in Fig. 5, includes a number of instruments which are either especially developed for automatic stations and thus possess particular interest or, in service, are obscured by glass covers. Enlarged views of these instruments with covers removed are shown in Figs. 6, 7, 8 and 9. Low-voltage relay No. 27 in Fig. 7 does not correspond with the relay shown in Fig. 5 as the latter photograph was taken prior to the installation of the relay shown in Fig. 7. Space does not permit a detailed description of these relays. However, by comparing the photograph of the switchboard with the complete wiring diagram for the station shown in Fig. 4 an idea of the purpose and functioning of the various relays shown can be obtained. The operation of most of these relays has already been described in the ELECTRIC RAILWAY JOURNAL.[*] The particular instruments not required in a single unit station are shown in the contact-making ammeter (No. 1-A) represented in Fig. 9 and the equalizer contactor (No. 17) which is shown mounted on the rotary converter in Fig. 10. The contact-making ammeter brings the second machine into service when the load on the leading machine has exceeded a predetermined overload value for a predetermined period of time. Either machine may be made the leading machine by throwing the transfer switch (No. 15) in the proper direction. This procedure transfers the connections of the contact-making voltmeter (No. 1-V) and its associated relays (Nos. 2 and 3) to the leading machine and the connections to the contact-making ammeter (No. 1-A) and its associated relays (Nos. 2 and 3) to the second machine. Also the operating circuit for the equalizer contactor (No. 17) is transferred to the second machine. The second machine is shut down through the action of the contact-making ammeter (No. 1-A) and its associated relays (Nos. 2 and 3), the latter of which is adjusted for the desired time element. Either machine when leading is shut down by the action of its particular underload relay (No. 37) in conjunction with the contact-making voltmeter. Reverse-current relay No. 29, shown in Fig. 6, is quite similar in construction to No. 37 except that it has a "flash coil" for stabilizing its polarity. In the starting of either machine the polarity of the rotary is definitely fixed by external excitation current from the small generator in its motor-controller-exciter set (Fig. 12) delivered through its polarizing four-pole contactor No. 31. Before either rotary converter can be connected to the line its polarity is checked by relay No. 36, shown in Fig. 6, which closes its contacts if the polarity is correct. This allows the coil of No. 18 contactor to receive direct current from controller segment No. 8, current reaching the negative bus through the electrical interlocks of contactors Nos. 16 and 14 and the contacts closed by field relay No. 30 (Fig. 8). Thermostats (No. 33) are shown in Figs. 4 and 10.

TABLE II—EQUIPMENT IN OAKLAND SUBSTATION

Two type TC, 300-kw., 600-volt rotary converters.
Two type HJT, 25-cycle, 300-kva., 13,200/11,000:370-volt, three-phase, O.I.S.C. transformers.
One type H, 25-cycle, 10-kva., single-phase transformer for control equipment.
One double-unit switchboard, a photograph of which is reproduced in Fig. 4.
Two K-12, 15,000-volt, 300-amp. oil switches.
One three-phase, 13,200-volt aluminum cell lightning arrester.
Two type C, 325-A motor control exciter sets, the construction of which is shown in Fig. 12.

In concluding this article the writer wishes to express appreciation of the valued co-operation and assistance which he has had from the engineers and other representatives of the manufacturer who furnished the equipment. Special credit is due also to F. L. Barnard and B. D. Whitcomb, of the power and line department of the railway company, for the making of tests and studies both prior and subsequent to the construction of the substations.

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[*] For example, see issues as follows: Sept. 18, 1915, page 583: July 14, 1917. Many other articles on the subject have appeared in the paper during the past three years. Attention is directed particularly to the article by Mr. Slade in the issue for Oct. 12, 1918, and to one by H. E. Davis in the issue for April 13, 1918.

The Problem Must Be Solved*

The Needs of the Electric Roads Set Forth with An Outline of the New Kind of Franchise Necessary—Question Is of Paramount Interest to the Public

BY P. H. GADSDEN
Chairman Committee on National Affairs, American Electric Railway Association

AT THIS very hour, the statesmen of practically all of the nations of the world are hastening to Versailles, with the fixed and unalterable purpose of laying down basic principles of conduct to be observed between nations as essential for the establishment of a lasting and durable peace. Heretofore, the spirit of aggrandizement and exploitation has been uppermost at such councils, and only now for the first time is it recognized that any peace, to be lasting, must be based upon mutuality and that the principles underlying it must commend themselves to reason and equity.

The same principles must guide us in reshaping industry in this country upon a peace-time basis. The experiences of war have brought home to us the interdependence of industry and have impressed upon us the necessity and value of co-operation. We have been made to realize, as never before, the community of interest which runs through the entire structure of our business life. Especially is this true of those industries which, under the shock and strain of war, have proved to be essential to the nation's welfare. As to these, never again can the public be indifferent to their success or failure. The great war has demonstrated that the country has a vital interest in their continued and efficient conduct. Their activities constitute an intimate and essential part of our national life and our national security, and from now on it must be the province of national and state governments to see that these essential industries are maintained in a high degree of efficiency and, to accomplish this end, that they are permitted to function under favorable conditions.

The public utilities have been officially declared by the President of the United States to be essential to the nation's life. But independently of this official recognition, the dependency of the nation upon the facilities and service rendered by them has been fully recognized. These facilities constitute the very base of our industrial commercial and social life. Never has the reliance of the nation, as a whole, upon them been greater than during the war. In any discussion of peace problems, in any convention called to adopt plans for readjustment, it is inevitable that public utilities should have a prominent place in the program.

NECESSARY STEPS IN RELIEF

In order to suggest a remedy for the conditions facing public utilities to-day, it is essential that there should first be a thorough understanding of the problems brought upon them by the war. These problems are clearly seen by the men responsible for the continuing operation of the public utilities under the increased demands for service due to the national crisis, and became more and more apparent as the nation's industries were mobilized on a basis of maximum efficiency for the prosecution of the war. The authorities at Washington were promptly informed that if a breakdown in the essential service of public utilities was to be averted, four phases of the situation require speedy attention:

1. Rates must be increased sufficiently to absorb the increased cost of producing the service.
2. The utilities must be relieved during the period of the war, of all non-essential and unproductive requirements, such as paving, undergrounding of wires, duplication and unnecessary extension of service.
3. Some way must be found to enable the utilities to take care of obligations maturing while the war lasts.
4. Assistance must be provided to enable the companies to finance the unavoidable extensions of service made necessary by the nation's war program.

How those problems were met is now a matter of history. That they were not adequately met is recognized on all sides. Measures of relief were meager and too slow in coming. The needs of the industry were obvious, but no channels for immediate help were available. Proposals that offered hope were shrouded by constitutional doubts, and so one after another, the public utilities were forced into financial and operating difficulties, with the burdens of the war laid unrelentingly upon them.

It is to remove as far as possible a repetition of those conditions and to assure a safe future for the industry, and adequate service to the public that a readjustment of relationships is imperative.

ADJUSTMENT TO NEW CONDITIONS DIFFICULT

One of the facts brought to the front during the last two years is, that the whole structure of the franchise relationship between the public utilities and the various communities has broken down under the strain of war. The rapid increase in the cost of all material, the extraordinary demands of labor made necessary by the rise in the cost of living, the alarming decrease in the purchasing power of the dollar, have brought the industry, particularly the electric railways, face to face with bankruptcy, because no avenue of automatic escape from rising costs lay open.

Practically every industry, except public utilities, whose rates are regulated by law, has been able readily to adjust its methods of doing business to meet the war demands, and the radical increases in cost of operations and of manufacture have been promptly reflected in the selling price, and so on to the customer.

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*Address delivered before group 5 at War Emergency and Reconstruction Congress of War Service Committees, United States Chamber of Commerce, Atlantic City, N. J., Dec. 4, 1918.

In all other departments of our commercial and industrial life where the economic laws of supply and demand have been unhampered and allowed free play, the inevitable increase in the cost of production has been taken care of in the perfectly normal way of increased cost to the consumer. It is only in those industries where the public has attempted to fix a just and fair price for the service rendered and where the artificial standard has been substituted for the natural one that we find this complete breakdown under war conditions.

Industry generally was never so prosperous, notwithstanding the increase in the cost of labor and materials. The public utilities, on the other hand, present practically the one great exception to this rule of prosperity. These utilities have been nearly destroyed by the war.

A tabulation of the income accounts of 388 electric railways, representing more than 63 per cent of the electric railway mileage of the United States, shows a falling off in net income of 82 per cent for the first six months of 1918 as compared with the corresponding period of 1917. Many of the companies are facing actual operating deficit in spite of increases in gross receipts.

These facts lead inevitably to the conclusion that the present relationship between the companies and the public, as evidenced by existing franchises with fixed rates of fare, is economically unsound; that the present system of regulating rates by franchises or through commissions is admittedly not sufficiently responsive to the violent and radical changes in operating conditions which are bound to occur.

Another fact emphasized by the war is that before a company can justify an increase of its rates it must first show that for a longer or shorter period it has suffered less under the existing rates, which loss cannot be compensated for by the new rates. In any other business the manager is able to provide against increases in cost by promptly advancing his selling price. The public utility must stagger along under inadequate rates for months until its credit is destroyed, its service impaired, its equipment deteriorated, and it has become obvious to the community that it is on the brink of destruction before its case has been sufficiently made out to justify an increase in its rate.

New Relationship to Municipality Needed

Of all the problems of readjustment which the nation will have to meet and solve, none will be more serious or more difficult than that presented by the public utility. In the light of our experience as emphasized by war conditions, it is manifest that to insure the efficient operation of these companies, there must be a recasting of the entire basis of the relationship existing between them and the communities which they serve.

In many cases, franchises which had come to be considered as valuable assets, have been proved by recent experience to be liabilities. Already there is a growing recognition of this fact in different parts of the country, as evidenced by the "operation at cost" plans recently adopted in Boston, Chicago and Cincinnati.

In the past the sole interest of the community has been thought to be in the service rendered, but with a broader conception of the underlying problems involved there is a growing tendency to recognize a community of interest in the problems of profit and loss, as having a direct and immediate bearing upon the rates.

Labor Board Decisions Aggravated Conditions

The condition of the electric railways, although generally typical, is somewhat more aggravated than that of other public utilities at this time, not only because relatively few roads have received adequate rate increase, but also because their difficulties have been enhanced by the action of the National War Labor Board. The decisions of that Board will add more than $100,000,000 annually to their greatly increased operating expenses. In every other industry, these additional labor costs have been promptly passed on to the customer, that is, to the government, in most cases during the war, but the case of electric railways the startling doctrine was announced by the National War Labor Board that it could not, and would not, take into consideration the financial condition of the companies, and that its award would not be influenced by the admitted inability of the companies to pay the increased wage scale.

Without questioning the justice or propriety of that position, it is apparent that the result of it is that a wage scale has been imposed upon the electric railways which cannot be taken care of by the present 5-cent fare, and a very grave question exists whether any rate of fare which the public is willing to permit will be sufficient for that purpose. This, then, is the situation which confronts the electric railways:

1. It is admitted that the service is essential to the nation's welfare.
2. A wage scale has been imposed upon the industry by national authority, which admittedly cannot be taken care of out of the present income of the electric railways.
3. The 5-cent fare which has heretofore been almost universal, is admittedly insufficient to provide the necessary revenue.
4. In order to obtain increases of rates, the companies, in some cases, are compelled to apply to state commissions, but in most cases to municipal authorities, and even under the pressure of war conditions only a relatively small number of electric railways have succeeded in securing an increased rate.

The result of these extraordinary increases in the cost of labor and of material as well, coupled with the inability of the companies to increase their rates, is shown by the tabulation of operating figures of 63 per cent of the electric railway mileage of the country, already referred to.

A careful study of these figures indicates that unless wise counsels prevail and the necessary relief is afforded electric railways in the near future, the industry, as an industry, is doomed to destruction. It needs no argument to establish the fact that no industry can continue successfully to function when deprived of the right to increase its rates to meet extraordinary increases in cost of operation.

What, then, are the remedies for the situation? Definite measures will suggest themselves as the problem is more thoroughly understood, but it is possible now to analyze the causes for the present situation and to suggest some of the basic principles which should control the relation of public utilities to their respective communities hereafter.

The chief difficulty has been that the viewpoint of both sides has been one of antagonism, instead of co-operation. Both the public and the companies have endeavored to obtain the greatest advantage for their respective interests, without considering the ultimate effect upon the industry or the community. The public, under the conviction that enormous profits were being realized, felt free to make one exaction after another, recognizing no interest in the public utility except the service rendered, and no responsibility for financial results. The companies, on the other hand, with no adequate appreciation of their true relationship to the public, and in some instances, it must be admitted, with reckless disregard for the future, insisted upon franchise provisions which seemed onerous to the municipalities.

The time has now come for a radical and thorough review of that relationship. In some way, the American people must realize that their interest in the continued efficient operation of these railways is such that it becomes imperative that they should recognize some responsibility for financial results. In some way the credit for the public must be put behind these properties in return for the class of service which it demands.

In view of the disastrous experiences of electric railways during the war, it is not reasonable that they will be able to attract, in the future, the private capital necessary for their further development. The fact that the public has been willing to permit this great industry to stagger on under the burdens of war, with inadequate relief in the way of increased rates, while exposed to the full brunt of the extraordinary increases in cost of labor and material, raises a question of fundamental equity and fair dealing. The public must be brought to realize that its interest in the electric railways of the country is greater than that of the stockholders or bondholders, and that if the electric railways are to continue to discharge their essential service, the public must, in some way, guarantee an adequate return upon the capital invested.

What is needed then, at this time, is a thorough and impartial study of the whole question of electric railway franchise, with the end in view of establishing the industry on a wholesome, economic basis, which will guarantee continued efficient service to the public. Such a study should be made primarily from the standpoint of the public interest—what is best for the communities served. It is a national problem and not one for the owners of the railways alone, or chiefly.

The solution must provide for adequate service to the public and a proper return upon the invested capital.

FRANCHISE SHOULD PROVIDE FAIR RETURN

The time has come for the electric railways to say to the public that they are willing to co-operate in the working of a standard franchise, which shall provide for a proper return upon the fair value of the property, and guarantee efficient service to the communities. On such a basis there is little room for difference of opinion. On such a basis the matter of fares readily adjusts itself. On such a basis, the responsibility of electric railways for paving, the annually recurring question of taxation, the undergrounding of trolleys, the extension of service into unproductive territory, and numerous other questions that have caused irritation in the past, present themselves for consideration in an entirely new aspect. The experiences through which we have just passed have impressed upon the public mind the fact that additional and unnecessary burdens imposed upon the electric railways must logically and inevitably be reflected, sooner or later, in the rate of fare, or in the impairment of the service rendered. With this fact established, the question whether the entire cost of the transportation should be borne by the passenger, or whether a certain part should not be absorbed as a community charge, can be fairly considered on its merits. It is in this spirit that we must approach the consideration of this important question. We should urge upon the Chamber of Commerce of the United States the importance to the business and commercial interests of the country of an independent investigation of electric transportation, and urge them to assist in formulating the basic principles upon which the industry may safely and successfully continue in operation.

At the annual meeting of executives of electric railways, held in New York on Nov. 1, with a full realization of the desperate condition of the industry and the imperative necessity of placing it upon a plane for the future that will demand the confidence not only of the passenger, but the public in general, and of the investor in particular, a committee was appointed charged with the duty of making a thorough and exhaustive study of this whole question, in the hope of arriving at certain fundamental principles which will meet with the approval of the country at large, and which will form a basis for the continuance of electric transportation hereafter. This committee conceives it as a part of its duty to bring this subject to the attention of all bodies assembling at this time to consider plans for reorganization and readjustment.

It is our purpose, so far as we are able, to impress upon the public mind that this is one of the greatest national questions which demands solution at the hands of the American public. The solution cannot be worked out by the owners and operators of the railways, but must, in the very nature of things, be the result of deliberation of all parties in interest. It is our confident hope and belief that when the situation of electric railways and the problems which they are called upon to solve, are properly and fairly candidly presented to the American public, for healthy discussion, a new relationship will come, based upon a recognition of the essential nature of the service rendered, the mutuality of interest involved, and the paramount interest of the public in the subject.

New Officers of A. S. M. E.

At the annual meeting of the American Society of Mechanical Engineers, held in New York City, last week, Dean Mortimer E. Cooley of the University of Michigan, Ann Arbor, was elected president. A biographical sketch of Dean Cooley will be found in the "Personal" columns in this issue. Other officers elected were as follows: Vice-Presidents, F. R. Low, New York City; Henry B. Sargent, New Haven, Conn., and John A. Stevens, Lowell, Mass. William H. Wiley was re-elected treasurer.

The Human Touch in Supervision

The Object of the Management Should Be to Instil a Spirit of Co-operation Among the Employees—How It May Be Done—The Bulletin a Great Help

BY E. C. CLARKE
Superintendent of Instruction Tacoma Railway & Power Company

THERE has never before been a time when the electric railway industry has had presented to it so many apparently insurmountable obstacles. Probably the greatest at the present time is that of securing a sufficient number of competent employees in all departments—competent trainmen to perform their work in a safe and efficient manner, experienced shopmen to maintain the equipment at standard, and able power-house and substation attendants. The problems are particularly serious in the cities where much work is being done on war orders for munitions and ships.

It would mean financial ruin for a street railway company to compete with the large wages paid by the shipyards unless the railways are allowed an increase in the rate of fare and a reduction in taxation. While an increase in fare makes it possible to increase the wages of employees, thereby keeping the older employees in service and getting a good type of new employees, only a very large increase in fare would make it possible to meet the increased cost of supplies that are needed to maintain power houses, substations and cars.

In coast cities where much shipbuilding is under way, the large number of people attracted by large wages demands that the railway provide more service rather than less. It is not at all an easy matter to keep men in service, for labor at the present time is so restless that the workman feels that he must change positions even if the other job pays only a few cents more a day. In numerous cases employees have resigned, often sacrificing years of service, to work in the shipyards or munition plants at a slight increase in wages. Then after beginning work in the shipyards they found the job harder and quite different from what they had been doing. Such men often return to their old jobs to start over again at the bottom of the list.

In some cities on the Pacific Coast there is a free and independent spirit not met with in the East, with its larger proportion of foreigners. One effect of this spirit, in many cases, is to retard that co-operation which is so necessary to the successful and efficient conduct of any business. To create such a co-operative spirit, one of the most essential things is the "human touch."

INSTIL THE IDEA OF CO-OPERATION

The lack of co-operation between the men themselves, and between the men as a whole and the company, is very often due to the fact that the employees do not fully understand the meaning of co-operation. This lack of understanding causes management and men to drift further and further apart. This can often be overcome by the injection of some personal contact into the work. It is undeniable that if there is any dissatisfaction among the men, more will be caused by an "overt act" by some official who may come in direct contact with the men. Whether the wrong is actual or imagined in the minds of the men, the story is added to with each repetition until a "mountain has been made out of a mole hill." The addition to the story is in proportion to the dissatisfaction, or lack of co-operation. As the cause of such misunderstandings is ignorance, it follows that proper instruction, education and thorough aboveboard publicity are necessary to eliminate them. Conditions should be explained clearly and concisely to correct any condition that may obstruct the full amount of co-operation and to inject the necessary personality into the situation.

A feeling which is very apt to creep into an organization is that the employees do not want to co-operate. This feeling in time permeates the men, causing the latter to believe that if the company does not expect their co-operation and help, it is not worth while for them to exert themselves to do their best for the company. The resultant effect is that the men work as individualists, not caring whether they please either the management or the men with whom they are working.

ENCOURAGE EMPLOYEES TO MAKE SUGGESTIONS

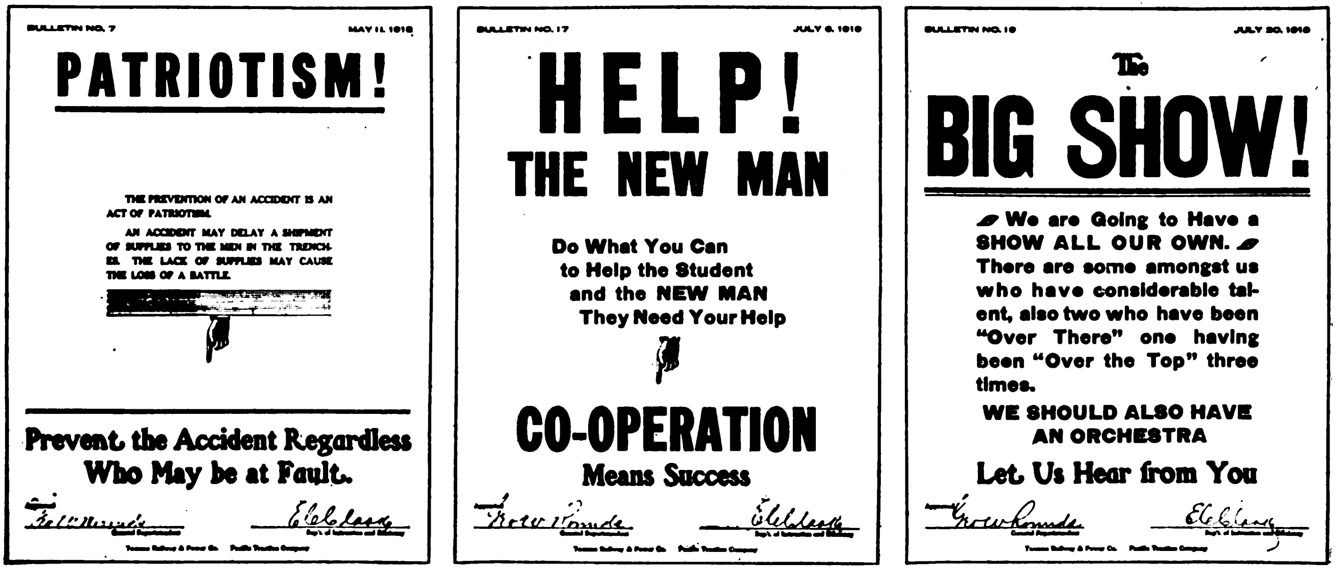
The idea that the officers should not talk to the men except on a matter of business is a mistaken one, for the men as a general rule want to be successful. Therefore, they like to see and talk with the officials about their work. The man who has his heart in his work is always trying to find a better way to perform his duties. In such endeavors naturally the desire comes over him to suggest the improvement which will increase the efficiency of the company as a whole.

For such suggestions there ought to be some channel through which men can present their views to the company in a very informal manner. There are plenty of men who feel that they know so much about their duties that they can tell their superiors how to run the business successfully. When such an employee cannot get his ideas before the proper official in an informal manner, he feels that the company does not want suggestions. It not infrequently occurs that the ideas and suggestions of the workman given in an offhand talk develop into most valuable information.

It should, therefore, be the duty of some official who possesses the necessary personality to meet the men individually while at work to discuss their duties with them. Such a man can make each employee feel that his work is just as necessary to the welfare of the company as that of any other employee and that the company welcomes any suggestion that will better working conditions, increase efficiency or improve safety. Every suggestion offered should receive due consideration, and if it is adopted full credit should be given to the man who made it.

Several successful methods have been used in many industries to secure suggestions from employees. However, the degree of success obtained in practically every case, has been in direct proportion to the amount of personal feeling and interest injected into the project by the employer. A very good and interesting method is that of the Yale & Towne Manufacturing Company. This company built several small individual work rooms and equipped each with a complete set of tools—in fact, everything a workman would need. If a workman thought he could make an improvement on any of the articles manufactured, the company assigned a work room to him to develop his idea until its value was determined.

A large number of electric and steam railroads make special efforts to secure suggestions from their employees. In practically all cases the plan has proved beneficial to both employer and employees.



BULLETIN NO. 7 MAY 11, 1918

PATRIOTISM!

THE PREVENTION OF AN ACCIDENT IS AN ACT OF PATRIOTISM.

AN ACCIDENT MAY DELAY A SHIPMENT OF SUPPLIES TO THE MEN IN THE TRENCHES. THE LACK OF SUPPLIES MAY CAUSE THE LOSS OF A BATTLE.

Prevent the Accident Regardless Who May be at Fault.

BULLETIN NO. 17 JULY 6, 1918

HELP!
THE NEW MAN

Do What You Can
to Help the Student
and the NEW MAN
They Need Your Help

CO-OPERATION
Means Success

BULLETIN NO. 19 JULY 20, 1918

The
BIG SHOW!

We are Going to Have a SHOW ALL OUR OWN. There are some amongst us who have considerable talent, also two who have been "Over There" one having been "Over the Top" three times.

WE SHOULD ALSO HAVE AN ORCHESTRA

Let Us Hear from You

THESE ARE REPRODUCTIONS OF THREE TYPICAL BULLETINS ISSUED IN TACOMA

PROPER SELECTION AND INSTRUCTION OF MEN ESSENTIAL

Necessarily, the proper selection and instruction of the men play a most important part in successful co-operation. Selection is made of those who it is believed will become competent and desirable employees by responding to instructions and disciplinary rules. When the applicant first presents himself it is not possible always to determine to a certainty his fitness and desirability. However, it is reasonable to give the applicant the benefit of the doubt and assign him to competent instructors where his work and actions can be observed. If the new man, while technically competent, demonstrates by his actions and general demeanor that he will become an undesirable employee or obnoxious to fellow-workers, he should be eliminated as soon as the facts are proved. Weeding out should not end when the student is pronounced competent and put to work but should be continued indefinitely by following up his work closely as well as giving the necessary instructions. If the new man does not respond to the instructions and does not continue to improve he should be separated from the service. In most cases where men qualify for the positions to which they are appointed they will improve after starting to work for themselves, but sometimes the newly qualified men will not only fail to improve but will not do as well as when under instruction.

Therefore, it is necessary to keep in such close touch with the new man's work that it will be possible to check him in his downward path before he seriously injures himself and others. To carry on this weeding out process successfully at this period of the employee's service, it is necessary to maintain an efficient corps of instructors who have the ability to interpret the rules intelligently and to render unbiased opinions that will enable their superior to determine the student's fitness. The instructors should also continue the instruction work after the new man starts to work for himself.

There is still another reason why it is necessary to determine an employee's fitness. This is that the older employees resent working with an incompetent or undesirable employee and care no more for his company than the management cares for his services.

The periodical issue of bulletins and literature has proved one of the best channels through which to reach all employees. The bulletin is not effective, however, unless it is short and snappy, something which the men can read at a glance. Merely to put words together or to quote rules does not get over. It is necessary to go straight to the point without beating around the bush and to use words and phraseology which the men will readily understand. However, it is not at all necessary that the text of the bulletin should be in the vernacular of the "extra" room or the shop. The style of the bulletin presented to the men should be so strongly suggestive of personality that when the men read the bulletin they will feel as if they were being spoken to directly by the official who issues it. This can be accomplished only by one who understands the whims of the workers and the conditions under which they discharge their duties. If the workers feel that the man who promulgated the bulletin does not fully understand their work, they will be very likely to take the text of the bulletin with the proverbial grain of salt. They must have confidence in the official and feel that he is willing and ready at all times to do anything possible in furthering their success. This feeling of the employees will be reflected in their effort to please with their work. The resultant effect is co-operation.

After the foregoing facts in issuing the bulletin have received due consideration, the next important factor is the proper presentation of the bulletin. Although the bulletin board may have been in use from time immemorial, it is nevertheless still a very good way to reach the workmen. However, the bulletin board must be so designed and so prominently placed that it will attract and hold the attention of those for whom it is intended. The bulletin board should be in a naturally well-lighted place, or if this is not feasible it should be especially illuminated, for the bulletin is useless if not read.

If no board is used, the bulletin may be printed on stock of letterhead size for insertion in neat, well-placed frames. As small frames are inexpensive, any number of bulletins that may be desired may be displayed at one time. Two other good methods of insuring the reading of all bulletins by all employees are, first, require all employees to sign their names in a book showing that they have read the bulletin; second, issue the bulletin on 4-in. x 5-in. stock for distribution to each employee by instructors and let the latter check off the employee's name from a list containing the names of all employees. The added advantage of the second method is that it affords an opportunity for the instructor personally to explain any bulletin statement which the employee may not thoroughly understand.

The bulletin should be illustrated whenever possible. The picture does more than to attract attention for it is also most natural to teach through the eye. Pictures constitute a universal language understood by both the educated and uneducated.

Efficient Operation with the Skip-Stop Service

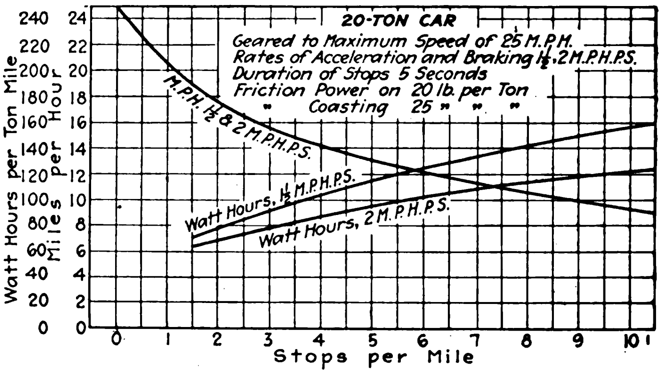
Specially Prepared by the

UNITED STATES FUEL ADMINISTRATION

A QUESTION that is frequently asked is as to the real economies which are produced by operating cars on the skip-stop system. In order to set forth the economies actually produced, in a partial way, some few facts are summarized in the following paragraphs:

Skip-stop service involves a reduction in the number of stops made, and theoretically there should be saved the amount of time previously lost in the stops thus eliminated. If, however, the schedules are not revised to compensate for the eliminated stops there will be a natural tendency for the motorman to accelerate and brake his car more slowly than before, and both motorman and conductor will tend to permit the stops to be extended in length. In order to get the full advantages of the skip-stop plan, therefore, car operators should use the maximum rates of acceleration and braking with the minimum duration of stop which are possible with due regard for the comfort and safety of the passengers. Time saved in reducing the accelerating, braking and stop periods can be utilized in increasing the schedule speed, or it can be added to the coasting interval, or it can be divided, part being used for each. To demonstrate the relation between schedule speed, energy consumption and stops per mile the accompanying curves have been prepared covering two rates of acceleration and braking. These curves are based upon data for a 20-ton car geared for a maximum running speed of 25 m.p.h. Acceleration and braking rates are assumed first at 1½ and then at 2 m.p.h.p.s., and the car is assumed to be operated at maximum schedule speed with five-second stops. The friction with power on is taken at 20 lb. per ton and for coasting at 25 lb.

When the car is accelerated and retarded at the lower rate the energy consumption is greater than when the higher rate is used. From the curves the following table has been prepared to show the relation of values in the two cases:



CURVES SHOWING RELATION OF SPEED, ENERGY CONSUMPTION AND STOPS PER MILE AT TWO RATES OF ACCELERATION AND BRAKING

Stops Per Mile	Watt-hours Per Ton Mile 1½ M.p.h.p.s.	Watt-hours Per Ton Mile 2 M.p.h.p.s.	Ratio in Per Cent
3	92	78	84.5
5	114	95	83
7	134	108	80.6
9	150	118	78.7

The reason for the smaller energy consumption with the higher rate of acceleration and braking is that the motorman operates for less time on the resistance points of the controller. There is also less energy dissipated in the brakeshoes as well as in the resistors.

It is suggested that all railways might advantageously post in conspicuous places, where they will be seen by train crews and company officials, statements of the total amounts of energy used during the preceding week, with the car mileages and energy consumptions per car-mile, and with comparisons of past records to permit the checking up of the effect of the instructions issued to train crews and others. Some railway systems have their power lines sufficiently subdivided as to make records available for individual lines and thus to permit records to be compared. Comparison between divisions will usually result in personal and divisional rivalry.

The practice of checking operators as to rate of acceleration and braking used, and as to their success in reducing duration of stops to the minimum, cannot be too strongly advocated. The most systematic way of doing this is with the aid of some form of checking instrument. Verbal instructions, printed rules and other educational work require a relatively large amount of effort and do not accomplish the results which can be obtained with the aid of some such device. It is reported that 98 per cent of the cars in Great Britain have for the past fifteen years been using some form of checking device. In America we probably use instruments of this character on fewer than 10 per cent of our cars. Records show that by using these devices, with proper follow-up systems, it is possible to save at least 15 per cent of the power consumption. Theoretical savings are from 20 to 25 per cent but in actual practice somewhat less is to be expected.

By reducing the actual number of stops which a car makes, by accelerating and braking at higher rates, and by shortening the duration of stops, it is usually possible greatly to increase the schedule speed of cars. This increase in many cases might be sufficient to allow as good service to be given with five cars as was formerly possible with six. With greater numbers of cars proportionately greater savings can be made.

Semi-Automatic Portable Substation Built at St. Louis

This 500-Kw. Equipment Provided with Numerous Protective Devices Will Care for Overloads at Isolated Points

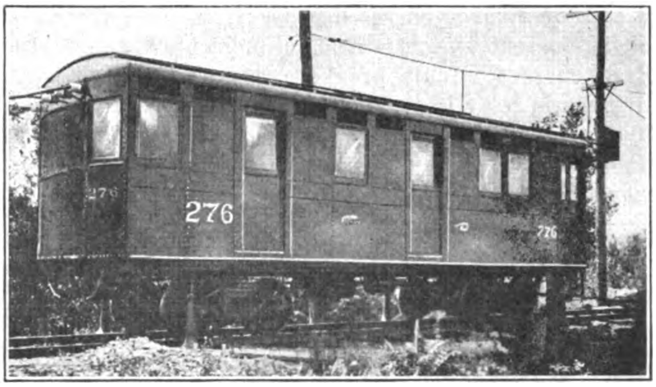
A SHORT TIME ago the United Railways of St. Louis placed in service what is known in its power department as "No. 3 portable substation." This unit, of 500-kw. capacity, can be classed as of the semi-automatic type. Part of the electrical equipment was installed in another station in 1906. In 1913 there was urgent need for an additional portable station, to meet which the rotary converter with the auxiliary equipment was set on a flat car and a roof was built over it. This arrangement was neither ornamental nor safe, the lack of safety having been emphasized by two fire scares. Consequently the apparatus was embodied in a new substation.

ALL STEEL CONSTRUCTION WITH REMOVABLE SIDE AND TOP

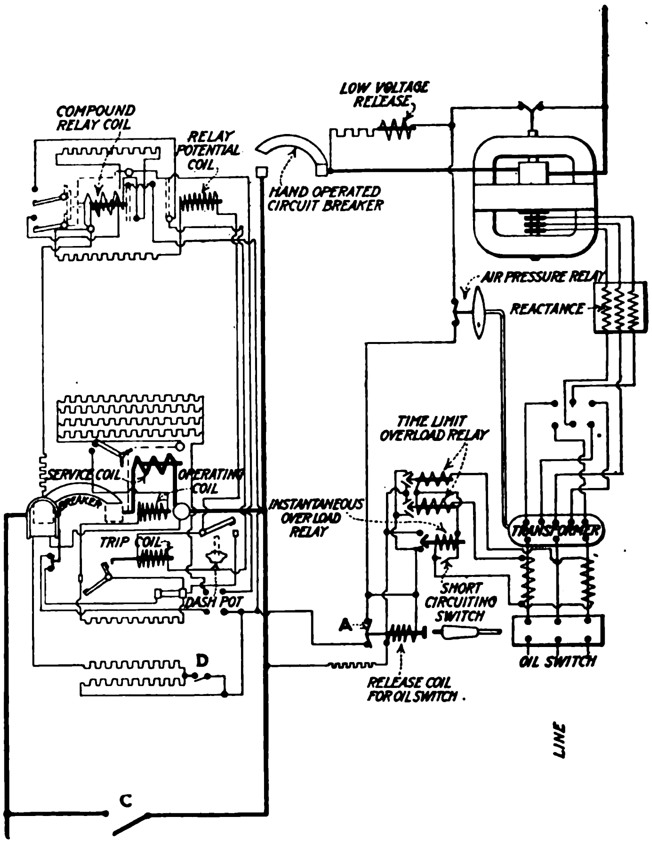
The present car is of steel construction throughout and it was built in the company's shops. Inside it is 34 ft. 8⅞ in. long, 9 ft. wide and 8 ft. 9in. high. The details of construction are shown in an accompanying drawing, from which an idea of the layout of the equipment can also be obtained. There are louvres near the top along both sides of the car to provide ventilation, and the transformer is set upon a raised air chamber, 12 in. high, through which air for cooling is forced by a fan. This equipment, with a reactance coil, is located about 5 ft. from one end of the car. In this 5-ft. space are the oil switch and the 11,000-volt Westinghouse multigap lightning arresters.

The converter is placed 3 ft. 4 in. from the opposite end of the car. As the bedplate measures 9 ft. 3 in. x 8 ft. 11¾ in., this leaves only ⅛-in. clearance from each side of the car. A special side-frame construction was, therefore, necessary. The three panels, alternating-current, direct-current and automatic, are located at one side of the center, leaving ample working space for manual attention. To permit the equipment to be placed in the car or removed from it, a large part of one side of the car was made removable in two sections, as were also the corresponding sections of the top. The windows, of which there are fifteen, are of clear wire-glass, and the floor is covered with wood matting.

The main feature of interest in the electrical equipment is the automatic reclosing circuit breaker, made by the Automatic Reclosing Circuit Breaker Company, Columbus, Ohio, this allows the station to be operated semi-automatically. It is necessary to start the station at the time it is due to be put on the line, as well as when the alternating-current supply is interrupted or when trouble causes the alternating-current oil circuit breaker to open. In case of a trolley break, however, the automatic reclosing circuit breaker comes into play, holding out the breaker until such time as the ground is altogether removed or reduced to a value that the machine will stand, when the unit will again cut in on the line.

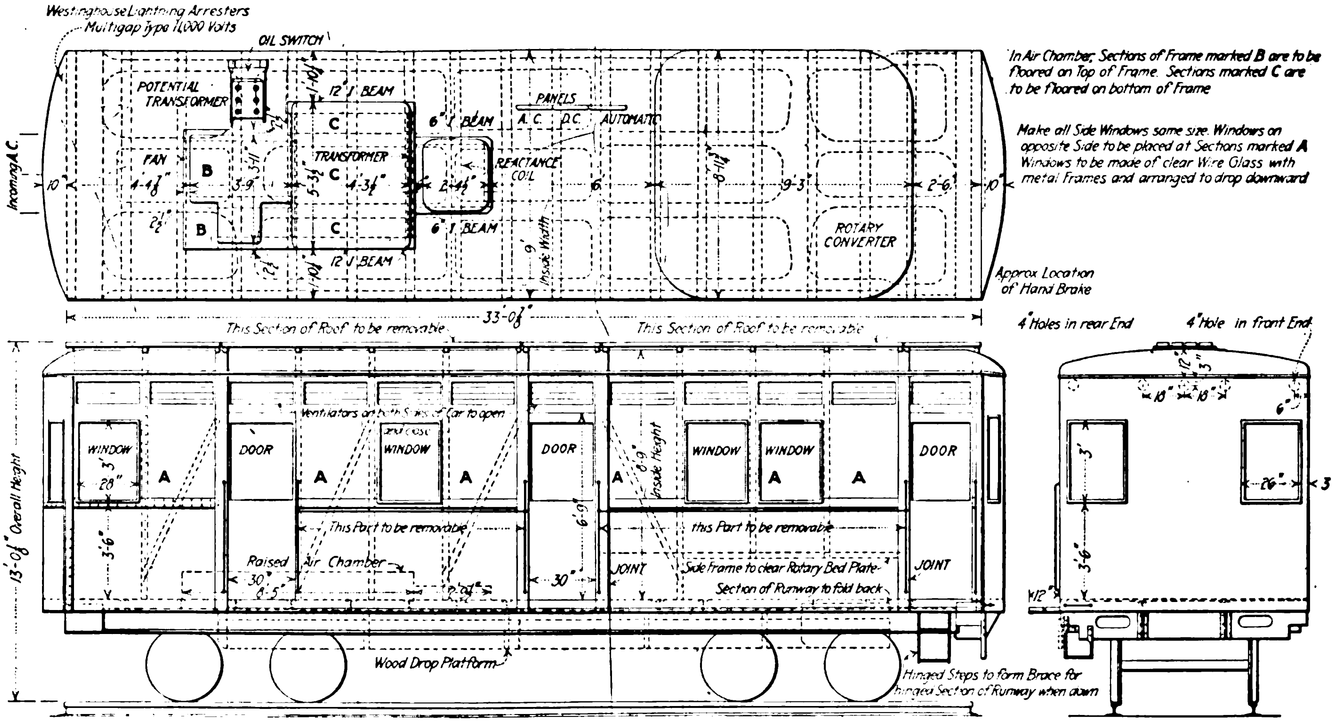


ALL-STEEL PORTABLE SUBSTATION CAR BUILT AT ST. LOUIS



WIRING DIAGRAM FOR PORTABLE SEMI-AUTOMATIC SUBSTATION

There are also numerous protective devices as shown on the wiring diagram on page 1051. The automatic apparatus is arranged so that the closing of a single switch makes all the special automatic apparatus non-operative, and the station can then go back to hand operation. This accounts for the use of two alternating-current relays, namely the time-limit and the instantaneous relays, the latter of which is short-circuited when the station is operated automatically. Thus in case of a surge on the direct-current side, the alternating-current switch is held in, momentarily, until the direct-current circuit breaker relieves the load. An air-bellows relay is provided also so that in case of lack of air for the air-blast transformers, the machine will "knock out" on the alternating-current and direct-current side. The over-speed mechanism also "knocks out" the machine on both sides. In case of an overload which trips the alternating-current oil switch through the release coil, the machine is cleared on the direct-current side by the breaking of the contact at *A*.


Westinghouse Lightning Arresters
Multigap Type 11,000 Volts
OIL SWITCH
POTENTIAL TRANSFORMER
12" I BEAM
PANELS
A.C.
D.C.
AUTOMATIC
6" I BEAM
C
FAN
B
TRANSFORMER
REACTANCE COIL
Incoming A.C.
10"
4'-4⅛"
3'-9"
5'-3½"
4'-3½"
2'-4½"
6'
8'-11½"
9'-3"
2'-6"
10"
2½"
1'-10½"
9' Inside Width
ROTARY CONVERTER
In Air Chamber, Sections of Frame marked B are to be floored on Top of Frame. Sections marked C are to be floored on bottom of Frame
Make all Side Windows same size. Windows on opposite Side to be placed at Sections marked A Windows to be made of clear Wire Glass with metal Frames and arranged to drop downward
Approx Location of Hand Brake
33'-0⅛"
This Section of Roof to be removable
This Section of Roof to be removable
4" Holes in rear End
4" Hole in front End
Ventilators on both Sides of Car to open and close
WINDOW
DOOR
A
3'
28"
3'-6"
13'-0⅛" Overall Height
8'-9" Inside Height
6'-9"
This Part to be removable
this Part to be removable
Raised Air Chamber
30"
8'-5"
JOINT
Side Frame to clear Rotary Bed Plate
Section of Runway to fold back
Wood Drop Platform
Hinged Steps to form Brace for hinged Section of Runway when down
12"
18"
6"
26"
3"
12"

DETAILS OF CONSTRUCTION OF SEMI-AUTOMATIC SUBSTATION CAR AND LOCATION OF EQUIPMENT

STATION IS LOCATED WHERE TEMPORARY INTERRUPTION IS NOT SERIOUS

Satisfactory tests have been made with this substation and in addition the machine has been operating well for some time under regular working conditions. It is not intended, of course, that a substation thus equipped would be used except under special conditions. It would have to be located at a point where a temporary interruption of the supply would not be particularly serious, because it is probable that from time to time there will be "knockouts" and attendant delays while the station is being put back on the line. However, there may be locations where a station is used to carry heavy loads at certain times and where a short interruption could not prove serious. There are several such locations on the St. Louis system, where small stations have been added at isolated points and no feed wire removed after the installation of the new station. In such cases, if the station is out of service, conditions are no worse than they were before the station was installed.

This new equipment gives the United Railways a total of three portable substations. The two other stations, however, consist of two cars each, one for the rotary converter and one for the transformers.

I. C. C. on Needs for Adequate Transportation System

The needs of an adequate transportation system for the United States, as outlined by the Interstate Commerce Commission in its recent annual report, requires provision for the following: (1) Prompt merger without friction of all the carriers' lines, facilities and organizations into a continental and unified system in time of stress or emergency; (2) merger within proper limits of the carriers' lines and facilities in such part and to such extent as may be necessary in the general public interest to meet the reasonable demands of domestic and foreign commerce; (3) limitation of railway construction to the necessities and convenience of the government and of the public, and assuring construction to the point of these limitations; and (4) development and encouragement of inland waterways and co-ordination of rail and water transportation systems.

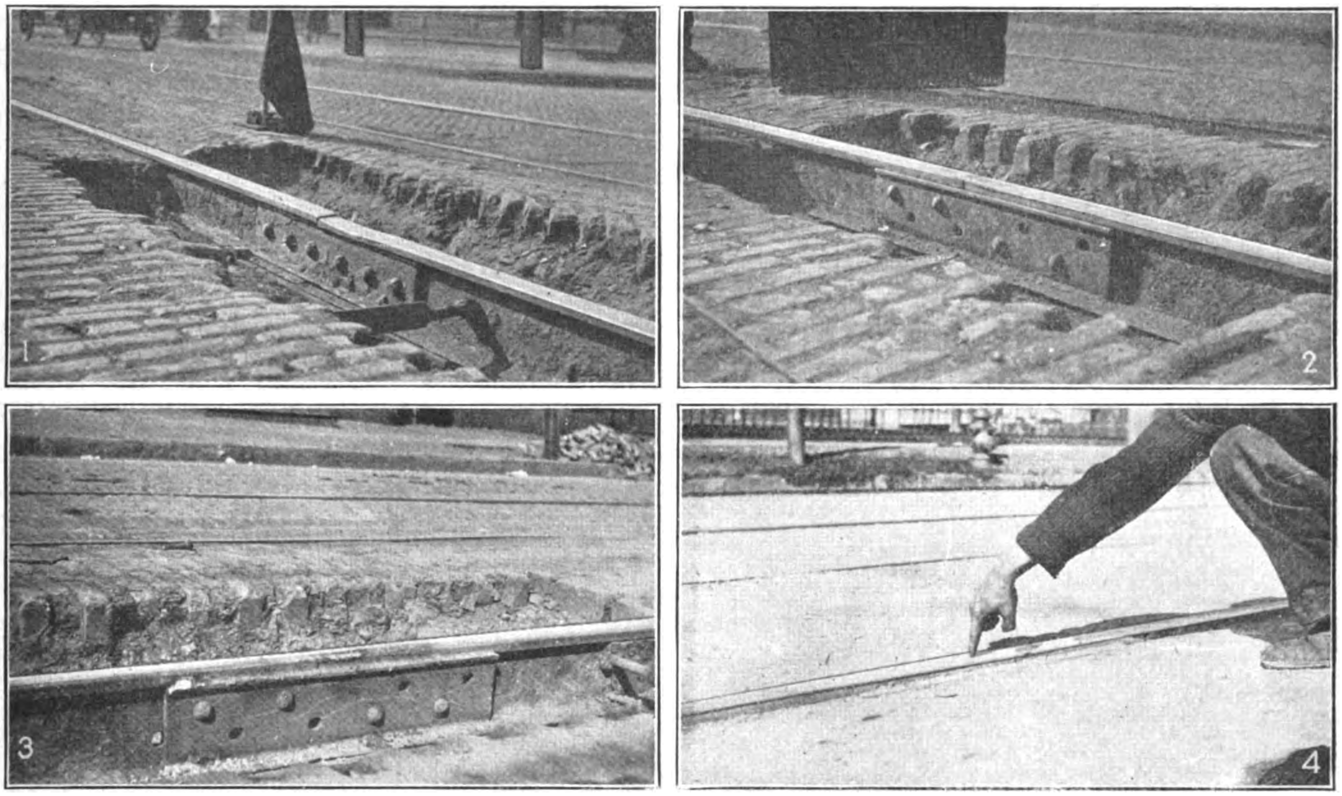
In discussing the effect of salt in warm climates on reinforced concrete in a recent issue of *Concrete* James C. Foss, Jr., an engineer of Hilo, Hawaii, states as a result of his observations that salt water should never be used in reinforced concrete, that all possibility that salt might be present must be eliminated, and that reinforced concrete where used in places having warm salt atmospheric conditions requires exceptionally careful construction.

Making the Old Track Last a Little Longer

What the Connecticut Company Did to Extend the Life of a Stretch of Track in New Haven, With Particular Reference to Arc Welding

By P. NEY WILSON
Roadmaster, The Connecticut Company, New Haven

ALTHOUGH the maintenance of way department of this company had been authorized last year to relay 6374 ft. of track on Grand Avenue, made up of 7-in., 70-lb. T-rail originally laid in 1896, no rail was available and an effort was made to fix it up to last over the war period. The joints were in a deplorable condition, resulting in vertical movement of the rail which loosened the pavement. Complaints were numerous on account of noise and bad pavement conditions. It was finally decided to try to arc weld the old plates to the rails, doing the "shimming," regaging, etc., necessary to make the road safe for two or three years. The work was done late last year and the results have proved very satisfactory. Not a single joint has failed and, while a few show some slight indication of fracture along the upper seam, these imperfections seem not to be serious. The indications are that the life of the rail has been extended from three to six years, depending upon the amount of maintenance work that is done. The track had quite a test soon after the work was done due to the occurrence of zero weather in December and January. The procedure in the "rejuvenation" was as below. The costs are given in the accompanying tables.



REHABILITATING AN ANCIENT JOINT IN NEW HAVEN

Fig. 1—Condition before repair. Fig. 2—Bolted up, ready for welding. Fig. 3—Welded complete. Fig. 4—Ground to surface and paved in

OLD FISH-PLATES INVERTED AND WELDED TO RAIL

As soon as the track was excavated, the old fish-plates were removed, turned upside down, and put back with the bottom flanges of the plates under the head of the rail. The plates were held in this position by four track bolts, and the upper and lower edges were arc-welded to the head and base of the rail. It was necessary to reverse the plates in order to get a weld at the head of the rail. The bottom flanges of the old fish-plates were much wider than the top and provided a "shelf" upon which the hot steel was laid. Surface depressions were then filled in with welding steel, after which the joints were ground to a true surface with a rotary grinding machine.

A considerable number of "dutchmen" were welded in the above manner, no attempt being made to remove them. This is an unusual procedure as it is customary to cut in new rails where dutchmen have been used. Some extra precaution was necessary in welding these

TABLE I—COSTS OF GRAND AVENUE WORK

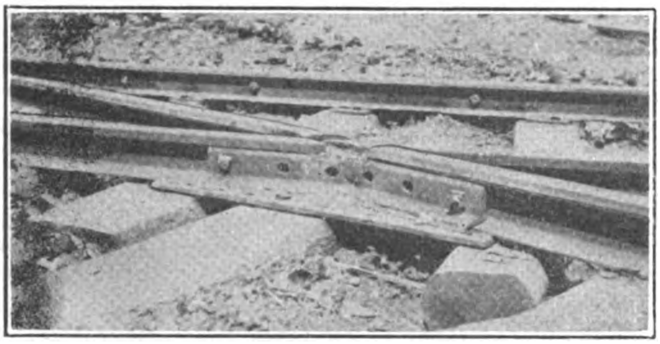
417 Joints Arc-Welded and Ground, 457 Joints Surface Welded

Labor, welding and grinding	$657.17
Labor, excavating, replacing pavement, and miscellaneous track work	1,572.32
Total labor	$2,229.49
Material, miscellaneous plates, bolts, etc	$572.86
Cost of Abbott plates	115.60
Total material	$457.26
Total labor and material	$2,686.75
Unit Costs, Based Upon 417 Finished Joints	
Cost per joint, welding and grinding	$1.57
Cost per joint, excavating, replacing pavement, and miscellaneous track work	3.77
Cost per joint, material	1.09
Cost per joint, labor and material	$6.43

NOTES—The above costs include regaging track and miscellaneous track work not necessary in repairing joints; also cost of surface welding forty cups in rails, not at joints, although necessary to produce smooth track. The estimate for this work was $6.90 per joint, showing a difference in favor of the actual work of 47 cents per joint.

Cost of Abbott plates deducted from totals as they will be reclaimed when track is scrapped. No charges are included for the consumption of power nor for depreciation on the machines used.

short pieces which, of course, raised the unit cost slightly. The nuts on the bolts were spot-welded and Abbott plates were placed under the joints. About 25 per cent of the rail ends were found to be fractured in the web near the ball. In a few exceptional cases, rails were cut in. In general, however, the cracked rails were welded fast to the upper edge of the plates in the new position in order to save expense in the hope that the experiment would prove successful, which it has done. The Abbott plates were not welded to the rails as it was thought that they could be reclaimed at some future time when the track is scrapped.



HOMEMADE FROG USED IN EMERGENCY CASES

TABLE II—MISCELLANEOUS REPAIRS

Showing saving effected by the use on the New Haven Lines of one welding and grinding outfit for one year

	Old Method, Cutting in New Rail	New Method, Welding Break	Saving
Repairing 127 broken rails in paved streets	$2,286.00	$285.45	$2,000.55
Sundry Repairs	Cost of New Pieces	Cost of Welding	
One switch, Meriden	$207.00	$6.75	$200.27
Two mates, State near Grand Ave., one frog, State near Grand Ave	415.00	10.41	404.59
Three center plates, State and Chapel Sts	88.00	6.94	81.06
One center plate, Meadow St. crossover	20.00	5.30	14.70
Four frogs, four center plates, Church and Elm Sts	500.00	33.83	466.17
Two mates, Grand Ave. carhouse	310.00	9.45	300.55
One center plate, Dixwell and Lake Pl.	20.00	5.55	14.45
One mate, Grand Ave. carhouse	155.00	12.50	142.50
Totals	$1,715.00	$90.71	$3,624.84

Number of joints surface welded in paved streets	1,016
Number of joints surface welded in macadam or dirt streets	327
Work done on special work	197
Total	1,540 joints
In Wallingford	30 joints
Compromise joints, Whalley Ave., T. O	8 joints
Compromise joints, Church and Elm Sts	2 joints
Compromise joints for Waterbury	3 joints
Total	1,583 joints

TABLE III—GENERAL SUMMARY

Electric welding Grand Ave., single track reclaimed by arc welding	6,375 ft.
Estimated cost per foot single track renewing rails and pavement on Grand Ave	$9.85
Total cost to renew	$62,793.75
Interest at 6 per cent on investment for one year	$3,767.62
Depreciation at 5 per cent for one year	3,139.68
Total	$6,907.30
Interest and depreciation for three years, the estimated minimum life of old track after welding	$20,721.90
Cost of welding	2,686.75
Saving in three years	$18,035.15
Miscellaneous repairs by arc welding: Saving in one year from miscellaneous repair work to joints and special work in 1917 as per Table II	3,624.84
Total saving	$21,659.99

SOME JOINT TIES HAD DISAPPEARED

When the excavation were made the foundation under the joints was found to be in bad condition. The ties, although fairly sound considering their age, had settled from 1 in. to 2 in., requiring the use of a considerable number of iron shims. The joint ties had been cut rather badly due to rail movement, and at from twelve to fifteen joints the ties had disappeared. At these points half of a new tie was placed to support the rails. A very considerable amount of vertical movement was eliminated by making the joints tight. The foundation of this particular piece of track is twenty-one years old, however, and even now the track as a whole develops vertical movement which must, of course, affect the pavement adversely.

COST DATA ON REHABILITATION AND MAINTENANCE

The accompanying tables give actual cost data on the Grand Avenue job and also some more general data showing the savings effected by arc welding, including this job. The rate of pay for common labor involved in these data is $2.50 per day of nine hours. The analysis of costs includes miscellaneous repairs to broken and cupped joints, as well as numerous special-work repairs. The analysis includes all of the work done by one complete welding outfit upon which economies can be figured. No savings are claimed for 1583 surface welds which were made, although there is no doubt that by surface welding battered rail ends the life of the track is extended.

Housing and Transportation Problems in London

In commenting on the parts of the recent report of the London (England) County Council committee on housing of the working classes which treated of tramway conditions, the *Electric Tramway and Railway World* has something to say regarding bus-line feeders. While no immediate increase in workmen's fares corresponding to the general increases is expected, nevertheless the position of workmen is considered likely to be affected prejudicially thereby. And any increase in workmen's fares in the future is likely to affect seriously the housing question in London. The tramways concerned, in outer London and the populous provincial districts, will undoubtedly find it politic to extend their existing motor bus service, or create new service, to serve as feeders to the tramways until such time as traffic will warrant the extension of the tramways themselves.

Just Values and Fair Rates Needed

Investment Bankers Point Out Requirements of Utility Situation—Mr. Taft Says Outlook Is Not Good

THE solution of the public utility and steam railroad problems, in the opinion of the investment bankers of the country, lies in charging regulatory commissions with responsibility for the welfare of the companies. This principle was expressed in the reports and resolutions before the convention of the Investment Bankers Association of America in Atlantic City on Dec. 9-11.

The committee reports of most direct interest to electric railway operators were those on public service securities and on steam railroad securities. The former report, which concluded that the interests of investors presents the study of the electric railway problem as one of the first duties of the committee during the reconstruction period, will be abstracted in a later issue.

The steam railroad report stated that (1) the pre-war plan of railroad regulation was a demonstrated failure; (2) the steam railroads should not be returned to their pre-war status without providing release from the burdensome conditions under which they have therefore operated; (3) any plan of future government control should eliminate the conflict of control between state and federal bodies; (4) the Sherman anti-trust law and state anti-trust laws in their application to transportation should be repealed in the interests of efficiency and economy, because such laws are unnecessary under proper governmental regulation, and (5) any plan of government control which increases operating expense and regulates income should assume responsibility for adequate earnings and sustained credit.

The steam railroad report added that the alternative of government ownership, which is being proposed by some as the best solution for the difficulties presented, does not offer the measure of relief demanded. The committee finds nothing in the experience of other countries in government ownership of transportation which warrants the assumption that such an experiment in this country will be successful. According to reliable authorities, it says, the records of government ownership the world over show decreased efficiency, increased expense, lessened initiative, political interference and economic waste.

RESOLUTIONS ADOPTED BY BANKERS

The following resolution, proposed by O. B. Wilcox, of Bonbright & Company, New York, chairman of the public service securities committee, was unanimously adopted by the association:

> Resolved, That the capital necessary for the development and expansion of adequate and efficient public service can be secured, in competition with opportunities for safe and profitable investments in unregulated enterprises, only if the state and municipal bodies regulating public utilities by just valuations of property devoted to public use and by fair rates for public service provide for the payment of all costs of operation, permit the replacement out of earnings of property worn out or no longer useful, and allow the accumulation of funds sufficient to assure the credit of public utility companies and the continued payment of fair returns on the capital invested.

An analagous resolution in regard to steam railroads was adopted, as follows:

> Resolved, That the association put itself squarely on record at this time as opposed to public ownership of railroads or permanent public operation, and emphatically in favor of an early return to private ownership under such altered methods of regulation as will insure sound railroad credit and an adequate transportation system.

ELECTRICAL RAILWAY SITUATION UNJUST TO INVESTORS

Addresses touching upon the electric railway situation were delivered by Travis H. Whitney, of the Public Service Commission for the First District of New York, and by William H. Taft, co-chairman National War Labor Board.

Mr. Whitney outlined the general requirements as to the revenue sufficient to cover operating expenses, obsolescence and depreciation, fixed charges and a reasonable return on the investment that is necessary to keep utilities in first-class condition. He said that while commissions have been criticised for the inability of the utilities to secure such revenue, the regulatory bodies have been hampered in many states by the lack of complete power on account of the limitations imposed by maximum rate statutes or franchise provisions. Investors should be interested in the character of all new utility legislation because of the relation of this to the soundness of their investment.

Mr. Taft spoke in the main on the subject of a league of nations, but in his introductory remarks he drew upon his experience with the War Labor Board for the following:

> In my official capacity, I have examined the balance sheet of most of the electric railways of the country. I do not think you are going to rush forward for that class of securities as an investment. The lines had my sympathy, but that could not affect my judicial view. Your clients have my profound sympathy.
>
> The outlook is not a good one. The electric railways of this country are dealing with a public educated to rates of fare and methods of fixing fares which are most unjust to investors. Whether you can overcome this situation I do not know. I am well aware that generalizations do not pay dividends.

Conclusion of Chamber of Commerce Meeting

THE War Emergency and Reconstruction Congress of the War Service Committees of the Chamber of Commerce of the United States, which met in Atlantic City last week, concluded its session on Dec. 6. The principal feature of the final meeting, from an electric railway standpoint, was the adoption of a resolution calling for the appointment of a committee to investigate and study the question of local transportation as it relates to the control of rates and service, franchise, taxes, the attraction of capital into the business and such other questions as the committee may find pertinent, and for the committee to report its recommendations to the board of directors of the national chamber, the board then to deal with the matter in accordance with established procedure.

This resolution was suggested by the Committee on Readjustment of the American Electric Railway Association, through its chairman, Mr. Gadsden. It was one of some thirty resolutions approved by the Clearance Committee out of perhaps three times or more that number which were submitted to the committee. The full text of the resolution adopted by the congress is published on the first page of this issue.

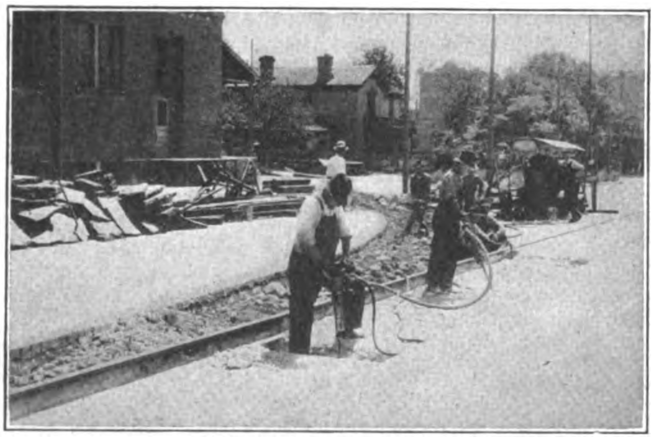
During the sessions of the chamber a daily paper to report the meetings was issued at Atlantic City by the Associated Business Papers, of which the ELECTRIC RAILWAY JOURNAL is a member.

Utilizing Gas Welding at Salt Lake City

Steel Rails Placed Upside Down and Welded to the Main Rails Were Used to Connect New With Old Construction

By JULIAN M. BAMBERGER
President and General Manager Bamberger Electric Railroad, Salt Lake City, Utah

IN THE SPRING of 1915 the Salt Lake Terminal Company, under the direction of the writer, made an installation of concrete track, consisting primarily of 7-in. 80-lb. T-rails, Pennsylvania Section No. 227, and International Steel Tie Company's box-girder ties, 32 in. over all, spaced 5 ft. on centers. Two classes of concrete were used, top concrete laid to a depth of 2½ in. on a screen of American Steel & Wire Company mesh No. 7, and the foundation concrete was 6 in., with a beam under each rail varying from 8 in. to 11 in., in accordance with subsoil conditions. Nose and plain blocks of sandstone were laid alongside each rail, and a drain tile was laid in cinders between the two tracks, so as to keep the entire subsoil in good condition. Further details and photographs of this type of construction were given in an article by the writer in the Jan. 23, 1915, issue of this paper, page 189.



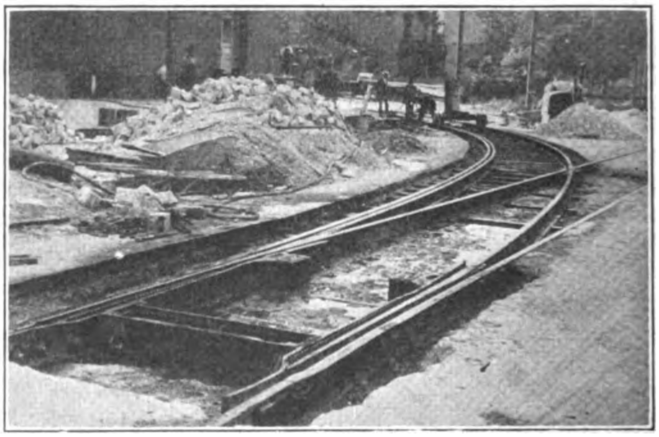
CUTTING OUT CONCRETE AT SALT LAKE CITY, PREPARATORY TO INSTALLING SPUR

Recently a number of large wholesale warehouses desired to have a spur track, and it therefore became necessary to tear up a portion of this trackage for the installation of a turnout. The accompanying photographs will give some idea as to methods employed in this new installation. One photograph shows the method of tearing up the concrete, which was done with the aid of air-operated Sullivan hammers, the air being supplied from an electrically-operated Ingersoll-Rand compressor. The concrete wearing surface was in perfect condition, and was of flint-like hardness. It was found necessary to drill it into small pieces, seldom as large as a man's fist.

It was considered inadvisable to interfere with the old construction except where absolutely necessary, and for this reason no excavation was made below the top of the ties, except that four trenches were constructed for the installation of ties to hold the turnout track to the main line rail. In this way the only parts of the main line which were interfered with were portions of rail where the actual switch points and frog were installed. For the connecting ties, mentioned above, 60-lb. steel rails placed upside down were used, and they were welded with the oxy-acetylene flame to the main line rail, thus forming a complete tie between the old and the new construction. The turnout rails were also welded to the steel ties of the original construction, so that the entire structure is securely tied together. Instead of copper bonds, the joint plates were installed upside-down, the flange being placed uppermost, and were welded at each end to the underside of the head of the rail, thus forming the bond. On the curved portion of the track, wooden ties were used, with 1½ in. of well-tamped pea gravel, on heavy concrete base. Sandstone blocks, well grouted with rich cement, were used as wearing surface throughout the entire installation.

The special work used was made by the Buda Company, and consisted of the insert frog and solid manganese double-tongue switches.

It is very interesting to note that the claims for the original construction have been borne out, in that after three years of use under very heavy freight traffic there was no sign whatsoever of deterioration of steel tie or joints. Further there was no indication that water had affected the structure, the original blocks being still in proper position, and the original concrete clinging to the rail. This showed that very little, if any, vertical motion had developed, especially at the joints, which had purposely been so placed as to come over the center of the steel tie, and thus to rest firmly on the steel plate.



SPECIAL WORK IN WHICH OLD STEEL RAIL IS UTILIZED FOR TIES WITH THE AID OF GAS WELDING

In this connection, it appears to me one of the absolutely essential requirements of good concrete track construction is that traffic be absolutely discontinued from such installation until the concrete has had a number of days to set. In addition, in case of double-track construction, a longitudinal expansion joint should be left between the two tracks and, as cracks develop from time to time, some tar preparation should be used to prevent moisture from entering the structure.

Questionnaire to Public Representatives

To aid electric railway officials in their study of reconstruction problems, the ELECTRIC RAILWAY JOURNAL has sent out to various classes of public officials and other leading men a questionnaire asking their opinions as to what should be the relations between electric railways and the communities served. From the replies received an analysis will be made for publication in this journal.

Various Systems Used for Welding*

The Chief Methods of Welding Are Described Based on Blowpipe, Thermite and Electrical Methods

WELDING, strictly speaking, is the art of uniting parts of similar metal by pressure at a temperature short of the fusing point, but to-day a broader interpretation must be accepted. The modern extension of the term "welding" to other than the ferrous metals includes processes which are in the nature of autogenous soldering. Practically the distinction between the two processes has disappeared.

Pure smith welding, the original and only practical method until recently, consists in heating the parts (of wrought iron or steel) to a temperature at which they are plastic, bringing together the surfaces to be united and applying pressure by hammering or equivalent means. The cleanliness of the surface is secured by putting thereon some substance which will fuse, thus protecting the metal from oxidation. This flux must subsequently be removed.

Such welding is dependent upon the skill and conscientiousness of the operator. Even a good operator cannot be certain that every weld he makes is a good one. Smithy welding is restricted to comparatively simple shapes, and to articles of comparatively small cross-section, except in certain cases where welding is or was performed under steam hammers, *e.g.*, in the manufacture or iron guns.

The use of water gas in a development of fire or smith welding, and has been largely used for making large tubes. The gas, being composed of a mixture of hydrogen and carbon monoxide produced by passing steam over red-hot coke, is comparatively cheap, and when burnt with oxygen or air gives a very clean flame. By means of a blowpipe or combination of tuyeres, the edges to be joined are raised to a welding heat, and the weld is completed by following up this heating with rollers or a pneumatic hammer. The system is obviously suitable for long welds, such as tubes and shells, in place of fire heating. Water gas is also used in blowpipes for fusion processes.

FUSION WELDING

In the fusion method the edges or surfaces of the pieces to be joined are raised to the fusing point. Very generally fused metal of composition similar to the work is added, so that new and old metal are amalgamated to an approximately homogeneous mass. Both flame and electric methods of heating are employed. Fusion welding should properly be classed as autogenous soldering.

All of the flame blowpipes in practical use consist of arrangements for producing a jet of flame of regular form and size and directing it upon the work. These arrangements include means for regulating the proportions of a cumbustible gas and oxygen (or air), mixing the two gases and projecting them as a flame upon the work to be heated. For welding, the flame and the products of combustion in contact with the heated metal should have a chemical reducing or neutral character. By far the most extensively used welding blowpipe method is oxy-acetylene. Acetylene and oxygen in equal volumes (in practice a little more oxygen than acetylene is always used) produce a flame with an inner core which has a temperature of about 4000 deg. Fahr. This core is white, and consists of hydrogen and carbon monoxide, both of which are reducing gases.

Generally the oxygen is supplied in cylinders in a highly compressed form (120 atmospheres) and, after passing through a governor which keeps the pressure constant, it provides the mechanical energy for the mixing of the gases and the projection of the flame. The blowpipe is a form of ejector, the oxygen pressure providing the propulsive force.

Dissolved acetylene has the advantage of purity, whereas acetylene as locally generated always contains impurities. Of these sulphuretted and phosphoretted hydrogen are the most objectionable. A purifier capable of removing these impurities is, therefore, necessary for good welding.

The oxy-hydrogen blowpipe has been used for more than a century, but it has been applied to welding on a large scale only since 1901, about the same time that oxy-acetylene was first used for this purpose. The best-known use of the oxy-hydrogen blowpipe before that time was for producing limelight. It had, however, several important industrial applications, especially for the fusion of platinum and for laboratory work. The hydrogen process has been used for a considerable time for lead "burning" or autogenous soldering.

A disadvantage of oxy-hydrogen for welding work is that the water vapor produced by combustion oxidizes some fused metals, especially iron. It is, therefore, necessary to use an excess of hydrogen over the proportion required for complete combustion, in order to mitigate this oxidation, and in practice about twice the theoretical quantity of hydrogen, *e.g.*, four times the volume of oxygen, has to be used. Nevertheless, the oxy-hydrogen blowpipe has its advocates, and for work with the more fusible metals the advantages in comfort and ease of observing the work may outweigh the disadvantages. Certainly it is best for lead burning and metal cutting.

Coal gas and oxygen produce a blowpipe flame which has considerable resemblance to the hydrogen flame. The products of complete combustion are carbon dioxide and water vapor, both of which are oxidizing gases. Oxy-coal-gas welding has been very little used, acetylene having proved easily superior, and coal gas practice has not developed.

Thermit welding is a fusion process applicable to ferrous metals. A mixture of aluminum and ferric oxide (Fe_2O_3) when ignited burns, or deflagrates, with the formation of metallic iron and alumina. The temperature of the reaction is very high, much above the melting temperature of iron and alumina. Essentially the process is carried out by fixing the parts to be joined in their proper positions and surrounding them with a mold of refractory material in which the space to receive the metal coincides with the jointing line.

This process is analogous to the old method of "burning" for repairing broken cast-iron articles by making a stream of molten cast iron flow over the joint, but the thermit metal is far hotter, the reaction temperature being over 5000 deg. Fahr. This welding method has been extensively applied to the joining of tramway rails and for repair work of various kinds.

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*From paper by Capt. James Caldwell read before the Institution of Engineers and Shipbuilders (Glasgow). This is the first of a series of articles to be published in the ELECTRIC RAILWAY JOURNAL dealing with welding methods and equipment.

SEVERAL METHODS OF RESISTANCE WELDING ARE USED

Resistance welding is a form of electric welding which is the closest approach to original smith welding. The surfaces to be united are approximately fitted, brought into close contact, and an electric current of sufficient strength is passed to bring the surfaces to welding heat. Then pressure is applied to force them into contact and to extrude oxide, etc., as far as possible. The heat produced by the passage of the current is greater at the contact surfaces than in the solid metal. The heat is further localized by using clamping electrodes of low resistance which hold the work as near as possible to the weld. Owing to the rapidity of the heating and the very small amount of air between the opposed surfaces, very little oxidation can occur. The earliest resistance welding was performed on iron and steel, but it was also found that other metals could be welded together. For resistance welding a large current at a low voltage is necessary. The several methods of resistance welding are as follows:

Butt Welding, which is applicable to the welding of rods, bars, etc., transverse to the length of the pieces.

Butt welding was first used on a large scale for jointing tramway rails and steel tires. It is also used for the jointing of wire and tubing in manufacture, cable making and windings of electrical machinery.

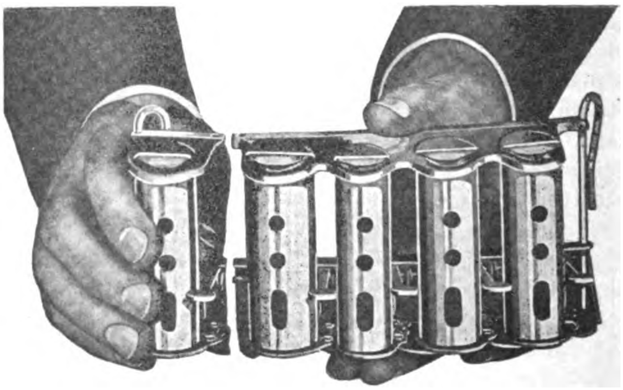
Spot Welding, which is most commonly used for uniting sheets or thin plates where a continuous weld or joint is not required. The two sheets are placed between electrode clamps which press them together, current is then switched on, the surfaces in contact are brought up to welding heat, and the pressure is maintained after current is off until sufficient cooling occurs. The sheets are then moved on to the next spot to be welded, and the operation repeated. Work so welded is therefore united by a line of small welds and may be compared to flush riveted work.

Seam Welding, which is an extension of spot welding, applicable to comparatively thin sheetwork. The electrodes are rollers through which the two sheets are passed when current is applied and the rollers revolved. The electric current heats up the sheets to welding point as they pass between the rollers, and they are thus united along the whole of the roller path. This continuous seam joint is stronger than spot welding, is fluid tight, and is comparatively rapid, as it is continuous. The surfaces to be joined must be absolutely clean, either sand blasted or pickled with acid.

Apropos of the article by W. G. Gordon in the issue of this paper for Nov. 30, describing the Canadian Northern Railway terminal electrification at Montreal, Quebec, the following information will be of interest. Regular operation of passenger traffic through the tunnel to and from the new terminal began over a month ago. Regular through trains now leave the terminal. In addition electric suburban service is being furnished, for the present, by means of electric locomotives pulling regular steam coaches.

New Development in Coin Changers

TO MEET the requirement growing out of the establishment of 6, 7, and 8-cent fares and the adoption of metal tickets, the McGill Ticket Punch Company, Chicago, Ill., has developed an improved lever-operated coin changer which will eject not only single quarters, dimes, nickels and pennies, but combinations such as four pennies, or four nickels at a time. In fact, the changer can be made up to fill practically any requirement desired, including the use of metal tokens. In order to obtain greater flexibility and more combinations when desired, the redesigning of the former four-barrel machine manufactured by this company has been such that a fifth barrel may be added by the adjustment of one of the belt hooks as shown in the accompanying illustration.



ADJUSTABLE COIN CHANGER WITH FOUR OR FIVE BARRELLS

Perhaps the greatest improvement over the former four-barrel machine is the change from a cam to a gear movement for the ejection of coins. This greatly reduces the wear on the moving parts. Another important feature is the absence of solder, all parts being securely riveted. The springs are made of heavy music wire. The ejectors can be quickly and easily locked by pressing a small lever at the side of the machine.

There are two main parts to the completed machine, the top and barrel forming one and the base, including the ejectors and auxiliary apparatus, the other. The two parts are quickly and simply assembled or disassembled for cleaning or repairing by the adjustment of a small nut on the end of each of the two belt hooks. This machine can be used as a means of fare collection or as a change maker in connection with fare boxes.

Long Transmission Line Span Over Maumee River

The Toledo Railways & Light Company has recently installed a 1500-ft. span across the Maumee River at Toledo, Ohio, as the initial step in the construction of a 30-mile 66,000-volt belt-line transmission system around the west side of the city.

The long span is located near the new Acme Power Company's plant which supplies power to the railway company, reinforcing the supply previously available from the company's older stations. On the banks of the river are steel towers, 190 ft. high, which were erected at a cost of $30,000. There are twelve cables in the span, the combined tension being 30 tons.

LETTER TO THE EDITORS

Nation-Wide Publicity and a Fighting Spirit Urged

Nov. 27, 1918.

To the Editors:

Now is not the time for commiseration among electric railway operators over the present critical situation. The spirit needed is one of "over the top and at 'em" if the industry is to be brought on a par with that high standard of American efficiency which is a marvel to the world.

Whether the industry will be a victim of adverse public sentiment and thereby become a political football, or will seek to lead vigorously and intelligently in the solution of its problems, at the same time creating the favorable public relations that are so essential in this work, depends upon how soon this fighting spirit materializes.

What can we do? We can get together and get busy. We can organize a nation-wide publicity campaign, under the direction of a main publicity board in New York with regional publicity boards in various sections of the country. Each company can subsidize itself to the extent of enlisting its ablest men in the work. Publicity material outlining the situation in general and for each particular company can be prepared, distributed and posted in every trolley car in the country. Men can be picked from each company or furnished by the regional boards to speak before various societies, federations, clubs, etc., and obtain from such organizations resolutions upholding the industry in its just demands.

PUBLIC DOES NOT KNOW

The public is not informed as to the present situation. It is stated by the War Board that public men, such as are represented in some of the boards controlling industry in Washington, do not know the situation. The work of the War Board has been primarily publicity work to bring the situation to the attention of those in authority. But why does not the electric railway industry go directly to the public, which is the source of all authority?

In our form of government those in office are the representatives of the people, and they are guided in their actions by public opinion. You can't put anything across these days with commissions or legislatures or any other public bodies unless you first line up the people they represent. Why did the public utility commissioners in conference at Washington say that they realized the situation but desired federal support before taking action? Simply because they knew that public opinion would be adverse to action on their part. We would not be playing politics if we went to the people and demanded justice, so that the representatives might know they were truly acting according to the wishes of their constituents when asked to change our franchises. We would be playing politics if we went to the legislators first.

People are not so perverse that they are unjust in their attitude toward public utilities and just in everything else. They do not know the facts. They do not realize our mutuality of interest, and they do not see that their own individual and community welfare is being jeopardized. The electric railway industry created adverse public opinion, and this has been left to ferment for many years. We have talked a good deal about publicity, but we have never done it right. The usual attitude has been: "It can't be done." Of course it can't unless the industry takes it up in the spirit that won't take "no" for an answer.

In 1914 a sub-committee on public relations of the American Electric Railway Association drew up a code of principles and recommended the establishment of a bureau of publicity. This was rightly hailed as one of the most important steps ever taken by representatives of the electric railway industry. Frank, fair and just public relations through publicity were acknowledged to be the fundamental factor in success. A swing around the circle was made by able men to spread the gospel in important cities. A good deal of talk among us followed; some companies hired press agents, and others advertised extensively. Never has this movement, however, been carried through in a nation-wide way.

Furthermore, seldom have the men of the industry gotten down and rubbed elbows with the public, talked with them in a frank, friendly way at their gatherings. The establishment of a real personal relationship between operators and the public might take a good deal of time day and night, but are there not some men willing to do real work for the industry?

As one gives, so he receives. This is a universal law of nature. If we can prove that we should receive more for the service we give, the public will give more. As for the desire of the public for the service, it is our job to sell it to them, to make them want it, to market our product in the manner of other industries.

INEFFICIENCY MUST BE REMOVED

One of the greatest reasons for the lack of public co-operation and support has been inefficiency, particularly in operation. In some branches of the industry the work is carried out through scientific study, but the end of business where the most is to be lost or gained is still run by rule of thumb methods.

The organization and operation of almost any railway suffers in contrast with that of a large modern industry such as the automobile industry, where competition is keen and manufacturing costs must be minimized by the greatest efficiency possible. In the latter case we find continuous scientific study and analysis of operations, records and cost systems which make possible these studies, rewards to employees by bonuses, etc., careful selection and training of employees, welfare work and so on.

But the railway man will probably say: "This is all very fine, but are the results warranted by the cost of doing these things, and anyway how are we going to get the money now?" There is plenty of proof that these things are warranted. As for the money—while the results will pay—it must first be secured from the public by convincing them that these things are necessary in order that they in turn may receive the most efficient service. And the public will not be convinced the more readily if the railways refuse to admit their mistakes in not having kept pace when money was available.

It is a sad reflection on the electric railway industry that a state of banruptcy had to be reached before sufficient spur was given to do things which should have been done before, the lack of money making it now doubly difficult. It is also a sad reflection that owing to the lack of understanding between the industry and the public it was felt necessary to stand behind the skirts of the federal administration in instituting those methods which have meant increased efficiency in service rendered.

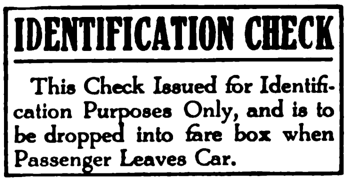
The association, with the intensive co-operation of all its members, should immediately take up the study of these questions and work out practical methods for the prompt establishment of better public relations and a speedy increase of operating efficiency.

RAILWAY BOOSTER.

Identification Check Assists Fare Collection

A Simple Ticket Enables Use of a Prepayment Area With Peter Witt Cars and Makes Fare Collection Certain

THE Mahoning & Shenango Railway & Light Company has had several Peter Witt cars in service on the Youngstown, Ohio, city lines for nearly a year. During this time a study of their operation has been made under the superivision of C. D. Smith, superintendent of transportation, which has proved their suitability for heavy traffic service. The use of this type of car in connection with prepayment areas was a question with which the company was not troubled until the opening of the season at Idora Park, which is located at the terminal of one of the city lines. On holidays this line carries about 45,000 patrons who are loaded from a prepayment area at the park. This loading platform is independent of the unloading platform and admission is gained from entrances at which conductors with fare boxes are stationed. Passengers board the cars from this platform and receive their transfers from the conductors in the cars.


IDENTIFICATION CHECK

This Check Issued for Identification Purposes Only, and is to be dropped into fare box when Passenger Leaves Car.

INDENTIFICATION TICKET USED ON FRONT-ENTRANCE CENTER-EXIT CARS

The equipment used on this park line is not uniform, but consists of Peter Witt, low-platform center-entrance, and double-end types of cars. The present season is the first during which the Peter Witt cars have been used. The collection of fares from passengers boarding the center-entrance and double-end cars after the cars have left the park never has presented any difficulty since, in these types of cars, the conductor controls the only entrance. However, during the present season passengers who boarded the Peter Witt car after it had left the park could not be distinguished from those who boarded at the park, and therefore could pass out at the center of the car without paying their fares. In order to avoid this condition an identification ticket, reproduced herewith, was devised. Tickets are carried by all conductors on the park line, and when they are working upon the Peter Witt cars with the prepayment area in operation the tickets are distributed to those passengers in the front of the car after the car leaves the park. These passengers are thereby distinguished from those who board the car between the park and the other terminal of the line, and as all the passengers in the front section of the car pass the conductor in leaving, they either must drop one of these identification tickets or a cash fare into the fare box. With this system there is no possibility of passengers leaving the car with their fares unpaid, and it interferes in no way with the operation of the prepayment area.

A further use has also been made of these tickets. Frequently passengers who have paid their fares and are standing in the rear of the cars discover front-end seats made vacant by passengers leaving the car. Ordinarily conductors could not permit such passengers to pass to the front inasmuch as the rear section is supposed to contain paid passengers only, and the moving forward of passengers from rear to front would cause confusion. By giving identification tickets to such passengers, uncertainty as to whether or not they have paid their fares is removed.

Experts Consider Transportation Reconstruction

ABOUT forty representatives of transportation and other interests, including the railroad committee of the Chamber of Commerce of the United States, met in Washington on Dec. 12 and 13 to formulate a statement of fundamental transportation principles for public discussion and possible legislation. J. N. Shannahan, Newport News, Va., member of the firm of Peck, Shannahan & Cherry, appeared in behalf of the electric railway interests of the country. J. H. Pardee, president of the American Electric Railway Association, had intended to be present but was unable to do so.

At the time this report was filed by the Washington representative of the ELECTRIC RAILWAY JOURNAL no question directly affecting electric railway interests had come up for discussion. Much of the discussion by the conference, which was held behind closed doors, was devoted to the subject of how long the government should retain control of the steam railroads. This was stimulated by the fact that on the opening day of the conference Director General McAdoo had sent a report to congressional committees urging the extension of the period of government control of railroads for five years.

Representatives of financial, commercial and industrial, agricultural, civic and social, labor, economic and all forms of transportation interests, as well as of the federal and state governments, were present to take part in the discussion. Authorization for the conference, which was held under the auspices of the Chamber of Commerce of the United States, was voted at the annual meeting of the National Chamber in Chicago last April.

It was suggested in Washington during the conference that it may become desirable to create an organization for educational purposes to convey to the public any suggestions which the conference may bring forth, although it is not intended that any report or resolutions attempting to bind all parties present shall be adopted.

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION

PERSONAL MENTION

Cleveland Strike Settled

All Women Conductors Will Be Replaced by March 1—Company Will Employ Them Elsewhere

An agreement reached on Dec. 5 between the local branch of the Amalgamated Association of Street & Electric Railway employees and the Cleveland (Ohio) Railway ended the strike of the platform employees on that road. This agreement was as follows:

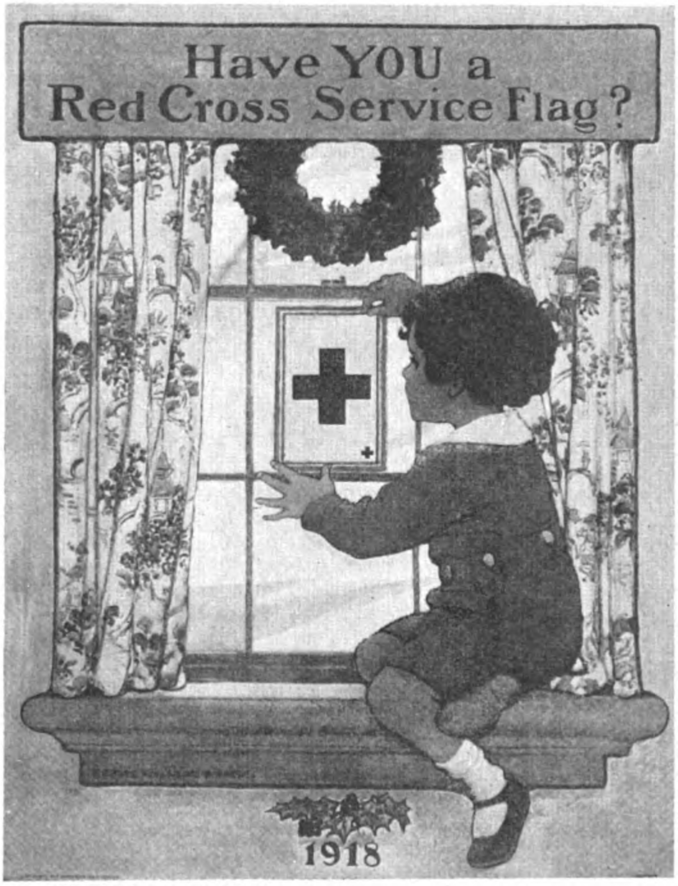
"It is hereby agreed by and between the undersigned that on and after this date no more women will be employed as conductors; that the Cleveland Railway will remove and displace the women that are now in its service as rapidly as possible.

"It is further agreed and understood that on and after March 1, 1919, no women will be in the employ of the Cleveland Railway as conductors."

This instrument was signed by President John J. Stanley, for the company; W. D. Mahon, president of the Amalgamated Association, and Fred Telschow, president; Fred J. Schulz, business agent, and W. M. Rea, secretary of the local branch of the Amalgamated Association.

The vote stood 595 for the settlement and 538 against it. About 800 members refused to vote. The plan that was accepted was the second one which had been formulated. The other one was somewhat similar, but provided for the retirement of the women on Jan. 1, 1919. Some of the features of the measure fixing Jan. 1 as the date for the women to go were not as acceptable to the men as those of the one finally adopted. Mr. Stanley said he had promised when the women were employed to take care of them, and that he proposed to live up to his promise by permitting them to take other places in the organization as soon as such places became vacant or the company needed additional help for which the women were qualified. The matter of uniforms will be adjusted by the company to the satisfaction of such women as had placed orders for them.

At a meeting at the Superior Avenue carhouse on Dec. 6 the women conductors voted to end their careers as conductors on March 1, 1919, in accordance with the contract signed by the company and the union. They placed themselves on record, however, as regarding this agreement as a boycott under the laws of Ohio and the United States and the case will be presented to the Women's National Trade Union League, with the recommendation that it be taken to the War Labor Board for settlement as a national issue of feminne freedom in the matter of labor. The women are ably represented.



Copyright by the American Red Cross

The Goal

The aim of the Red Cross roll call from Dec. 16 to Dec. 23 is to recruit under the banner of the organization every loyal American. The membership fee is $1. The work of the Red Cross is not ended; indeed, the peak of its achievement will probably be reached in 1919. Let the Red Cross rollcall be the Christmas gift of every American man, woman and child to the nation and the world. Do your part to make the list complete.

Service at Cost

Transit Commissioner of Pittsburgh Recommends City Study Boston Public Control Act

In the opinion of E. K. Morse, transit commissioner of Pittsburgh, Pa., as expressed in his annual report for 1918, just presented to the Mayor, the Boston public-control act should receive careful consideration with regard to the features applicable to the problem in Pittsburgh. In conjunction with the rapid-transit ordinances in Chicago and the Cincinnati ordinance, the Boston act should be used as a basis for the development of an agreement with the Pittsburgh Railways whereby all interested may realize their aims and desires. The service-at-cost plan, Mr. Morse says, has been incorporated in the more progressive actions taken to restore the electric railway transportation business to a normal condition. In this connection he says:

> The abnormal conditions brought about by the war, resulting in radical advances in operating costs and maintenance expenses, render the rates of fare prevailing before the war inadequate. The cost-of-service plan meets the situation admirably and undoubtedly results in so stabilizing the electric railway transportation business that it will be more generally adopted and remain in force indefinitely. It is thoroughly equitable, guaranteeing a fair return to the electric railway on its investment and guaranteeing equally to the patrons that service to which they are entitled for the fare paid. In instances where it has been adopted provision is made for co-operation between the municipality and the operating company in such a manner that the possibility of inefficient operation and financial mismanagement will be reduced to a minimum, if not entirely eliminated.

Mr. Morse states that the trend of events and publications during the last year has advanced the position taken by the advocates of municipal ownership. He believes that the public generally is willing to pay for what it gets. Any fare over 5 cents, however, is unfortunate, and any fare over 6 cents is "excessive and unsound," but there must be a limit to the length of haul for a 5-cent fare. If it requires municipal ownership and operation to bring about adequate rapid transit in Pittsburgh, this should come at once.

Atlanta Wages Increased

War Labor Board Also Decides Union Button and Reinstatement Questions

The decision of the War Labor Board in the case of the Georgia Railway & Power Company, Atlanta, Ga., handed down on Dec. 6, closes the controversy between the men and the company as far as the War Labor Board is concerned, at least, until peace is declared. The trainmen struck some time ago because the company refused to reinstate certain employees who were associated with the disorderly element in the 1916 strike, which was followed by a large number of indictments for dynamiting. Among the issues in the 1918 strike were recognition of the union and the right to wear the union button on duty. Both sides agreed to submit these differences to the War Labor Board. During the hearings, however, the men brought forward many new claims that were not an issue in the 1918 strike, such as demands for substantial increases in wages for motormen, conductors and other employees.

WAGES UP 25 TO 40 PER CENT

The decision of the War Labor Board increases wages from 25 to 40 per cent retroactive to Sept. 23. The War Labor Board has recommended an increase in fare for the company, but the city has not as yet permitted a 6-cent fare as recommended by the Railroad Commission of Georgia. While it is expected that the War Labor Board's recommendation to the City Council will carry considerable weight, the fact remains that the Council has already voted down such a measure of relief for the company and is contesting an increase in fares in the courts. The Mayor-elect, J. L. Key, was elected on a municipal ownership ticket. He represented the railway men as attorney before the War Labor Board.

The board fixed wages as follows: First three months, 36 cents an hour; next nine months, 38 cents an hour; thereafter, 40 cents an hour. The wages of employees other than motormen and conductors are to be increased by the same percentage that the maximum of the wage scale paid to motormen and conductors is increased except that for all employees other than those under twenty-one years of age the minimum wage is to be 36 cents an hour, and with the further limitation that none of these increases is to operate to carry the rate per hour for journeymen to a figure in excess of the present union-craft rates in Atlanta.

UNION BUTTON TABOO

The company had issued an order forbidding its employees to wear the union buttons while on duty. The War Labor Board says that it can see no objection under ordinary circumstances to workers wearing a modest button of the ordinary size and design, worn presumably not for any objectionable purpose, but as men wear Red Cross buttons or fraternal emblems. The board points out, however, that it already ruled, in the Columbus case, that "should this button-wearing stimulate angry feeling or lack of co-operation between union and non-union employees, the company might reasonably forbid the practice." It holds that in the Atlanta case the wearing of buttons seems to have had such results. The hope is expressed by the board that this feeling may abate, but it found that for the present the company is justified in forbidding the wearing of buttons while men are on duty. The order is not, however, to be construed to limit in any way the rights of men to wear union buttons while off duty.

The board holds that the company is under no obligation to recognize the union or to deal with representatives of the union who are not employees, but says that the company should continue its announced policy of permitting the organization of its employees and receiving committees representing them as an organization.

In regard to reinstating the so-called 1916 men the board said that it was of the opinion that it had no jurisdiction to pass on their cases, as the time of their discharge occurred before the date of the creation of the board and before the nation entered the war. In the case of the so-called 1918 men the board ruled that two should be reinstated and that the company should not be required to reinstate five other men as it was perfectly clear that they were incompetent and inefficient.

PRESIDENT ARKWRIGHT'S EXPLANATION

P. S. Arkwright, president of the company, said in part:

"The increased wages awarded by the National War Labor Board to motormen and conductors of this company amount to approximately $316,358 per annum. This is in addition to the increase already voluntarily granted by the company since the war began. There will also be considerable increases to other employees. The War Labor Board finds that unless the company is permitted to increase its fares it will not be able to pay the increased wages and continue the present railway service. It therefore recommends that the City Council should permit an increase in fares in order to pay the wages awarded to the men. We hope that the City Council will permit this necessary increase in fares."

In a letter dated Dec. 5 from the War Labor Board to the Mayor and Council of the city the board said in part:

"We have felt that the men are entitled to higher wages awarded to enable them to meet increased living expenses. We are equally convinced of the necessity and justice of increased income to this company through increased fares to meet the cost of the service. We have been urged to make the award of increased wages conditioned on increased fare. The fixing of street railway fares is, however, outside our province and we have felt sure that the local authorities having control of the fares would see that the increase necessary to meet the award is allowed. The board urgently recommended that justice requires an increase in the fares of this company."

Arrests for Accident

Mayor of New York Orders Five B. R. T. Officials Arrested, Charging them With Manslaughter

Timothy S. Williams, president of the Brooklyn (N. Y.) Rapid Transit Company; John J. Dempsey, vice-president; William S. Menden, chief engineer; John H. Hallock, of the New York Consolidated Railroad; Thomas F. Blewett, division superintendent, and Edward Luciano, motorman, were held for the grand jury on Dec. 11 in connection with the wreck on Nov. 1, on the Brighton Beach line in which more than ninety persons were killed and more than 150 injured. Mayor Hylan, sitting as a magistrate in Brooklyn, signed warrants charging the six men with manslaughter.

Luciano was the only one of the six in court when the Mayor announced his decision. Bail for the five officials was fixed at $10,000 each. Luciano's bail was continued at $5,000.

The Mayor said that the hearing seemed to have brought out another fact—that of the failure and neglect of the Public Service Commission for the First District properly to inspect the construction and equipment of the road. The Public Service Commission, according to the Mayor, had been flagrantly derelict and willfully negligent of the duties imposed by law. He continued by saying that he considered it his duty to direct Harry E. Lewis, district attorney, to endeavor to find out whether the penal law had been violated by the commission, by reason of the apparent neglect of obvious duties.

Charles Bulkley Hubbell, chairman of the Public Service Commission, made a statement concerning Mayor Hylan's allusions to that body, in which he declared:

"The facts as to the change in the grade of the curve at Malbone Street (the point at which the accident occurred) will be developed in due season before the proper tribunal. For the present it may be sufficient to say that the original plans were filed and approved, and the amending plans were filed and became effective before any member of the present commission was in office. Mayor Hylan did not have the courage to say that the only evidence before him showed that the change was made by the engineering experts in the interests of greater safety, and that a greater elevation on this curve would have made disaster more likely and more serious."

I. T. S. Interurban Strike

Employees Not Amenable to Reasoning of Union Officials, Company Officers or Members of War Labor Board

Unexpected to the company and to officials of the Brotherhood of Interurban Trainmen, the trainmen on the St. Louis division of the Illinois Traction System, Peoria, Ill., walked out at midnight on Dec. 5. In sympathy the men on all the other divisions also walked out and 450 miles of interurban railway were idle for a whole week up to Dec. 11. The strike was still on at that time.

More than 300 men are involved. They include the men on all the interurban divisions and the bridge car trainmen employed by the St. Louis Electric Terminal Railway. The company had made no attempt to operate up to Dec. 11, the time that the telegram was filed upon which this account of the matter is based.

NEGOTIATIONS REVIEWED

The strike was called after failure to reach an agreement on the wage scale, but it was not authorized by the officers and committee of the Brotherhood of Interurban Trainmen, who were negotiating with the company at the time the men went out. The president of the brotherhood notified the men to return to work, but they refused.

The contract which the company had with the men expired on Dec. 1. Instead of taking up the matter with the company as usual, the trainmen went to the War Labor Board in August with a request for 65 cents an hour for motormen and conductors, passenger and freight. The board held up the hearing in the case until Nov. 21. It then told the men the case was similar to the Birmingham controversy, referred to in the ELECTRIC RAILWAY JOURNAL for Oct. 12, page 667, in which the board refused to intervene because the agreement between the company and the union representing the men specifically provided a means of settlement which the employees had not invoked. In the Birmingham case the board would not take jurisdiction.

QUIT WHILE NEGOTIATIONS WERE PENDING

Negotiations with the company were then started with a conference on Dec. 3. On top of this came an ultimatum from the men that they must have a satisfactory answer by Dec. 5 under penalty of a strike. The committee of the brotherhood and the officers of the company in conference on Dec. 5, however, agreed that more time was necessary. The men were informed that the conference would be continued on Dec. 6 and were told to stay at work. Over the instructions of their officers the men walked out.

The company agreed from the start to arbitrate the differences if the men would return to work, but the men refused. They finally decreased their demands to 55 cents an hour, but held to this arbitrary figure.

Since Dec. 9 conferences have been held in Springfield with business men from the communities affected in an endeavor to secure a settlement, but the trainmen have refused all efforts toward arbitration or conciliation. The company contends that the 55-cent wage is prohibitive. It has expressed a willingness to increase wages, but says that its revenues will not permit it to comply with the men's demands.

This is the first strike in the history of the interurban lines of the Illinois Traction System.

Kansas City Men Strike

Late on the night of Tuesday, Dec. 10, the local union of electric railway employees at Kansas City, Mo., voted to quit work at 4 a.m. the following morning pending an increase in their wages. Tuesday was pay day. Frank O'Shea of the International Union and the local union officials had previously called on Philip J. Kealy, president of the Kansas City Railways, and being told that wages could not be raised until fares were increased they indicated that they would wait for court or commission action.

Union officials had publicly indicated that they were standing by the agreement with the company under which the wage matter was submitted to the War Labor Board. This agreement made any increase awarded to the men dependent upon the ability to the company to secure additional revenue to meet any wage advance that might be recommended by the wage board.

One hundred trainmen reported for work on Dec. 11, but no effort was made to give service. Police protection is promised, and cars may be brought out later in the week. Most of the power plant workmen quit also, causing a suspension of the service on the interurban railways that are supplied with current by the Kansas City Railways. Trainmen on the Leavenworth line struck at the time the city men went out.

Fearing that the local authorities would deny an increase in fares to the railway, the company after the wage award sought to establish the authority of the War Labor Board over fares as well as wages in an action in the Federal Court at Kansas City in which it asked for an injunction to restrain State and municipal bodies from interfering with it in complying with the War Labor Board's findings with reference to wages and fares.

The court held that the award of the War Labor Board expressly negatived any requirement of the increase in wages specified therein, and that with rate cases pending before the commissions and in the absence of any threat of violation of law, it was not the premise or duty of the court to raise rates to put the award into effect. This decision was reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 7, page 1025. More recent developments in connection with the matter are referred to elsewhere in this issue.

Commission Storm Brewing

New York Said to Be Likely to See Changes in First District Commission by New Governor

Prospects seem to point to the internal affairs of the Public Service Commission for the First District of New York again being exhibited to public view. Errors of omission are charged against the commission in the conduct of its affairs that have caused a demand for action by the incoming State administration.

All these things preceding the session of the Legislature, it seems quite likely that the commission will again become the football at Albany this winter. Under the Moreland act the Governor can appoint a commission to investigate the actions of the Public Service Commission, and from the report of this commission could prepare charges against the individual members of the utility board. All this could be done without going to the Legislature.

In the last few days the storm has broken out afresh between one corporation and the commission, with statements and counter statements flying fast in the public press and with considerable careless use of the words Bolshevist and Socialist as terms of derision. In this connection counsel for the commission for the first district felt called upon to say: "The public service company which defies the law, disregards the courts and brings private ownership and management into disrepute is the chief ally of those who wish to usher in state socialism."

With all this in progress the Public Service Commission and the city administration through the Comptroller are each blaming the other for delay in rapid transit construction work which is absolutely necessary as a real measure of relief from transit conditions fast becoming intolerable and for which many riders are inclined to blame the operating companies. On the other hand, one of the companies has brought suit to compel the commission to hasten its compliance with the terms of the new rapid transit contracts in so far as they relate to the construction work under the commission's direction.

Merchants' Association Will Study Utilities

A special committee of the Merchants' Association of New York City, to study the operation of public utilities, has been appointed by William Fellowes Morgan, the association's president. In a letter asking the members to serve Mr. Morgan outlined the reasons for such a committee, saying:

"Whether the public utilities of this country shall be acquired and operated by federal, state, or municipal governments, or whether they shall remain in private hands under suitable government regulation, is one of the vital questions now before the public.

"Although the Merchants' Association has hitherto contended that government ownership and operation are economically, politically, and socially unwise and harmful, the changed conditions resulting from the war make desirable a re-examination of the subject to determine whether the association shall continue its previous policy, or whether, because of changed conditions, it shall modify its previous policy, and, if so, in what manner and to what extent."

The members of the committee are Frank R. Chambers, chairman; Prof. Joseph French Johnson, dean of the School of Commerce, Finance and Accounts, New York University; Otto H. Kahn, H. H. Porter, Francis H. Sisson, and James G. White.

Another Referendum

On March 25 Buffalo Will Again Vote on Question of Aiding International Railway

Residents of Buffalo, N. Y., must vote again whether they will pay a 6 or 7-cent fare to the International Railway, for the City Council on Dec. 9 re-enacted a previous resolution which allows the company to charge a 6-cent fare with 1-cent rebate slips until the determination of a just and reasonable rate by the Public Service Commission for the Second District.

This action on the part of the Council was made necessary by the filing of a referendum petition containing the names of more than 12,000 voters checked by the City Clerk and representatives of the International Railway.

March 25 has been fixed by the City Council as the date for the next referendum. The question to be voted upon will be the same as before, namely, whether or not the action of the City Council shall be repealed. By voting "yes" a voter opposes a higher rate of fare, and by voting "no" the voter favors the 6 or 7-cent fare. At the last referendum the vote was five to one against higher fares.

Although an agreement was reached on Nov. 13 between the municipal authorities and representatives of the railway whereby all pending litigation would be dropped and the so-called service-at-cost plan put into effect, no effort has been made by the Council to enact a resolution toward accomplishing the plan. Such a resolution would also be subject to a referendum. No resolution can be enacted by the City Council giving the railway the right to raise its fares, without a referendum vote of the people, if the proper referendum petitions are filed.

Fair at Lyons, France

The annual fair at Lyons, France, will be held next year from March 1 to 15. It is intended to replace the fair formerly held at Leipzig. Previous fairs were held in Lyons in 1916, 1917 and 1918. Invitations to American manufacturers to be represented are being sent out by the Mayor of Lyons.

Labor Board Limits Action

In order to meet the changed conditions resulting from the signing of the armistice, and the withdrawal of the federal government's control over the industries of the country, the National War Labor Board, after conference with the Secretary of Labor, has made an order providing that in the future it will act only in such cases as are jointly submitted to it for arbitration.

All complaints filed after Dec. 5, setting forth industrial controversies, will, therefore, be referred to the Labor Department for action by its mediation and conciliation bureau. Failing settlement in such cases, the Secretary of Labor will refer back to the War Labor Board only the cases in which both parties voluntarily submit the issues to the jurisdiction of the National War Labor Board and agree to abide by its decision. All cases which were before the board prior to Dec. 5 will be handled as they have been in the past.

This action was concurred in by all the members of the National War Labor Board, and is approved by the Secretary of Labor.

News Notes

New Time Zones Officially Fixed.—The Interstate Commerce Commission, in accordance with the provisions of the daylight saving law passed last March, has determined the proper limits of the time zones in the United States. On Jan. 1, 1919, the official boundaries will be substituted for the unofficial unsystematic ones that have heretofore existed.

Cincinnati Ordinance Attacked.—A taxpayer of Cincinnati, Ohio, on Nov. 13 filed suit in the Superior Court at Cincinnati against the city, the Cincinnati Street Railway and the Cincinnati Traction Company, attacking the validity and constitutionality of the ordinance passed by the City Council on Aug. 23 last, which provides for service at cost.

Amalgamated Hard Hit.—On account of the enormous increase in deaths, due to Spanish influenza, the Amalgamated Association of Street & Electric Railway Employees of America found it necessary, in order to pay the funeral benefits provided for under its by-laws, to levy an assessment of $1 per member, for the month of November.

St. Louis Company Will Reinstate Men.—The United Railways, St. Louis, Mo., has announced that every man who left the employ of that company to join the armed forces of the United States, will be given his place back when he returns to civilian life if he desires to return to the employ of the company and is physically qualified to discharge the duties as he did before he left.

City Authorities to Consider Municipal Ownership.—The first step in the readjustment of municipal activities in New York State as the result of the cessation of the war came on Dec. 3 when a call was issued for municipal authorities from all over the State to convene at Albany on Jan. 22. The three principal problems to be taken up will be municipal revenues, municipal ownership and hydroelectric power.

Bridge Municipal Line Nearly Ready.—Director of Public Utilities Hooke of St. Louis, Mo., announced on Nov. 28 that the municipal railway across the free bridge would be in operation probably by Feb. 1. Two one-man cars, each having a seating capacity of thirty-four persons, will be used in making the run from Seventh and Gratiot Streets, St. Louis, to East St. Louis and back. The fare will be 5 cents.

Bay State Wages Announced.—Wage increases for employees of the Bay State Street Railway, Boston, Mass., were awarded on Dec. 5 by the War Labor Board. The award fixes a scale varying from 41 to 45 cents an hour for motormen and conductors, with an approximate increase of 10 per cent to other employees, and is retroactive to Oct. 22. The finding of the board held that the higher cost of operation will call for adjustment of passenger fares.

Women Refused Union Cards.—Fifteen women, constituting the most recent class of women in training for work as conductors on the city cars of the Detroit (Mich.) United Railway, recently completed their educational period under the instructor, and under the terms of the company's agreement with the union all applied for the customary permits in order that they might begin work. Shortly after the applications were made the women notified the operating department that officials of the union refused to issue the necessary permits. The company will call the attention of the War Labor Board to the matter and ask for a decision.

Will Frame Objections to Depot Ordinance.—President Gahn of the City Council of Cleveland, Ohio, has appointed a committee to frame objections to the franchise ordinance drafted for the new union station to be erected by the Cleveland Union Terminals Company. O. P. Van Sweringen, president, and John L. Cannon, secretary of the company, recently appeared before the Council and discussed with members the points to which they object. They also stated that they would reply to the objections of the Civic League through the newspapers within a short time. These objections, they said, would prove to be unfounded when the ordinance was considered as a whole.

Financial and Corporate

Higher Fares No Solution

Jersey Commission Says Studies of Other Methods of Relief Might Have Been More Advantageous

In the opinion accompanying its order permitting the Northampton, Easton & Washington Traction Company, Easton, Pa., to increase fares, as referred to elsewhere in this issue, the Board of Public Utility Commissioners of New Jersey points out that increased rates evidently do not afford the real solution of the problems now confronting electric railways. The board says that there is apparently a maximum to the price that the public will pay for service, and it is suggested that a study of traffic conditions might reveal the necessity of a rearrangement of zones, and encouragement rather than discouragement of the profitable short-haul traffic.

The board, in discussing the conditions confronting the public utility companies in general as a result of the war, says:

> The operating results of increased rates have become so unsatisfactory to many of the utilities, that it becomes pertinent to discuss the policy of meeting the emergency, which still exists; whether it should be met by increasing rates or whether some other method should not be studied and presented and, at least, tried. It is a singular commentary that almost without exception applications by utilities for increased rates in the present abnormal times have been opposed strenuously by the public affected.
>
> Most of the utilities in New Jersey have made application to the board for increased rates. They were opposed in most cases by representatives of municipalities in which they sold their product or furnished service, as well as inhabitants thereof, and civic bodies. This opposition is not peculiar to this State but has been manifested in every other State. Every increase in rate permitted has been unpopularly received by a part of the public and has been the subject matter of bitter and hostile denunciation.
>
> To what extent this feeling of the public is involved in the reduction in traffic which always results from an increase in rates no one can fairly estimate. It is established, however, that increasing the unit of fare invariably results in reduced traffic. Necessity is one of the chief factors in determining the volume of traffic, so that it is fair to assume that the traffic lost is the short-haul traffic.
>
> It has also been demonstrated that the percentage of decrease in traffic is affected considerably by the amount of the increase. Each additional increase in rates makes the percentage decrease in passengers larger.
>
> Traction officials concede that every increase in rates diminishes traffic. They differ, however, as to the percentage in loss of the number of passengers, and it is doubtful if any average percentage could be ascertained, as so many elements enter into the calculation.
>
> Numerous applications have been made to the board for further increased rates in cases where it had previously allowed increases. The results of the operation under the rates allowed were disappointing because of the continued mounting of operating costs and the shrinkage in business. How long the emergency is likely to continue now that the armistice has been declared, and that peace is likely to ensue, no one can determine. How long the period will last before the prices of materials will become normal and to what extent the wages of labor will be adjusted is problematical. Presumably many utilities operating under the increased rates heretofore allowed will not obtain the result anticipated.
>
> We desire to point out, therefore, that the policy of increasing fares and rates does not solve the existing difficulty. While utilities have centralized their efforts in solving their respective difficulties by increasing rates, studies of other methods might have been of greater advantage. Particularly is this true of the interurban and electric railways. There is a maximum to the price the public will pay for the service.

Northern Electric Wound Up

An increase of more than $200,000 a year in the earnings of the Northern Electric Railway system of California was shown in the final accounting made on Dec. 3, by John P. Coghlan, receiver of the properties since Oct. 5, 1914. During Mr. Coghlan's management, $467,572 was put into new construction and betterments. Funds totaling more than $4,500,000 have been handled during the receivership and all bills incurred during that time have been paid. In addition $105,584 in indebtedness has been disposed of that was incurred before the receivership. Cash on hand amounted to $128,231. This sum Federal Judge M. T. Dooling ordered Mr. Coghlan to turn over to the Sacramento Northern Railroad, a reorganized company which bought the road at foreclosure on May 28, as noted in the ELECTRIC RAILWAY JOURNAL of June 15, page 1161.

Mr. Blair Is Pittsburgh Referee

William R. Blair, referee in bankruptcy, has been appointed master in the Pittsburgh Railways' receivership proceeding by Judges Charles P. Orr and W. H. S. Thomson, in the United States District Court. The order of the court empowers him to investigate the questions involving the payments of fixed charges, rentals, bond interest, improvements, and the keeping of separate accounts of receipts and disbursements of underlying companies.

Mr. Blair's duties will be strictly those of an investigator for the court. Mr. Blair's appointment was made upon a petition filed on Nov. 20 by Charles A. Fagan, one of the receivers. One of the first things to be accomplished, it is understood, is the investigation of the payment of fixed charges, bond interest and rentals.

The court further empowered the master to investigate and ascertain the reasonable requirements of the receivers and of the various municipalities through which the Pittsburgh Railways system operates, with respect to street repairs and improvements, which may be required or contemplated during the year of 1919, with a view to harmonizing relations among all persons interested in this phase of the case in order that the court may be advised what should be done by the receivers to comply with franchise obligations of the lines now operated by the receivers.

Asks for Receiver

Mortgage Trustee Acts for Bondholders of Buffalo & Lackawanna Traction Company in Default Case

Application for the appointment of a receiver for the Buffalo & Lackawanna Traction Company, Buffalo, N. Y., was made in the Supreme Court of Erie County at Buffalo on Dec. 9 by counsel for the City Trust Company, Buffalo, trustee of the mortgage under which the first 5's of the railway are secured. The action was forced by the petition of George Bullock, receiver for the Buffalo & Lake Erie Traction Company, for permission to abandon its lease of the Buffalo & Lackawanna Traction Company's line between Main and Clinton Streets, Buffalo, and the Lackawanna city line. The Buffalo & Lake Erie Traction Company was unable to pay the interest due on Dec. 1 on the $1,600,000 of 5 per cent Buffalo & Lackawanna Traction Company bonds and a committee was formed to represent the bondholders.

ROAD OPERATED UNDER LEASE

The Buffalo & Lackawanna Traction Company's line was leased to the Buffalo & Lake Erie Traction Company soon after it was built. Recently the receiver for the Buffalo & Lake Erie applied to the city for permission to appeal to the Public Service Commission for the Second District, for determination of a just and reasonable rate of fare to be charged within the city of Buffalo. The City Council denied this right to the company and then Mr. Bullock reported to the bondholders' committee of the Buffalo & Lake Erie Traction Company, of which Alvin C. Krech, president of the Equitable Trust Company, New York, is chairman, to the effect that the company was losing money on its lines in New York State.

The application of Mr. Bullock for authority to abandon the lease of the Buffalo & Lackawanna line was heard on Dec. 3 before Justice Louis W. Marcus in the Supreme Court of Erie County. The petition was opposed by representatives of the Buffalo & Lackawanna Traction Company. They asked the court to adjourn the hearing until Dec. 31 so that the bondholders could make their plans. This was agreeable to Mr. Bullock.

STRIKE INCREASES TROUBLES

The difficulties of Mr. Bullock as receiver for the Buffalo & Lake Erie Traction Company increased at the time of the strike on the lines of the International Railway, Buffalo. The trainmen of the Buffalo & Lake Erie Company also went on strike, but returned when they received a 40-cent wage, with the promise that their case would be presented to the War Labor Board for adjustment. This board recently awarded the men a wage scale of 41, 43 and 45 cents an hour. The award is retroactive to Sept. 11. The War Labor Board recommends that the company be allowed a higher fare.

Glasgow Not Immune

Municipal Railway System That Has Paid for Itself Is Affected by Present High Costs

Although the Glasgow (Scotland) Corporation Tramways for the fiscal year ended May 31, 1918, had a net profit of £177,552 to be turned over to the common good, as compared to £160,984 in the preceding year, when all records were broken, the system shows signs of having felt the present-day burdens of higher operating costs.

TOTAL INCOME UP 12.1 PER CENT

The total income of the system for the last fiscal year represented a gain of £152,520 or 12.1 per cent, the increase in traffic receipts being cut to this figure by the decrease in other receipts. The interest on investments, however, declined from £78,637 to £8,579, with the result that the total income for the last year represented a gain of £82,462 when compared with that in the preceding year.

INCOME ACCOUNT OF GLASGOW CORPORATION TRAMWAYS FOR YEARS ENDED MAY 31, 1917 AND 1918

	1918	1917
Traffic receipts	£1,404,110	£1,245,507
Sundry receipts	8,525	14,607
Total revenue	£1,412,635	£1,260,114
Traffic expenses	£527,152	£395,736
General expenses	156,949	137,816
Maintenance and repairs	179,812	143,758
Power expenses	86,029	67,231
Clydebank bridges	1,131	879
European war	£951,063	£745,420
	93,120	92,645
Total expenditure	£1,044,183	£838,065
Balance carried to net revenue account	£368,452	£422,049
Interest on investments	8,579	78,637
Total	£377,031	£500,686
Deductions	199,479	339,702
Surplus to common good	£177,552	£160,984

On the other hand, the operating expenses, excluding expenditures incurred on account of the war, showed an increase of £205,643 or 27.6 per cent. The balance before income deductions, therefore, was only £377,031 in the last year as compared to £500,687 in the year preceding, a falling off of £123,656.

INCOME DEDUCTIONS LESS

That this decrease was not reflected in the net profit was due to the fact that £78,846 for interest and £114,377 for sinking fund were not duplicated in the last year. It will be recalled that the Glasgow tramways department has in the last twenty years paid off out of revenue the capital cost of the undertaking. The payments were completed last year, and the tramways, with all their buildings and plant, now stand on the books of the municipal corporation without any corresponding capital liability.

The amount to the credit of the depreciation and permanent way renewals funds on May 31, 1917, was £181,200. The sum of £7,681 was expended during the following year and £123,894 added, so that the balance on May 31, 1918, was £297,412. During the year £85,957 was expended for ordinary track repairs, and £78,510 was reserved at the rate of £400 per mile of single track.

The passengers carried in 1917-1918 numbered 430,946,566 as compared to 388,294,876 in 1916-1917 and the average fare per passenger was 0.782d. and 0.769d. respectively. The car-mile totals in the two years were 26,261,231 and 25,786,047 respectively, and the car-hours operated amounted to 3,500,415 and 3,466,732 respectively.

8,000,000 Fewer Passengers in Month

According to the monthly report filed by the Public Service Railway, Newark, N. J., with the Board of Public Utility Commissioners of New Jersey as required by the order allowing increased rates, the company carried 31,971,373 passengers in October, of whom 25,917,057 were revenue passengers. The company carried 8,000,000 fewer passengers in October, 1918, than during the same month of 1917.

The total passenger revenue for October, 1918, was $1,608,983, as against $1,551,941 for October, 1917. The total operating revenue of the company increased from $1,589,105 for October, 1917, to $1,654,392 for October, 1918. For the same period operating deductions increased from $1,030.970 to $1,349,007. The total operating income of the company decreased from $559,129 in October, 1917, to $305,453 in October, 1918. The gross income for October showed a decrease from $569,204 to $309,958 and the net income fell from $136,947 to $124,832.

The 7-cent fare was not made operative until Oct. 15. The company's report of course includes the first fourteen days of October, during which time there was a 5-cent fare with 1 cent for a transfer. The figures for October, 1918, show the net increase in passenger revenue to have been $54,606, or 3.5 per cent over October of 1917.

Latest Montreal Report

The income statement of the Montreal (Que.) Tramways for the year ended June 30, 1918, follows:

Gross earnings from July 1, 1917, to Feb. 9, 1918	$4,652,747
Allowance under new contract and other earnings from Feb. 10, to June 30, 1918	874.048
Total	$5,526,796
Surplus from preceding year	856.449
Total	$6,383,245
Operating expenses from July 1, 1917, to Feb. 9, 1918	$3,148,004
Taxes from July 1, 1917, to Feb. 9, 1918	92.474
City percentage on earnings from July 1, 1917, to Feb. 9, 1918	250.509
Interest on bonds and loans for year	940.242
Interest on debenture stock for year	800.000
Dividends paid to April 30, 1918	254.638
Discount on bonds	223.112
Expenditure on renewals over amount carried forward from last year	106.808
Amount paid on account of first Tramways Commission up to June 30, 1918	15.000
Total	$5,830.787
General surplus	$552.458

In the accompanying table the gross earnings to Feb. 9, 1918, the date of the termination of the old franchise, are shown separately from the allowance under the terms of the new ordinance. The credit surplus balance at the end of the year was $552,458, a reduction of $303,991 from the surplus as it stood at the close of the fiscal year 1917.

The general financial provisions of the new franchise are known to the industry, but it is doubtless worth while to reproduce here the company's summary of the details:

> The fares are to be fixed by the Tramways Commission, appointed by the Lieutenant-Governor in Council to administer the contract, and must be sufficient to produce a revenue that will meet the allowances provided for under the contract, viz: Operating expenses and taxes, operating profit, maintenance and renewals, 6 per cent per annum on the amount of $36,286,295, as established by the contract; 7 per cent per annum on additional capital supplied during the continuance of the present world war and for two years after its close, to be received over a period not exceeding five years beyond the close of the war; 6 per cent per annum on working capital furnished by the company for the operation of its system; one-half of 1 per cent per annum on the sum of $36.286,295, or $181.431, for the purpose of covering the expenses incurred by the company in procuring additional capital. A rental of $500,000 per annum is to be paid to the city during the period of the contract. A sum equal to 1 per cent per annum of the gross revenue is to be paid annually into a contingent reserve fund, until such fund shall amount to $500,000. All the portion of the gross revenues remaining after the payment of the charges above described shall constitute the divisible surplus, and shall at the end of each year be distributed as follows: To the city, 30 per cent; to the company 20 per cent, and to the tolls reduction fund, 50 per cent. The tolls reduction fund shall be held in trust for the patrons of the company for the reduction of fares and shall be administered by the commission as provided for under the contract. Whenever at the end of any year the amount in this fund shall exceed $1,000,000, the commission may, and whenever the amount in the fund shall exceed $2,500,000, the commission shall, reduce the fares.

London Tramway Seeks Relief

Legislation to permit the London (England) United Tramways undertaking to be carried out without loss is before the select committee of the House of Lords. The system includes 50 miles of lines in receiver's hands. The company asks for the abolition of certain abnormal fares and for powers to revise fares and to carry out financial reorganization and reconstruction. It is proposed to jettison £1,500,000 of capital and to provide £400,000 for reconstruction and as a reserve and for renewals.

Financial News Notes

New Receiver for Pittsburgh.—George S. Davison has been named by Judge Orr as one of the three receivers of the Pittsburgh Railways to succeed James D. Callery, resigned.

Changes in Personnel.—The following changes have been made in the personnel of the Kensington & Eastern Railroad, Chicago, Ill.: C. A. Peabody to succeed C. H. Markham as president; A. S. Baldwin, formerly chief engineer of the company, to succeed C. M. Kittle as vice-president; L. A. Harkness to succeed O. F. Nau as treasurer, and E. L. Thompson to succeed A. S. Baldwin as chief engineer.

Tiffin Line May Be Saved.—After a citizens' committee had audited the Tiffin, Fostoria & Eastern Railway Company's books and found a deficit of $400 for November, the City Council at Tiffin, Ohio, granted the company a fare of 7½ cents. The company agreed to give this rate a test of sixty days. If this does not produce sufficient revenue to pay operating expenses, the company may suspend operation in the city.

Another Road Abandoned.—Service on the Norfolk & Bristol Street Railway, Foxboro, Mass., which operates from the Holbrook station in Randolph to the town of Stoughton, was discontinued on Dec. 2 by the present owners of the road, H. Cohen & Sons, junk merchants, Chelsea. The firm has been operating the road for the past two months on a 10-cent fare basis. Even this fare proved to be insufficient and the owners decided that they would shut down the road.

Initial Dividends Under Public Control.—The trustees of the Boston (Mass.) Elevated Railway have declared a dividend of $2.04 1-6 on the preferred stock and $2.50 on the common stock, payable on Jan. 2, 1919. These are initial dividends under public control and call for $658,235. The odd amount declared on 7 per cent preferred is due to the fact that the stock was not fully paid on July 1, the first subscription payment of $35 being made at that time and other payments later.

Would Abandon Branch.—The Empire State Railroad Corporation, Syracuse, N. Y., has applied to the Public Service Commission for the Second District, for approval of the proposed abandonment of its line from the Riverside Cemetery in Scriba running southerly along the River Road and private right-of-way to the Oswego River bridge at Minetto. The proposed abandoned section, it is claimed, is being operated at a continuous and considerable loss to the company without corresponding benefit to the public.

Influenza Affects Portland Earnings.—The Portland Railway, Light & Power Company, Portland, Ore., in a recently prepared report, shows that in decreased fares the company lost approximately $80,000 in the three weeks of October covered by the quarantine against influenza. Losses in lighting revenues in the twenty-one embargoed days of last month amounted to about $5,000, but this decrease will be accentuated in the meter readings on which November bills will be paid.

Massachusetts Electric Meeting Postponed.—Inasmuch as it will probably be necessary to hold a special meeting of the stockholders of the Massachusetts Electric Companies, Boston, Mass., in the near future to consider the terms of a reorganization plan now being formulated by the committees representing the share and security holders, the regular meeting will not be held on the third Wednesday in December, which is the usual date, but the shareholders will be called in special meeting when the occasion arises. This postponement has the approval of the committees representing deposited preferred and common shares.

One Per Cent Twin City Common Dividend.—The Twin City Rapid Transit Company, Minneapolis, Minn., has decided to pay a dividend of 1 per cent on the common stock. In a letter addressed to stockholders Horace Lowry, president of the company, explains that gross revenues for the current year decreased 5 per cent, compared with 1916, while operating expenses have increased 16 per cent. The stock of the company has been on a 6 per cent basis since 1909. Last March the quarterly disbursement on the common stock was cut to 1 per cent, and in June the dividend was passed. The payment of a 1 per cent dividend at this time makes a total of 2 per cent paid on the common for 1918.

Salt Lake & Utah Bonds Offered.—Wilson, Crammer & Company, the International Trust Company and E. H. Rollins & Sons are offering at 98¾ and interest, netting about 7½ per cent, $562,500 of first mortgage bond-secured three-year 7 per cent notes of the Salt Lake & Utah Railroad, Salt Lake City, Utah, dated Aug. 1, 1918, and due on Aug. 1, 1921. The bonds are in denominations of $100, $500 and $1,000. The Northern Trust Company, Chicago, Ill., is the trustee. The 6 per cent bonds deposited at 75 per cent of their face value to secure the present issue are a first mortgage on all the property. The purpose of the issue is to fund indebtedness incurred for permanent extensions and improvements to the property.

Washington Short-Term Bonds Offered.—J. S. Wilson, Jr., & Company, Robert Garrett & Sons and the Mercantile Trust & Deposit Company, Baltimore, Md., are offering for subscription at 96 and interest, to yield approximately 7 per cent, $1,000,000 of Washington Railway & Electric Company, Washington, D. C., five-year 6 per cent general mortgage gold bonds dated Dec. 2, 1918, and due Dec. 1, 1923, interest payable June 1 and Dec. 1. The bonds are in the denominations of $1,000 and $500, with the privilege of registration as to principal. They are a direct mortgage on the entire property, subject to underlying liens which cannot be increased during the life of the present issue and none of which mature until two years after the maturity of the present bonds. The purpose of the issue is to provide for the purchase of fifty double-truck prepayment cars and to reimburse the company for other capital expenditures to meet heavy demands of traffic. The Public Utility Commission of the District of Columbia has authorized the company to construct a double-track connection on Seventeenth Street, Northwest, between its tracks at Seventeenth and Eighth Street and those of the Capital Traction Company at Seventeenth Street and Pennsylvania Avenue, and in this connection has further authorized the company to issue $150,000, face value, of general improvements 6 per cent debenture bonds to be dated Jan. 2, 1919, and payable Jan. 1, 1925, and to pledge the bonds as collateral for a loan of $125,000 from the United States Housing Corporation, the latter sum being the estimated present cost of the track extension just mentioned.

Electric Railway Monthly Earnings

ATLANTIC SHORE RAILWAY, SANFORD, ME.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$9,961	$9,542	$419	$388	$31
1m., Oct., '17	11,804	11,187	617	431	186

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Sept., '18	$210,299	*$165,455	$44,844	$37,177	$7,667
1m., Sept., '17	202,865	*138,015	64,850	35,574	29,276
9m., Sept., '18	1,602,068	*1,360,933	241,135	323,928	†82,793
9m., Sept., '17	1,638,859	*1,165,943	472,916	321,659	151,257

* Includes taxes. † Deficit. ‡ Includes non-operating income.

NEW YORK (N. Y.) RAILWAYS

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Aug., '18	$926,929	*$766,031	$160,898	$277,101	†‡$73,522
1m., Aug., '17	1,136,769	*800,598	336,171	282,942	‡102,379
2m., Aug., '18	1,832,759	*1,524,558	308,201	558,032	†‡163,662
2m., Aug., '17	2,237,000	*1,599,577	637,423	565,552	‡169,191

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$2,462,188	*$1,780,709	$681,479	$820,404	†$138,925
1m., Oct., '17	2,602,140	1,514,809	1,087,331	810,889	276,442
4m., Oct., '18	10,642,529	6,976,882	3,665,647	3,271,930	393,717
4m., Oct., '17	9,895,799	5,738,589	4,157,210	3,245,825	911,385

Traffic and Transportation

Kansas City Case Appeal

Railway Will Continue Its Effort to Secure Revenue to Permit It to Increase Wages

The Kansas City (Mo.) Railways will seek to secure higher fares, with the backing of the decision of the Federal Court, referred to in the ELECTRIC RAILWAY JOURNAL for Dec. 7, page 1025, and the award of the War Labor Board, through the State commissions, and the City Council.

COMMISSION DECISION EXPECTED SOON

A decision is expected shortly from the Missouri Supreme Court, which will pass on the authority of the Public Service Commission of Missouri to order 6-cent fares on the Kansas City Railway lines in Missouri.

The Public Utilities Commission of Kansas possibly will hold a session (postponed until "after Nov. 7") to take up the matter of fares on the Kansas side. Both of these bodies, it is understood, had been withholding their conclusions pending decision by the Federal Court on the War Labor Board's award.

The Kansas City Railways will also appeal to the United States Supreme Court from the decision rendered on Dec. 2 by the federal judges, in a further effort to secure a federal finding more specifically establishing the jurisdiction of the War Labor Board over wages and fares.

The Kansas City Railways has issued a clear and forceful statement of the fare situation. The company said:

COMPANY STATES ITS ATTITUDE

"The court decides, first, that the company is financially unable, and its general financial conditions will not permit it under present fares to pay the wages awarded; second, that the War Labor Board did not hold, or intend to hold, that the company should be required, or expected, to pay the advanced wages until an increase of fares was obtained; third, that this is a condition precedent to taking effect of the award and until increased fares are granted by either the State Commission or the City Council, the company cannot be required to pay the increased wages.

"The company will continue to make every effort to obtain increased fares and thus enable it to pay the awarded wages. To this end an appeal will be taken to the Supreme Court of the United States and, the law providing for such hearings being expedited, that court will be asked to act immediately. In addition the Public Utilities Commission and the City Council may be asked to act if there is hope that they will give relief.

"The public must realize, however, that the court, utilities commission and the labor board have all decided, and it is true, that without greater fares no greater wages can be paid."

In order to further its interests as stated in the announcement to the public just quoted, the company has filed an appeal from the decision of the federal judges at Kansas City, Mo. The company has also asked the public service commissions of Kansas and Missouri to make inquiry, and to authorize such increased fares as will permit of payment of the increased wages mentioned in the War Labor Board's report.

The petition to the state commissions contains the following paragraph:

> Therefore, without waiving its right to appeal said cause, applicant prays that the commission shall immediately inquire into and ascertain what should in addition to the duly regular fare be collected from passengers in order that the wages, as fixed by the National War Labor Board, can be paid, and when so ascertained, that the company be authorized to make such additional collections for the period during which such award is effective, which collections shall be held and kept separate and apart from its general fares than other funds of the company and for the sole purpose of carrying out the terms of said award. If the commission will but permit this to be done, the men may at once receive the increased wages as awarded, and not be compelled to wait the action of the Appellate Court.

Commission Urged to Act

War Labor Board Directs Attention of South Carolina Railroad Commission to the Shrinking Nickel

The War Labor Board has decided that the wages of motormen and conductors in the service of the Charleston Consolidated Railway & Lighting Company of Charleston, S. C., shall be increased to the following: For the first three months, 36 cents an hour; for the next nine months, 38 cents an hour; thereafter, 40 cents an hour.

This award the board has called to the attention of the State Railroad Commission in an appeal in part as follows:

"The board is informed that the railway is now operating at a 5-cent fare and that this fare is not sufficient to pay for the service rendered the public under present conditions and will be still more insufficient when the company pays the wages found by this board to be fair and just.

"The board respectfully calls your attention that at the time the 5-cent fare was fixed costs were far below what they are now. According to very careful figures collected by departments of the federal government the 5-cent fare in 1913 was about equivalent to a 7-cent fare at present, and although certain economies have been possible in the war of reduction of service, if the public desires to retain its street railways to a reasonable degree of efficiency it must expect to pay more for the service rendered.

"The board further respectfully calls to your attention the financial recommendation in the last paragraph of the inclosed award."

Suggest Des Moines Raise

Conciliation Board Finds that Company There Is Properly Entitled to Seven-Cent Fare

The Iowa Board of Conciliation has ruled for the Des Moines City Railway in its fight for 7-cent fares. The decision of the board is only advisory and has no legal bearing on the controversy, but it is a complete victory for the railway in so far as substantiating its claim that the 7-cent fare is necessary if the company is to remain solvent. The decision of the board was announced by Mayor Truman A. Potter of Mason City, its president. It will be used by the railway as a basis for starting legal action to increase the rates. The ruling is the most important decision so far made affecting the Iowa utilities and their disputes with the municipalities.

The decision as announced gives a straight fare of 7 cents for individual payment, but the board recommends that all conductors be required to sell tickets at four for a quarter. The present rate of 2½ cents for school children is recommended for continuance.

Just previous to the decision by the board the District Court of Polk County, in which Des Moines is located, sustained the demurrer filed by the Des Moines City Railway in the injunction suit brought by the city of Des Moines to prevent the Board of Conciliation from hearing the case. The city of Des Moines refused to take any part in the hearing before the board, but the case of the company was submitted in detail by its attorneys.

Counsel for the city has announced that any attempt to raise rates will be fought to the limit. Emil Schmidt, president of the railway, in turn has announced that the company will make no effort to increase the rate without due process of law. Mr. Schmidt admits openly that the board's decision is without legal force, but he thinks that it will be of unusual importance in showing both the courts and the people the result of opinion arrived at by an unprejudiced body of trained men.

City-Interurban Transfers Stopped

Under the ruling the Public Service Commission of Oregon that it is unfair for the city service of the Portland Railway, Light & Power Company to furnish with free city transportation the passengers using the interurban trains, the issuing of transfers between the city and interurban lines has been discontinued. The opinion under which this change was brought about was reviewed briefly in the Dec. 7 issue of this paper.

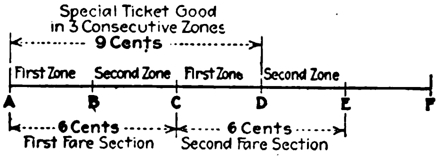
Six-Cent Zones

Massachusetts Northeastern Street Railway to Try New Fare for Six Months

A 6-cent fare unit with a modified zone plan went into effect on Nov. 14 on the Massachusetts Northeastern Street Railway, with the approval of the Public Service Commission for a six months' trial. The commission issued a short memorandum stating that the company's need for additional earnings was so urgent that the tariff should be experimentally allowed. By the new schedule the former 5-cent fare unit is abandoned, but the arrangement of fare sections and zones remains substantially as before. The accompanying diagram illustrates the application of the tariff to typical zones and sections.

RESEMBLES COPPER ZONE PLAN

The fare plan resembles in many respects the so-called copper zone system and differs from it only to the extent that a passenger may not ride through any two zones upon the payment of two zone fares. Thus, A to C is one fare section, A to B being the first zone and B to C the second zone: C to E is one fare section, C to D being the first zone and D to E the second zone. A passenger may ride through two zones, A to C for 6 cents, or from C to E for 6 cents, but he cannot ride from B to D for 6 cents, as he would be passing through two sections and would be obliged to pay 12 cents cash or to use a reduced rate ticket sold at 9 cents (ten for 90 cents) and good in any three consecutive zones.



ARRANGEMENT OF FARE ZONES

Each fare section (except shore lines and section from Hudson Center to Nashua, N. H.) is 2 to 3 miles long; each zone is 1 to 5 miles long.

The sections have been so arranged that where the greatest density of traffic is found, as at Lawrence, Haverhill, Newburyport and Amesbury, this rule does not apply, and passengers may ride through one-half of the two sections, or between B and D, for one unit of fare, 6 cents. This system was adopted mainly because it allows the use of the overhead register on fare collections. When the management decided that a rearrangement of its fare plan was necessary, its first aim was to adopt a plan practical on open cars, by far the greatest volume of business being handled on open cars during the summer months.

COPPER ZONES IMPRACTICABLE

Much time and attention were given to the copper-zone plan, but no satisfactory means was found of applying it on open cars of the company. Therefore the present modified zone plan was adopted, with fare collections in every section but not in every zone. Workingmen's commutation tickets and excursion tickets are abolished in the new schedule.

The company found that the adoption of the 5-cent fare unit in the preceding schedule, with shortened zones, did not yield any material increase in recovered short-haul travel. The loss of regular riders to the extent of about 18,000 young men taken into the national service through enlistment or draft, and the increasing popularity of the private automobile, enhanced as it has been by high wages, are the principal factors in the loss of revenue from which the company is suffering.

I. U. T. Wants Quarter Cent More

The Union Traction Company, Indianapolis, Ind., filed a petition with the Public Service Commission on Nov. 27 asking for an increase in passenger rates from 2½ cents to 2¾ cents a mile. The petition includes all the interurban lines in the State operated by the company, but does not ask for an increase for the Indianapolis-Broad Ripple line.

It is generally understood that requests for similar increases will be made by other Indiana interurban lines. All the interurbans obtained a 2½-cent rate from the commission about five months ago, shortly after the United States railroad administration instituted a 3-cent rate on steam roads.

The petition refers to the increase to 2½ cents which the company put into effect on June 10 of this year. It says that "despite this increased rate the expenses have continued to advance at a greater rate than gross revenues have increased."

City Opposes Transfer Charge

The city of New York, by Corporation Counsel Burr, has filed with the Public Service Commission for the First District a brief in opposition to the application of the New York Railways for permission to charge 2 cents for transfers. It is also a reply to a statement made by James L. Quackenbush, counsel for the company, that "the charge for transfers, if permitted, would probably only delay the approaching time when receivership proceedings would have to be instituted because of the company's desperate financial condition." When this occurs, Mr. Quackenbush pointed out, the various lines composing the company would be separated into independent lines and then the public would have to pay as much as 15 cents in some instances for a ride that now costs only 5 cents.

Mr. Burr denies the jurisdiction of the commission in permitting any charge of more than 5 cents on the company's lines and states that even if the lines are separated the commission will have the power to order through routes, and joint rates and to direct that transfers be given from one line to another as was done in the receivership proceedings ten years ago.

Chicago Fare Hearing

Surface Lines Case Goes Over Until Dec. 23 After Considerable Discussion of Valuation Matter

The Chicago Surface Lines made its appeal before the Public Utilities Commission of Illinois on Dec. 10 for emergency relief in the form of a 7-cent fare. The application was resisted by Chester E. Cleveland, the city's special counsel, and over the objections of W. W. Gurley, general counsel for the railway, the hearing was continued until Dec. 23.

The city challenged the company's position in appealing to the Public Utilities Commission when it is contesting in the United States Supreme Court the commission's power over service regulations. Attorney Gurley stated that the companies are willing to abandon the appeal in the service case and that their appeal to the commission for higher rates should be accepted as a waiver of past objections.

Counsel for the city argued that the contractual relations between the municipality and the surface lines presented a situation different from any other which has been heard by the commission. The chairman explained that the views of the commission on contract ordinances were well known, but said it was possible that the Chicago franchises were different. He would like to hear arguments on this later.

VALUATION DISCUSSED

The city also contended that while the valuation of $156,127,356 might be acceptable as a purchase figure, it should not be considered as a basis for rate fixing. The claim was made that this total is about $50,000,000 too high. Attorney Gurley asserted that the lines were properly valued at this amount. He was willing that the commission should make its own valuation later when fixing a permanent rate.

Testimony was introduced by Leonard A. Busby, president; John J. Duck, general auditor, and J. V. Sullivan, statistician of the Surface Lines. The various exhibits had to do with the valuation of the properties, the earnings and expenses, the action of the War Board on wages, the increased cost of materials, and outstanding securities and dividends paid. Another exhibit showed 329 cities in which fare increases had been allowed to Dec. 1.

The valuation of the properties in 1906 had taken about nine months when the total was only $50,000,000, and the time that would be required to revalue the property now would mean disaster to the Surface Lines if relief were to be withheld that long.

One of the commissioners wanted to know whether sufficient relief could be given if the city's 55 per cent of the net receipts were to be commuted under the terms of the ordinance. President Busby stated that there was no longer any net to divide or to commute. The net earnings for the year ending July 31, 1919, are estimated at $4,426,634 less than for the preceding year.

Soldiers Moved Quickly

Winona Interurban Railway Hauls 830 Men from Winona to Indianapolis on Very Short Notice

In view of the fact that the War Department has not used the traction lines to any considerable extent in the movement of troops and supplies, the routing of 830 men and officers from the Winona Lake Training School to Indianapolis, Ind., on Nov. 23, via traction, possesses exceptional interest. The army officers in charge were inclined to doubt the ability of the Winona Interurban Railway to handle the order and were surprised when a complete schedule was submitted within less than one hour's time and they were informed that the movement could be put under way within five hours.

EIGHTEEN CARS USED

This movement involved the use of sixteen passenger and two freight trail cars, which left Winona Lake between the hours of 7.15 a.m. and 11.15 a.m., the last train arriving in Indianapolis at 3.55 p.m. The troops were loaded at the camp grounds, Winona Lake, and unloaded at Forty-second Street, Indianapolis, only three blocks from the State Fair Grounds, their final destination.

To handle the business it was necessary for the Winona Interurban Railway to secure some equipment from the Union Traction Company of Indiana, which demonstrates the fact that by pooling equipment traction lines can do many things on a large scale that otherwise would be impossible.

To the end that there might be no breaks in the schedule, officials of both the Winona lines and the Union Traction Company were stationed at various points along the route. J. C. Schade, general manager of the Winona lines, personally supervised the loading at Winona Lake; John O. Motto, general freight and passenger agent of the Winona company, looked after the personal comforts of the men as they left Warsaw, and C. S. Keever, superintendent of transportation of the Union Traction Company, took charge of the movement as it passed Peru, the junction point of the two lines.

COMPANY'S LARGEST PARTY TICKET

To the ticket agent at Warsaw belongs the honor of issuing the largest party ticket ever put out in the history of the Winona lines, if not the largest ever issued by any traction line in Indiana. The ticket was for 830 men and the amount was $2,506.60.

Would Annul Chicago "L" Increase

State's Attorney Hoyne on Dec. 8 instituted court proceedings to annul the 6-cent fare on the Chicago (Ill.) Elevated Railways and to compel it to restore the former 5-cent rate. Mr. Hoyne's court action was an information in chancery filed in the Circuit Court by his assistant, Henry A. Berger, who will ask for a temporary injunction restraining the companies from collecting the fare advance. The increase in fare was authorized by the State Public Utilities Commission of Illinois.

Mr. Hoyne challenged the right of the Public Utilities Commission to raise rates of fare. He cited in support of his contention excerpts from the State Constitution which prohibit the General Assembly from granting street railroads the right to operate in cities without the consent of local authorities. He denied the right of the Assembly to release or extinguish liabilities or obligations of corporations to municipal corporations.

Attorney Gilbert M. Porter, representing the railway, is reported to have said that the answer to Mr. Hoyne's contentions would be that "every contract is subject to the paramount power of the State."

Los Angeles Fares Reaffirmed

In an opinion handed down by the Railroad Commission of California on Nov. 22 the commission reaffirmed its decision of Sept. 4 fixing the fares to be charged by the Pacific Electric Railway, Los Angeles, Cal., but changed that part of the September order governing the minimum fare. The new order reduces the minimum fare from 10 cents to 5 cents, and directs the carrier to apply a rate fixed on a mileage basis on interurban fares, the mileage to be computed on all distances beyond the street car zone.

The opinion of Nov. 22 was written by Commissioner Harvey D. Loveland on an application for a rehearing of the September order filed by southern California municipalities, who opposed the adjustment of rates made by the commission.

The "blanket rate" fixed in September by the commission is undisturbed by the decision of Nov. 22, the commission holding that the claim of the west coast beaches—Santa Monica, Venice, Ocean Park and Playa Del Rey—for a lower rate was not justified. Pasadena's claim that the percentage of raise allotted that district was too large, urged the commission to hold that the reason it appeared large was because the rates were too low as compared with the others before the September adjustment. The commission announced that its policy was to make the rates equitable and to dispose of fares that apparently gave a preference.

It appearing that through a misunderstanding the carrier had increased its 5-cent fare in some of the municipalities, the commission says in this connection:

"Acting upon instructions from the commission, the 5-cent fares have been restored. These fares, however, covered zones in the different cities and towns and should not be confused with the fares between interurban points where the mileage basis, with a minimum of 5 cents, will be observed."

Another Seven-Cent Road

New Fitchburg & Leominster Street Railway Fare Provides Seven-Cent Units

A 7-cent cash fare for the Fitchburg & Leominster Street Railway was approved by the Public Service Commission of Massachusetts on Nov. 30. The company has had a 5-cent fare unit, with zones of varying lengths, and in two instances workingmen's tickets are provided at a reduced rate during certain morning and evening hours over portions of the road where the regular cash fare is 10 cents. Between Lunenburg and Fitchburg these tickets are sold at the rate of 7⅓ cents each, and between Shirley and Ayer at the rate of 8⅓ cents each.

FIVE-CENT UNITS WERE IN USE

The company proposed to substitute for the 5-cent unit a 7-cent unit of cash fare, selling tickets good at all hours in lieu of cash at the rate of eight for 50 cents, or 6¼ cents each. Incidentally, it proposed to abolish the workingmen's tickets. Tickets for school children are to be sold at the rate of eight for 25 cents.

The company operates about 41 miles of track, serves about 70,000 persons, and its operating revenue for the year ended June 30, 1918, was $456,702. Its total capitalization, including notes, is about $41,000 per mile. It has paid dividends regularly from the beginning of operation in 1887, and since 1901 has paid 6 per cent yearly.

The commission found that the company needs additional revenue in view of increased cost of operation and the prospect of traffic loss, especially from Camp Devens, one of the national cantonments. The board approved the new rates with the exception of the proposed cancellation of workingmen's tickets, recommending that ten of these tickets be sold for $1.

SIX-CENT FARE OPPOSED

There was some opposition to an increase in the fare unit above 6 cents, but the commission held that the proposed 6¼-cent tickets are a reasonable charge, and authorized the schedule, after revision of the workingmen's ticket rate, for six months' trial. The commission pointed out in its decision that by encouraging the use of tickets the schedule proposed will facilitate the collection of fares on the cars, remarking that it is quite as easy, probably, to sell a strip of eight tickets for 50 cents as to collect one 7-cent fare.

Bad Fix, All Right

We know a man who got so mad at the street car company when the fare was raised from a nickel to 6 cents that he decided to walk to and from work. Then the shoe man came along and raised the price of his $5 shoes to $12, and that made him so mad that he decided to ride on the street cars just to spite the shoe man.—W. P. STRANDBORG in *Watts Watt.*

Transportation News Notes

After Dishonest Conductors.—The Public Service Railway, Newark, N. J., has caused the arrest of seven of its conductors on the various lines in Hudson County on charges of embezzlement.

Six Cents for Bangor.—The Bangor Railway & Electric Company, Bangor, Me., was authorized on Dec. 4 to increase its fare from 5 cents to 6 cents by the Public Utilities Commission, as an emergency measure.

Ashtabula Fare Plea Tabled.—The City Council of Ashtabula, Ohio, has tabled the ordinance to permit the Ashtabula Rapid Transit Company to be allowed to charge a 7-cent fare for the next five years. This is regarded as tantamount to the rejection of the company's plea.

Hog Island Fare Increased.—The Philadelphia (Pa.) Railways on Dec. 3 filed with the Public Service Commission a new tariff to become effective on Dec. 26, increasing the rate of fare between Third and Jackson Streets, or intervening points in Philadelphia, and Hog Island from 8 cents to 10 cents.

New Tariff for Valley Forge Road.—The Public Service Commission of Pennsylvania has announced that the Phoenixville, Valley Forge & Strafford Electric Railway had filed a new tariff of rates to become effective on Dec. 20. The new tariff makes numerous omissions, increases and decreases in existing rates.

Elevated Fare Argument Dec. 16.—Circuit Court Judge Jesse A. Baldwin will hear State's Attorney Hoyne's application for an injunction against the Chicago (Ill.) Elevated Railways charging 6-cent fares. Judge Scanlan was to have heard the case, but counsel for the elevated lines asked for a change of venue. Judge Baldwin set Dec. 16 for hearing arguments.

Three Zones Would Replace Two.—The Fishkill (N. Y.) Electric Railway has filed with the Public Service Commission for the Second District, a new schedule of passenger rates which it proposes as effective in Beacon and Fishkill on Jan. 6, 1919. It is proposed to divide the line into three fare zones, two of 5 cents each and one of 6 cents. The line has heretofore been divided into two 6-cent zones.

From Six to Seven Cents.—A 7-cent fare for each of its zones was allowed the Northampton, Easton & Washington Traction Company, Easton, Pa., on Dec. 4 by the State Board of Public Utility Commissioners of New Jersey. This is the second fare increase allowed this company within a few months, the board having permitted the railway to charge 6 cents, instead of 5 cents, early this year.

Owosso-Corunna Fare Increased.—The City Commission of Owosso, Mich., has voted a fare increase to the Michigan Railway, Kalamazoo, Mich., which operates the Owosso and Corunna line. The city fare remains at 5 cents, but the fare to Corunna is 10 cents, or 15 cents for the round trip. The increase cannot become effective, however, until the Corunna Council and Caledonia township board ratify it.

Connecticut Company Talks Fares.—Advertisements were placed in newspapers on Dec. 10 by the Connecticut Company, New Haven, Conn., calling attention of patrons to the increased costs of maintaining electric railway service. L. S. Storrs, president of the company, says that increased fares will be needed, and that it is probable an effort will be made to secure them in the immediate future.

Brooklyn Service Order Not Met.—F. J. H. Kracke, of the Public Service Commission for the First District of New York has instituted action which will bring the Brooklyn Rapid Transit Company before the board at a hearing to explain why its service in the month of November was 16 per cent short of full compliance with the orders of the commission defining the service which the company should give.

Harrisburg Jitney Men Lose.—The Superior Court of Pennsylvania has *nolle prossed* the appeal of the jitney men of Harrisburg, Pa., from a decision by the Public Service Commission which drove the automobile men off the streets. At one stage of the effort to keep the jitney service alive the operators had the city use the initiative for the first time to pass an ordinance favorable to them.

Cleaner Cars for Boston.—C. D. Emmons, general manager of the Boston (Mass.) Elevated Railway, has been giving special attention to the condition of the cars of the company, and as a result the company announces that very shortly a thorough system of cleaning will be put into operation. The management says it has been greatly handicapped up to date by its inability to get labor for this work.

Jamestown-Lakewood Fare Reduced.—The Chautauqua Traction Company, Jamestown, N. Y., under special permission of the Public Service Commission for the Second District, has reduced from 16 cents to 10 cents the one-way fare in either direction between Jamestown and Lakewood. A twenty-coupon book, each coupon good for one ride in either direction between Jamestown and Lakewood, will be sold for $1.50.

Sacramento Fare Appeal Withdrawn.—The Pacific Gas & Electric Company will ask the State Railroad Commission of California for the withdrawal of the company's petition asking for an increase from 5 cents to 6 cents in fares in Sacramento. When the petition has been withdrawn the City Commission will readopt the Coulter jitney franchise ordinance prohibiting the operation of jitneys. This measure was rescinded some time ago.

Status of East St. Louis Fares.—The 7-cent fare case of the East St. Louis & Suburban Railway, East St. Louis, Ill., which has been before the Public Utilities Commission at Springfield, Ill., was continued until Dec. 11. The company, however, made application for an emergency fare of 7 cents in East St. Louis. The Belleville case, covering rates raised between East St. Louis and Belleville, has been taken under advisement by the commission.

Seven Cents on Another Jersey Road.—The Jersey Central Traction Company, Keyport, N. J., was authorized on Dec. 10 by the Board of Public Utility Commissioners to charge a 7-cent instead of a 6-cent fare. The company's application for permission to charge 8 cents was denied. A decrease in traffic because of the explosion in a munitions plant at Morgan, near Perth Amboy, and a consequent reduction of revenue, were responsible for the increased fare, the commission said.

Another Three-Cent Case in Illinois.—Judge Duane J. Carnes of Sycamore has granted an injunction in the Circuit Court at Rockford, Ill., restraining the Attorney General and the State Public Utilities Commission from interfering with the Rockford & Interurban Railway's advance of its passenger rate to 3 cents a mile. This ruling is in line with the decisions in three other similar cases in Illinois reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 7, page 1026.

Seven Cents for Enid.—The State Corporation Commission of Oklahoma has granted the application of the Enid City Railway for an increase in fares. The new rates will be 7 cents for single fares. Four tickets or coupons will be sold for 25 cents or seventeen for $1. The increase was granted after indorsement by the Rotary Club and Chamber of Commerce, both of which organizations appointed committees to investigate the physical and financial condition of the company.

No More Flagging.—On recommendation of M. N. Baker, Supervisor of Public Utilities, motormen and conductors of Dallas, Tex., hereafter will not flag railroad crossings for cars to pass. Under the city ordinance it has been necessary for cars to stop at all railroad crossings and for the conductor to walk ahead and flag the car across, even though the crossing was merely a switch track and used infrequently. This has been found to be one of the chief causes of slow service.

New Albany Increase Denied.—A proposal to increase passenger fares from 5 cents to 10 cents between points in southern Indiana and Kentucky by the Louisville & Southern Indiana Traction Company and the Louisville & Northern Railway & Lighting Company, New Albany, Ind., was declared unwarranted on Dec. 10 by Attorney-Examiner Myron A. Pattison in a report to the Interstate Commerce Commission. Mr. Pattison recommended, however, that the application be denied without prejudice to the right to apply for authority to fix rates at 6 cents.

High Costs Hit Municipal Line.—Chairman McLeran of the finance committee of the Board of Supervisors of San Francisco, Cal., has advised the Mayor that there is a possibility that the Municipal Railways will have to resort to a 6-cent fare because of the heavy increase in the cost of operation and the falling off of revenue during the influenza epidemic. The depreciation account and other funds have been drawn upon in order to make up the deficit. Supervisor McLeran said that the city faces having to raise the fares or making good the loss in the next municipal budget.

Must Report Service Interruptions.—The Atlantic Coast Electric Railway, Asbury Park, N. J., has been ordered by the Board of Public Utility Commissioners to maintain the equipment at its power station in proper operating condition and keep in stock such materials and supplies as may be necessary to reasonably assure the maintenance of the equipment and cars in proper operating condition. Beginning Jan. 1 the company must furnish the commission with monthly statements containing information as to condition developing at its power plant which result in interruption of five minutes or more.

Municipal Line Increase Impending.—Mayor Sweet of Attleboro, Mass., reported to the Council on Dec. 4 that the municipally-owned A. B. C. Railway between Attleboro and Briggs Corner, in its first ninety days of operation, shows a slight deficit, and unless conditions change an 8-cent fare will be necessary. The road is all that is left of the old Bristol County Street Railway. It was described briefly in the ELECTRIC RAILWAY JOURNAL for Nov. 23, page 933. To purchase the property the city negotiated a loan of $22,500. If the road cannot be made self-sustaining the taxpayers will be called upon to meet the deficit as one of the general charges against the city.

Would Prevent City Interfering.—The San Antonio (Tex.) Public Service Company, which operates the railway system of San Antonio, has filed suit in the United States District Court for the western district of Texas against the city, Mayor Sam C. Bell, the City Commissioners and the City Attorney, asking that a temporary injunction be issued restraining the defendants from interfering with the putting in force of a 7-cent fare. Application was made by the company to the City Commission in August to charge a 6-cent fare. The appeal was denied in October. In November the company asked for a hearing. This plea was also rejected by the City Commission. Up to Dec. 1 the city had not yet filed an answer to the present suit.

Personal Mention

Dean Cooley Heads A.S.M.E.

Is Well Known in Electric Railway Field for His Appraisal and Engineering Work

Mortimer E. Cooley, dean of the colleges of engineering and architecture of the University of Michigan, Ann Arbor, was elected president of the American Society of Mechanical Engineers at the annual meeting held during the week ended Dec. 7. The dean is well known in the utility field as he has for twenty years or more been active in appraisal and other engineering work in many parts of the country. He is an investigator whose ability, saneness and fairness appeal to both sides in any controversy in which his professional services are a factor. His friendliness, good humor, and other human qualities have endeared him to hosts of students and have surrounded him with an expansive circle of friendship in the engineering profession. He believes in bringing into the classroom the atmosphere of the engineering world and his college faculties are therefore made up largely of men who have succeeded as practicing engineers.

M. E. COOLEY

AN ANNAPOLIS GRADUATE

Dean Cooley was graduated from the U. S. Naval Academy in 1878 at the age of twenty-three. For a few years thereafter he was in the service of the Navy but left, in 1881, to become professor of mechanical engineering at Ann Arbor, where he has been, with slight interruptions, ever since. He was chief engineer on the U. S. S. *Yosemite* during the Spanish-American war. He has served on many important commissions and boards and has received several university degrees, the highest being Eng.D. from the University of Nebraska in 1911.

Uel W. Lamkin has been appointed secretary of the Missouri Public Service Commission, effective on Jan. 13, 1919, to succeed T. M. Bradbury, deceased.

Lee Dennis has been appointed a member of the Railroad and Public Service Commission of Montana, effective in January, 1919, to succeed J. R. Hall.

F. W. Bedard has been appointed superintendent of the Urbana & Champaign Railway, Gas & Electric Company, Champaign, Ill., to succeed H. J. Pepper.

Frank Milholland has been appointed a member of the Board of Railroad Commissioners of North Dakota, effective Jan. 1, 1919, to succeed M. P. Johnson.

E. P. Doyle, master mechanic of the Chicago & Interurban Traction Company, Chicago, Ill., has also been appointed electrical engineer of the company to succeed R. J. Bell.

J. V. Davis, formerly general freight and passenger agent of the Washington & Old Dominion Railway, Washington, D. C., has been appointed general manager of the company.

J. M. Mellor, formerly acting manager of the Hartford & Springfield Street Railway, Warehouse Point, Conn., has been appointed secretary and general manager of the company.

H. E. Dalton has been appointed general manager of the Boise Valley Traction Company, Boise, Idaho, to succeed W. T. Wallace, who still retains his position as vice-president of the company.

Harold W. Clapp, for many years general superintendent of the Columbus Railway, Power & Light Company, Columbus, Ohio, has been made general manager, succeeding E. K. Stewart.

George S. West has been appointed treasurer of the Hartford & Springfield Street Railway, Warehouse Point, Conn., to succeed P. L. Saltonstall, who has been elected president of the company.

F. L. Jackson has been appointed assistant manager of the Humboldt Transit Company, Eureka, Cal., to succeed Mitchell Russell. Mr. Jackson will also succeed E. I. Pike as master mechanic.

C. H. Ragon has been appointed engineer maintenance of way of the Humboldt Transit Company, Eureka, Cal., to succeed J. C. Clark. Mr. Ragon will also succeed E. I. Pike as engineer of overhead construction.

J. A. Bunkley has been appointed claim agent of the City & Suburban Railway, Brunswick, Ga., to succeed J. M. Armstrong, who still retains his position with the company as superintendent and purchasing agent.

L. L. Newman, vice-president and assistant general manager of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has also been appointed chief engineer of power stations of the company to succeed C. T. Christian.

B. H. Elliott, formerly superintendent of power houses and substations of the Birmingham Railway, Light & Power Company, Birmingham, Ala., has been appointed electrical superintendent of the company to succeed F. V. Underwood.

Earl E. Hoyt who has been superintendent of inspection for the local and interurban lines of the International Railway, Buffalo, N. Y., for six years, has resigned to become vice-president and general manager of the Railway Bonding Company, Buffalo, N. Y. Previous to becoming superintendent of inspection, Mr. Hoyt was associated with the auditor's office of the International Railway.

E. E. HOYT

E. O. Edgerton, a member of the Railroad Commission of the State of California, has been appointed president of the commission to succeed Max Thelen, who resigned to become supervisor of war contracts under Quartermaster-General Goethals.

B. Jordan has been appointed superintendent of power houses and substations of the Birmingham Railway, Light & Power Company, Birmingham, Ala., to succeed B. H. Elliott, who has been appointed electrical superintendent of the company.

W. C. Campbell has been appointed general superintendent of the Columbus Railway, Power & Light Company, Columbus, Ohio, to succeed Harold W. Clapp, who has been advanced to the position of general manager. Mr. Campbell has been assistant superintendent for some years.

E. K. Stewart has resigned as general manager and treasurer of the Columbus Railway, Power & Light Company, Columbus, Ohio. He will continue as vice-president and remain in charge of the claims department. Mr. Stewart has been general manager of the road for many years.

Frank G. Frost, formerly the superintendent of the Houston Lighting & Power Company, Houston, Tex., has been transferred to New Orleans, La., to join the organization of the New Orleans Railway & Lighting Company, as superintendent of power. Both properties are controlled by the United Gas & Electric Engineering Corporation.

Stirling T. Dow, formerly assistant auditor of the Maine Central Railroad, with headquarters in Portland, has been named as general manager of the Atlantic Shore Line Railway, with headquarters at Kennebunk, Me. Mr. Dow was made acting general manager of the Atlantic Shore Line Railway some time ago to succeed L. H. McCray, who resigned to go into government service.

George S. Davison has been appointed one of the receivers of the Pittsburgh (Pa.) Railways to succeed James D. Callery, whose resignation is noted elsewhere in this column. Mr. Davison will serve in the capacity of receiver with H. S. A. Stewart and Charles A. Fagan. Mr. Davison has had wide experience in electric railway matters. He is a director with Mr. Callery of the Philadelphia Company and Pittsburgh Railways, a director of the Monongahela Street Railway and of the Pittsburgh & Birmingham Traction Company. He is also a director of the Pennsylvania Water Company. He is president and director of the Gulf Refining Company, the Bessie Furnace Company, Cambria Limestone Company, the Gulf Pipe Line Company of Oklahoma, the Gulf Products Company, the Gypsy Oil Company, the Indiana Oil & Gas Company, the Mexican Gulf Oil Company, the Sharpsville Furnace Company and the South American Oil Company, besides being vice-president and director of a number of other industrial concerns.

James D. Callery has resigned as one of the three receivers of the Pittsburgh (Pa.) Railways, giving as his reason his desire to devote his time to private business interests and to his family. Mr. Callery was president of the Pittsburgh Railways for many years. He was made receiver of the company last April when the courts were asked to take over and administer the affairs of the company. He entered the transportation business in Pittsburgh in 1884 as a director of the West End Street Railway. In 1898 he became president and director of the Second Avenue Passenger Railway and was the prime mover in the conversion of the Second Avenue and the West End Traction systems from horse to electric motive power. He was active in the mergers which brought together the isolated transportation systems of the city of Pittsburgh, and in 1901 when the Pittsburgh Railways was formed he was elected president of the company. He retired as president of the company on Jan. 1, 1917, in favor of S. L. Tone. Mr. Callery retains the presidency of the Duquesne Light Company. He will also continue as vice-president of the Philadelphia Company and associated corporations.

B. C. Amesbury has been appointed assistant superintendent of the New York State Railways, Rochester Lines. Mr. Amesbury entered the employ of the Rochester Railway as a motorman in 1892. He continued in that position until 1897, when he received the appointment of inspector. In 1900 he was appointed general foreman of construction of the Rochester & Sodus Bay Railway, which was then under construction. When the road was opened for operation in the fall of that year Mr. Amesbury was appointed roadmaster of the company and continued in that position until 1906. He was then made superintendent and held that position until the consolidation of the Rochester Railway, Rochester & Eastern Rapid Railway, Rochester & Sodus Bay Railway and other properties into the New York State Railways. At the time of this consolidation he was appointed division superintendent at Rochester, in which capacity he continued up to the present time.

B. C. AMESBURY

Obituary

Lieut. Harry M. Atkinson, Jr., the son of Col. Harry M. Atkinson, chairman of the board of directors of the Georgia Railway & Power Company, Atlanta, Ga., died on Nov. 2, of pneumonia, in a hospital at Angers. He had been taking his last training at an artillery school in the French town, preparing to go to the front. Lieutenant Atkinson was graduated from Harvard and had supplemented his work there with two years' training at the Massachusetts Institute of Technology. He won his commission at Plattsburg, and was assigned as instructor to several American camps before going abroad.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER,
SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES BUSINESS ANNOUNCEMENTS

Conditions of Steam Turbine Manufacture

Shops Have Unfilled Orders on Hand That Will Keep Them Busy for Some Months

Steam-turbine business is expected by the producers to fall off. A survey has been made by the ELECTRIC RAILWAY JOURNAL of conditions in steam turbine shops, and it is found that these shops have contracts either directly or indirectly with the government which, depending on the plant, it will take all the way to a year to clean up. About 50 per cent of the manufacturing capacity will be absorbed in this work, although one of the smaller concerns finds that this work will take but 25 per cent of its capacity.

CONSIDERABLE STOCKS OF RAW MATERIAL ON HAND

These contracts are protected by prior purchase of raw material on government account. Speaking generally, the manufacturers have considerable stocks of raw materials on hand, which, having been obtained during the war period, are being carried at the high prices at which they were purchased.

Besides the government work there are other unfilled orders which will absorb a large part of the manufacturing capacity for some time. One plant puts this at 90 per cent, another at 75 per cent for the next six to eight months, and a third plant finds that unfilled orders will employ its facilities for the best part of a year to come.

Deliveries on orders now placed must consequently be somewhat delayed. They will depend, apparently, entirely on the volume of unfilled orders. Two companies making only small-size turbines quote one of them two weeks to three months and the other ten months on units under 2500 hp. Companies producing all sizes are quoting up to fourteen months in all sizes, although units apparently can be had in three to four months.

As far as could be learned no quotations are being made as of date of shipment. They are rather firm as of date of order.

NO PRICE CHANGES EXPECTED FOR SEVERAL MONTHS

Prices are expected by the manufacturers to hold for some time. This is concisely put by the sales manager of one concern as follows:

"We can see very little prospect of material price changes in finished apparatus for several months to come, as raw materials, which would naturally be used in filling orders booked in the near future, will largely be drawn from stock purchased at the highest prices current during the past year. Labor conditions may change some, but probably cannot be greatly changed until living costs come down, and there seems no imminent prospect that commodities of this kind will be materially cheaper for some time. The inevitable trend of prices will be toward lower levels, but it will be vastly to the benefit of us all if these changes can be effected gradually, and we believe this can be accomplished if the business men of the country think calmly and act with care and continuance of the patriotism which was displayed during the war period."

The outlook for the future apparently shows diminished demand. A statement by one of the men prominent in the industry is to the effect that this condition is brought about by the largely increased capacity installed and under manufacture. "We think," says this man, "that when the war started central stations were generally under-powered. We believe that conditions have changed or will change to that of their being pretty generously powered until conditions settle down and the natural increase in demand comes upon them."

Wire Splicer Market Is Fairly Active

Supply on Hand Good Although of Not So Much Variety as Heretofore

Trolley wire trouble, with the advent of winter and its attendant storms of sleet and snow, is about due. Extremely cold weather has the effect of making the wire brittle and breakages are bound to occur. As a result the market for splicers is fairly active now although it is more or less steady at all seasons, owing to the fact that the life of the splicer depends entirely upon the amount of traffic passing over the line. Every time the trolley wheel strikes the splicer a small part of the ear wears off and on busy systems the splicers wear away rapidly.

Supplies of trolley wire splicers on hand are good although perhaps in not such variety as heretofore. Standardization in this line, as well as in many other electric railway equipment appliances, is rapidly taking place, the supply men state, and manufacturers are anticipating the cutting out of many little and uncalled for styles.

On the whole the market conditions are good and no price changes of note have taken place recently.

The Future of Prices

Increasing Volume of Purchases by Traction Systems Everywhere Eagerly Looked For

Speculation with regard to the future of prices and labor is general. Guesses are being made and, generally speaking, the trade is optimistic, almost without knowing why. The general feeling among the supply men is that the electric traction systems will buy and buy plentifully. When pressed for a reason the answer comes that the roads have put off purchasing so long that now the war is over they must buy.

There also seems to be a firm conviction among the sales forces that prices will continue at top notch for some time; this for the reason that stocks of raw materials were purchased at high prices, labor has not come down and the reconstruction demand will be large.

An investigation of the underlying economic conditions of the electric railway industry reveals many interesting facts in this connection.

That the electric roads will at once commence new construction and the rehabilitation of their lines in any considerable volume except where such work can no longer be delayed has not been confirmed by inquiries. What effect the labor situation with regards to track work would have was outlined in this section two weeks ago. Events since then have only served to further confirm the statements then made.

On the other hand, the volume of purchasing for maintenance and for increasing operating economies must necessarily continue.

Also while the war was going on it was certain that all purchases would be pared to the bone. Now, it is just as certain that every day that passes means that the electric railway big buying market is just so much nearer. Sight must not be lost of the fact, also that for long it has not been possible to procure many items, especially rails. These products are needed and it is reasonable to suppose that as soon as shipments can be made that orders will be more frequent.

That lower prices will bring a greater volume of orders seems more than probable. To be sure, for just the moment the market is pretty dull.

This is the period of business readjustment and caution in buying is everywhere being carried out.

No one doubts that lower prices are coming. The only question to-day in the minds of both buyers and sellers, on this point, is how long before the lower prices will come and how they will come. That some commodities will be lower before others is natural. Nevertheless substantial decreases are foreshadowed by conditions.

Early this week the price of rails dropped $5 a ton and so far as it could be learned from prominent steel concerns this cut is but the forerunner of more to come.

GOVERNMENT REGULATION DISCONTINUED

The government price-fixing program comes to a halt with the first of the new year. The steel men have already shown their hand with this week's substantial reductions. Copper producers now frankly admit that lower prices for copper can be expected after Jan. 1. Large stocks of copper are accumulating, and to dispose of these and the continued output, concessions the producers agree, must be forthcoming.

In other words the sellers' market which has held sway for more than three years is giving way to another buyers' market. To what extent prices will come down it is not possible to forecast. However, with producers staying in their present mind it seems certain that reduction will come gradually. Nevertheless the revision downward must certainly keep pace with the volume of incoming orders in inverse ratio.

On the other hand it would not be surprising to see prices during the next eighteen months fluctuate considerably, but with an unmistakable tendency downward. Copper producers, for instance, expect an immediate slump, but when business quickens prices are expected to harden automatically and then advance.

It is doubtful if buyers will accept this increase for long, so that the natural result will be another drop, etc. In this way it looks at present as though the producers will test out the market.

Imports of Lead and Rattan Permitted

By a bulletin issued on Dec. 9 the War Trade Board announces that the restriction of the importation of lead has been amended to permit the issuance of licenses for the importation of lead bullion, as classified under Paragraph 153 of the Tariff Act of 1913, when originating in Mexico and coming by ocean transportation. The board also announces that W. T. B. R. 176, issued July 26, 1918, restricting the importation of rattans and reeds has been revoked and that henceforth applications for licenses to import rattans and reeds will be considered by the War Trade Board for shipment from any country by any means of transportation.

Rail Prices Lower

Rolling Mills Getting Back to Peace Basis and Are Turning Out Rails on Back Orders

Immediately following the meeting of the American Iron and Steel Institute rail producers offered a reduced schedule on rails, which at once became effective. The meeting was held on Monday of this week at the Waldorf-Astoria, New York City, and was attended by more than 150 representatives of all branches of the iron and steel industry. They had been summoned by the general committee on steel and steel products of the institute for the purpose of expressing views and recommendations as to future policy and prices.

The new schedule on standard T-rails which went into effect on Monday afternoon follows: Open hearth rails 100 to 500 ton lots, $57, and bessemer rails, $55. Prices previously quoted were $65 and $63 respectively.

This is the first time in many months that any revision has taken place in the price of rails. For several years—1913, 1914 and 1915—the price averaged $28 per ton. In 1916, the average was $30 per ton and for 1917 up to November $33 per ton, when a price of $38 was reached and remained at this figure until the government fixed the price.

RAILS IMPOSSIBLE TO OBTAIN

It has been next to impossible for electric railways to obtain any rails at all in the past two years. If they were fortunate enough to secure any rails they had to pay in the neighborhood of $65 or more for them in small lots.

The principal rolling mills are rapidly getting back to a peace basis and are now turning out rails on back orders. Some of these orders have been on the company's books for more than two years and it is understood are now being filled, except for necessary government work, in the order of acceptance. Even after 100 per cent production has been reached the mills will be busy for months to come.

The new schedule of prices does not at this date affect the price of girder rails, which has not changed any during the past nine months but has more than doubled since the war began. The girder rail situation as to deliveries is more difficult to forecast, but, some rails are coming in the market now for domestic use, and much better deliveries may be looked for after the first of the year.

One of the principal mills producing girder rails has been almost wholly engaged in rolling sheet steel for shells, but these contracts have now been filled and its energies will now be devoted to filling back orders on its books which have been accumulating for over two years.

The producers' committee was in Washington on Wednesday, when it asked the War Industries Board to fix the prices approved at the Monday meeting. This, however, the Board refused to do on the ground that the board was to be disbanded on Dec. 31. It was then announced that the government no longer wished to act as a price-fixing medium.

The rail market, therefore, will be free from government control and supervision after the first of the year. Prices from that time on naturally will depend on the demand. It was hinted this week by more than one prominent man in the rail business that the current reduction is but a forerunner of others. It was learned that producers expect to bring the market price nearer to normal gradually in order not to disturb the market unduly, as would otherwise be the case.

At the same time that rail prices were reduced, cuts in sheets, blooms, billets, bars, etc., were recommended. It was proposed that blooms and billets be reduced from $47.50 to $43.50; bessemer pig iron, $35.20; basic pig iron, $33, and foundry pig iron, $34, each to be reduced $3 a gross ton; heavy shapes, now $67.20, to be reduced $4 a net ton; sheared and universal plate, $72.80, to be reduced $5 a net ton; merchant bars, now $64.96, to be reduced $4 a net ton; black sheets (No. 28), $112 a gross ton, to be reduced $6 a net ton; tinplate, $7.75 per 100 lb. to be reduced 40 cents per 100 lb.

Carbon Brush Stocks Still Low

Demand Now Heavy and Supplies Are Expected to Reach Normal Level During January

Carbon brushes are in very heavy demand at present and owing to the country's war activity supplies on hand are in very limited quantity.

Large railway systems usually purchase from 5000 to 10,000 brushes at a time and began placing their orders as far back as six months ago, forecasting the possibility of a serious shortage which might have crippled the full operation of their lines. Fortunately the manufacturers were able to meet the situation and although at times only a small part of an order could be delivered, by parcel post or express, the wheels were kept turning and all lines, whether large or small, were able to operate.

Supplies now are beginning to show signs of improvement and it is expected will continue to do so although this will probably be a slow process. Stocks are not expected to reach normal again until some time during January.

Prices of brushes have advanced about 25 per cent in the past two years.

Track and Roadway

Municipal Railway of San Francisco, San Francisco, Cal.—The Board of Supervisors of San Francisco has authorized the Board of Public Works to prepare plans and specifications for the construction of the extension on Brighton Street between Ocean and Grafton Avenues.

San Jose (Cal.) Railroads.—The Railroad Commission of California has granted extensions of time to the San Jose Railroads, the Peninsular Railway and other companies in which to comply with the provisions of the State law known as the safety act, under which they must reconstruct their overhead lines.

Shore Line Electric Railway, Norwich, Conn.—Work has been begun by the Shore Line Electric Railway on the construction of an extension from the Jefferson Avenue terminal to connect with the tracks on Bank Street and thence to Montauk Avenue and Truman Street, New London.

Georgia Railway & Power Company, Atlanta, Ga.—Work is under way by the Georgia Railway & Power Company on the reconstruction of its tracks at Ridge Avenue and South Pryor Street, where the city made a change in the street grade. The track on the East Point line at Oakland City is also being relaid, a 90-lb. A. R. A. rail being substituted for 50 to 60-lb. T-rails.

St. Joseph, Mo.—Director of Public Utilities Hooke has announced that the municipal car lines across the free bridge would be placed in operation about Feb. 1.

Gloucester City, N. J.—Construction work is well under way on the new traction line of the Emergency Fleet Corporation from Broadway and Warren Street to Yorkship Village, with terminus at the new housing development for employees of the New York Shipbuilding Company. It is understood that the line will be leased to the Public Service Railway.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—The Board of Public Utility Commissioners has ordered the Trenton & Mercer County Traction Corporation to make improvements and betterments in its system, including the completion of a signal system, the installation of new crossarms, insulator pins and insulators, new feeder lines and repairs to its ground system. The work will also include considerable rail construction, as well as the installation of fire protection facilities at the carhouse and shops of the company. It is understood that plans are under way for the construction of an extension from the present Trenton Junction division terminus on Grand Avenue to Ewing Avenue.

International Railway, Buffalo, N. Y.—Plans are being considered by the International Railway for the extension of its line on Franklin Street, Bailey Avenue and Abbott Road. The work is estimated to cost about $750,000.

Penn Yan & Lake Shore Railroad, Penn Yan, N. Y.—An extension will be built by the Penn Yan & Lake Shore Railroad from Branchport to Hammondsport, about 12 miles.

Levis County Railway, Levis, Que.—Work on the reconstruction of the tracks of the Levis County Railway has been suspended on account of winter conditions. It is expected that work will be resumed next May.

Dallas (Tex.) Railway.—Mayor Joe E. Lawther, of Dallas, has recommended to the City Commission that the Dallas Railway be instructed to begin at once the making of surveys and the preparation of plans for two new street car lines to touch the Oakland Cemetery section. These lines are to be built as the first of the improvements to be made by the traction company under the terms of its franchise. Mayor Lawther asks for a survey and plans for a line extending from Second Avenue southwesterly by way of Harmon Street and passing along the entire southern boundary of the cemetery. The other line is to be surveyed as an extension from the Forest Avenue line in a southeasterly direction, reaching the northern boundary of the cemetery. Either extension would require about 1 mile of new track.

Willapa Electric Company, Raymond, Wash.—The citizens of Willapa have petitioned the Willapa Electric Company to establish an auto line to Willapa temporarily, and later extend its electric line to that city. The company has the matter under consideration.

Charleston (W. Va.) Interurban Railway.—It was expected that operation would be begun the early part of this month on the new double-track extension of the Charleston Interurban Railway between Charleston and the United States naval ordnance plant at South Charleston. Work will be begun at once by the company double-tracking its line on Virginia Street from Russell Street to Court Street. This will leave only a small stretch of single track in the line between Charleston and the naval plant, that being over the South Charleston bridge. The improvement, when completed, will represent an expenditure of several hundred thousand dollars.

Power Houses, Shops and Buildings

Berkshire (Mass.) Street Railway.—The Berkshire Street Railway has notified the secretary of the Commonwealth of Massachusetts of its intention to petition the incoming legislature for permission to sell electricity and power for commercial and other purposes.

City Light & Traction Company, Sedalia, Mo.—A new 1000-kw. General Electric turbine will be installed by the City Light & Traction Company at its power house, and it is expected that it will be in service by January or February.

Interborough Rapid Transit Company, New York, N. Y.—The Public Service Commission for the First District of New York has awarded a contract to A. W. King, New York, for station finish on the Fifth and Lexington Avenue stations, at $126,448.

Toronto & York Radial Railway, Toronto, Ont.—Plans have been prepared by the Toronto & York Radial Railway for the construction of a carhouse on Kingston Road, Toronto, for the Scarboro division.

Philadelphia, Pa.—Bids will be received until Dec. 23 by W. S. Twining, Director Department of City Transit, 754 Bourse Building, for furnishing and placing steel frame work and railings, concrete floors and parapets, side inclosures, etc., for four station platforms with connnecting passages between platforms and station buildings of the Frankford elevated railway at Orthodox-Margaret Streets and Ruan-Church Streets, together with one over passage bridge and stairs, also altering existing girders at Orthodox-Margaret Streets.

Pennsylvania Railroad, Philadelphia, Pa.—Plans have been prepared by the Pennsylvania Railroad for the construction of a new one-story addition, about 18 ft. x 40 ft., to its power house at Butler Street and Glenwood Avenue, to cost about $5,000.

West Penn Power Company, Pittsburgh, Pa.—Rapid progress is being made by the West Penn Power Company, which is controlled by the West Penn Railways, on the installation of a new 30,000-kw. unit at its plant at Windsor, to provide for increased capacity. The company is planning for the installation of a similar unit to be ready for operation by March 1.

Virginia Railway & Power Company., Norfolk, Va.—Plans are under consideration by the City Council of Norfolk for the purchase of the local power plant of the Virginia Railway & Power Company with a view of controlling the heat, light and power systems in this section.

New Advertising Literature

Link-Belt Company, Chicago, Ill.: Bulletin No. 353, covering coal and ash handling.

H. W. Johns-Manville Company, New York City: A 152-page book entitled "Service to Power Users" dealing particularly with heat insulating materials, steam packing and fuses.

Quigley Furnace Specialties Company, Inc., New York City: A leaflet which tells about its "Insulbrix," a cellular refractory brick for keeping heat in boilers.

Trumbull Electric Manufacturing Company, Plainville, Conn.: Catalog No. 11 setting forth dimensions and cost data for the company's electrical accessories.

Milliken Brothers Manufacturing Company, Inc., New York City: Pamphlet, "Space and Speed in Steel Buildings," descriptive of the standardized truss unit system of building construction, designed and manufactured by this company. According to the company hundreds of buildings of this type have been erected for the United States government in different parts of the country and they represent low initial cost of material, transportation and erection.

Rolling Stock

Colorado Springs & Interurban Railway, Colorado Springs, Col., as reported in the ELECTRIC RAILWAY JOURNAL of Oct. 26, furnishes the following equipment memorandum on the twenty-four cars to be delivered in December:

Number of cars ordered	24
Name of road	Colorado Springs & Interurban Ry. Co.
Date order was placed	Sept. 1, 1918
Date of delivery	December, 1918
Builder of car body	Cincinnati Car Co.
Type of car	Birney safety
Seating capacity	28
Interior trim	Cherry
Air brakes	Westinghouse
Armature bearings	Ball
Car signal system	Faraday
Designation signs	Hunter
Door operating mechanism	Safety Car Devices Co.
Fare boxes	Johnson
Fenders or wheelguards	H. B. wheelguard
Heater equipment	Gold
Headlights	Golden Glow
Journal bearings	Friction
Lightning arresters	Electrolytic
Motors, type and number	G. E. 258-2
Registers	International
Slack adjuster	Gould
Trolley catchers or retrievers	Keystone
Trolley base	Nuttall
Trucks	Cincinnati Car Co.
Ventilators	Utility
Wheels	24 in.
Special devices, etc.	15-in. Hunter route signs

Trade Notes

W. F. Keckeisen, formerly advertising manager of the International Filter Company, and previously associated with the Federal Sign Company, has joined the staff of Russell T. Gray, advertising engineer, Chicago.

C. W. Y. Loucks, secretary and sales manager of the McKeen Motor Car Company, Omaha, Neb., resigned recently to enter an Officers' Training Camp at Plattsburg, N. Y. C. B. Matthai of the Union Pacific Corporation legal department, has been elected to succeed Mr. Loucks in the capacity of secretary.

Economy Electric Devices Company, Chicago, announces that the Kyoto (Japan) Traction Company, through its American purchasing agents, has bought an equipment of Economy electric railway meters for power-saving work. These meters are designed to record the energy consumption of the cars on which they will be installed.

Engineering & General Supply Company, Los Angeles, Cal., J. G. Monahan, manager, has been appointed the representative of the Drew Electric & Manufacturing Company for southern California and the State of Arizona. The Drew product consists of overhead trolley line material and a number of electric railway specialties. The Engineering & General Supply Company maintains sales offices at 400 San Fernando Building, Los Angeles.

Edison Storage Battery Company, Orange, N. J., announces a number of important changes in the staff of its sales organization. Bertram Smith, for the past three years district sales manager of the Detroit district has been appointed assistant sales manager, with headquarters at the main office, Orange, N. J. George F. Simons has been appointed district sales manager of the Detroit district. Mr. Simons has been associated with the Edison Storage Battery Company for the past three years. J. K. Mahaffey, who has been representing the company in Washington in connection with government business, has been appointed as sales manager of the Pittsburgh district.

Roller-Smith Company, New York City, announces the promotion of M. Frankel, now manager of its Chicago office, to the position of assistant sales manager. Mr. Frankel's headquarters will remain in Chicago, from which point he will supervise the activities of the company's offices in Cleveland and Detroit as well as in Chicago. His familiarity with the company's products gained through his connection with it for the past six years or more makes him particularly well qualified to handle the duties incident to his new position. The company also announces the appointment of W. A. McCombs & Company, Union Arcade Building, Pittsburgh, Pa., as its agent in the State of Pennsylvania west of Altoona and the entire State of West Virginia, to handle the Roller-Smith lines of instruments, circuit breakers and meters.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, December 21, 1918 *Number 25*

The Last Call for Data for Statistical Issue

CHAIRMAN GADSDEN of the American Association committee on public relations has said repeatedly that one of the greatest handicaps which the Electric Railway War Board met in Washington during this past year in setting forth the position of the electric railways to the authorities was the lack of accurate, comprehensive electric railway data. The ELECTRIC RAILWAY JOURNAL is endeavoring at least partly to supply this lack through its annual Statistical issues, published each year during the first week in January. Blanks have been sent during the past month to all operating electric railway companies, calling for the miles of track built and cars purchased or built during the current year for publication in our issue for Jan. 4, 1919, and the statistics thus being collected are nearly complete. If any railway has not sent in the data requested, there is still opportunity to do so. It is both the privilege and the duty of each railway to assist in making these annual tables complete and correct.

How Good Transportation Helps the Local Merchant

AN INSTANCE of selfish opposition to an important feature of transportation improvement was noted during a recent discussion of an ordinance which was about to be submitted to a referendum. This opposition did not arise from any claim or pretense that the ordinance could not give the people good service. Indeed, it was based on exactly the reverse. It was contended that if the ordinance was adopted it would make it too easy—too cheap—for those who lived in a certain neighborhood to go downtown to buy goods. Needless to say, the obstructionists who raised this point were business men of an outlying community who wanted to discourage all trading in other districts. In its final analysis, their argument was that the hundreds of thousands who go to town every work day should be inconvenienced in their going and coming so that a few might be deterred from shopping in the larger district.

Making due allowance for the fact that a storekeeper is right in seeking to retain all possible customers for his own store, it is manifest that the best business centers outside the central or downtown district of a large city are those which have the best transportation service to such a district. People will not move into an outlying district unless they are assured of adequate facilities for traveling between their homes and their working places. Stores could not exist in remote districts unless people were reasonably satisfied with transportation to and from their work. It would appear to be shortsightedness of the narrowest kind, therefore, when business men of this class attempt to block plans for making their community still more accessible. It looks like a plain case of biting off the nose to spite the face.

Possibilities for More Extended Use of Welding

THE high cost of materials and the difficulty of obtaining material of all kind promptly from the manufacturer or dealer have recently given a tremendous impetus to welding operations in repair work. As emergency measures a great deal of welding has been carried on which would not have been done under normal conditions. This focussing of attention on welding has led to an accelerated development of the art, and particularly in the operations and equipment used in arc welding. Railways have used this system for bonding and minor repairs for many years, but for important operations where failure would be accompanied by serious results the system has been looked on more or less with suspicion. A case of this nature where welding may not be suitable is pointed out in a communication in this issue. The chief reason for the apparent apathy toward the use of arc welding is that haphazard methods have been employed. Almost any kind of electrical equipment, any kind of electrode material and any kind of labor for welders have been used. Another thing that has militated against a more extended use of arc welding is the difficulty of determining whether a completed job is good or bad. These arguments have less weight now because conditions have been improved rapidly.

The tendency in arc welding development has been toward the use of an automatic machine to lessen the skill required in navigation. Nevertheless, automatic arc welding machines will not take the place of the skilled operator for repair work and special jobs, although they occupy an important place in repetition work. There is also much research work still to be done, as practical use has preceded scientific investigation. The metallurgist, the physicist and the electrical investigator have some interesting problems to solve in determining the best conditions for producing good welds.

Many committees appointed by various technical societies and by the government have made extended investigations and reports, and numerous articles are appearing in the technical press which emphasize the importance of welding. Believing that electric railways will be benefited by a more extended application of welding the ELECTRIC RAILWAY JOURNAL has begun the publication of a series of articles dealing with the various methods in use, the equipment necessary and the supervision and tests desirable to insure proper work. The first of these, treating of various systems in use, was published in the issue of this paper for Dec. 14. Additional information on the subject will be found in this and later issues.

Rail Failures: A Class of Trouble Which Seems to Have Overlooked the Electric Railways

IN THESE times of many troubles the electric railways have cause to congratulate themselves upon their comparative immunity from serious accidents due to rail failures. Unlike the steam railroads, we have seldom heard of this trouble upon electric railways although the tracks, upon private right-of-way at least, are built very much in the same manner, with similar rails, ties, ballast and other construction features. Meanwhile the steam railroads have been burdened with an increasing number of accidents from this source and several fatalities have occurred, which investigation proved were due to rail failures. These in turn were mostly of the type ascribed to transverse fissures. This sort of rail failure is very peculiar in that it usually comes suddenly, with no previous warning. It is a progressive fracture which starts from a hidden interior defect. The most careful inspection on the part of maintenance-of-way forces will fail to reveal the presence of transverse fissures which may cause a break within a few hours after an inspection has been made.

The committee on rail of the American Railway Engineering Association has been investigating the subject for several years. Although it has secured many valuable data, it has, as yet, discovered no definite preventative. However, it is believed that the change from bessemer to open-hearth steel for rails, which has been incorporated into the practice of most railroads, has helped considerably in reducing the number of broken rails. Constant study has been given to improvement in mill practice and many types of alloy steel have been tested in service as well as greatly increased rail sections, but the trouble persists much as the corrugation trouble which still bothers the electric railway in street track.

Perhaps the immunity of the electric railways from rail failures may be ascribed to the lighter axle loads and to the lesser impact which prevails even with electric locomotives, since it has been found that the impact upon bridges of more than 20-ft. span, produced by electric locomotives of the Chicago, Milwaukee & St. Paul or Norfolk & Western types, is not more than one-third that produced by steam locomotives. There can be no question but that severe impact will finally search out undisclosed transverse fissures.

A renewal of interest attaches to the subject because of the prominence again given it through the recent report of the chief of the bureau of safety of the Interstate Commerce Commission, covering the investigation of the accident which occurred in April last on the Long Island Railroad at Central Islip, N. Y. The body of the report is made up from the exhaustive study of the subject of transverse fissures prepared by J. E. Howard, engineer-physicist, and the discussion therein of the conditions in the so-called critical zone of the rail-head metal (which zone is at the surface and extends downward perhaps half an inch below the surface) serves to call attention again to the question as to how the action of the steel in the rail head in this zone may affect the tendency of rails in street service to corrugate. It is pointed out in the report that in this zone the elastic limit of the steel is exceeded, the relations of the elastic limits in tension and compression are disturbed, internal strains are introduced and the value of the modulus of elasticity is at least temporarily lowered and sometimes destroyed. The latter has been proved by laboratory tests.

Can it be possible that in the last item we have a substantiation of the argument advanced by several engineers to the effect that overstraining of surface metal is the prime cause of corrugation? Would transverse fissures develop, instead of corrugations, in street railway rails if the axle loads were as heavy as those on steam roads? It would indeed be interesting if tests upon corrugated rails could be made to disclose whether or not the modulus of elasticity has been destroyed in the critical zone of these rails. We understand that the structural changes above noted do not extend much, if any, below the critical zone, and it is rather interesting to note also that as a rule corrugations once removed from the surface (critical zone) seldom return. This would indicate that whatever the structural changes which occur in rail heads which become corrugated, these do not extend below a certain critical zone. Surely there is room here for important tests which may throw light on a vexing subject.

Can Your Organization Be Reconstructed to Advantage?

THE publication in recent issues of this paper of one or two new plans of departmental organization calls attention to a subject which is very timely. The great war having come to a close, it is important that the head of every large organization should turn to questions of efficiency with a view to securing the best possible results. This is especially true of electric railway companies.

A majority of these properties have barely managed to exist through the strenuous period of the past few years. Quite a number recently have been put in a position to secure more revenue through the action of utility commissions and city authorities. All will need efficient management if they are to make the best of their opportunities. The basic step in proper management is to have a workable form of organization, and the larger the property the more complicated this organization is bound to be.

It is undoubtedly true that many companies have furnished transportation in a reasonably efficient manner with a form of organization that would not stand the test of expert criticism. This does not prove, however, that better results might not have been attained under a different system. In such cases it will usually be found that a dominant personality at the head of the company made up for shortcomings in the form of organization. This, then, is not an answer to the argument that the method of conducting business should be safeguarded by the basic principles of efficiency.

We have seen this theory tested in some notable rate cases where the higher fares asked for were not granted because the petitioners were unable to show that they were getting all possible benefits from the existing charges for transportation. The public, of course, is most intimately concerned with the workings of the transportation department, and under intelligent control this is the department which can do most to secure additional revenues for the company. The wise executive will give careful consideration to matters of this kind. He will overlook no chance to give a proper structure to his organization and see to it that men of the right caliber are placed in authority under him to carry on the functions of the various departments. This is a reconstruction period for electrical railways as for all other lines of business. Men are coming back from France to rejoin the organization. The duty, therefore, is to reconstruct where reconstruction is advisable.

State Commissions Should Act in Kansas City Fare Case

WHEN is a contract not a contract? This is the question which naturally comes to mind when one reads that the employees of the Kansas City Railway went on strike recently for higher wages, notwithstanding their agreement that any advance in compensation should be limited by the financial ability of the company.

The unusually complicated situation in Kansas City was brought about by the recent award of the War Labor Board fixing a higher wage scale and finding that the financial condition of the company would not permit it to pay the advanced wages or to readjust its schedules as directed, and also stating that "in strict justice, the public must pay an adequate war compensation for a service which cannot be rendered except at war prices." The public authorities refused to sanction higher fares, and as the financial condition of the company grew worse an appeal was made to the federal courts to restrain interference with the collection of an 8-cent fare. The federal tribunal, as reported in the Dec. 7 issue of this paper, held that under the circumstances the state boards of Missouri and Kansas had primary jurisdiction and denied the restraining order.

The employees, meanwhile, had grown restive under conditions which seemed to hold out no hope of higher wages and, disregarding the joint agreement which had been filed with the War Labor Board, they refused to operate the cars. This is truly a Gordian knot, and there is serious danger for the future of the railway properties until the matter is settled. It is probably true that the men should have higher pay. There has been no proof that the company has overstated its plea of financial embarrassment. The War Labor Board's decision differed from its ruling in other cases, in that it made the effectiveness of the award dependent on the ability of the company to meet its terms. This was made possible by the signed agreement between the company and the employees, and this contract was taken as an evidence of desire for fair play upon the part of the men.

In the final analysis the disentangling of this situation lies with the public utility commissions of the two states in which the Kansas City company operates. We hope that the members of those commissions will be big enough to accept the recommendation of the federal board "that the company should be permitted to make such charges for its services as will produce sufficient income to pay the wages herein specified." If the commissioners can find another way out let them do so. The interests of the public, the employees and the security holders demand, however, that some action be taken at once.

British Standardization Seems to Be Getting Somewhere

REFERENCE was made last week to a paper, presented before the annual meeting of the A. S. M. E., outlining the work of the British Engineering Standards Association. This work ought to prove, and undoubtedly has already proved, very valuable to the several standardizing agencies in this country. There may come a time when it will be advisable for these agencies to get together more closely, possibly even to form some kind of an engineering standards association in this country. Many of the standardization achievements of such organizations as the Master Car Builders' Association, the American Railway Engineering Association, the American Society for Testing Materials and the American Electric Railway Engineering Association have been very creditable and indicate the possibilities that are ahead. But a beginning only has been made; the surface has hardly yet been scratched. There is much overlapping of jurisdiction on the part of the associations and far too much exercise of individualism in design by engineers in the industries. To illustrate the latter it is only necessary to remind our readers of the electrical machinery situation a few years ago, which has its parallel in other fields now. Time was when each designer of a "dynamo" or motor wanted to express his individuality through it. "Freak" field magnets, queer brush rigging, etc., contributed to great variety in appearance and to high cost. Now all machines of this class look, in general, alike, and all are trim in appearance, efficient in operation and reasonable in cost.

An almost universal complaint that is met is that many association "standards" do not become real standards, that is, industry standards. There must be good reason for this, and the blame cannot all be placed on the industries. In many cases the standards are too academic. Presumably the same situation exists in Great Britain as here in this regard, although the Standards Association is endeavoring to forestall the formulation of academic standards. In the words of its secretary, it was early recognized that the association's main committee "should be an industrial organization in the closest touch with practical requirements and modern scientific knowledge and discovery; that it should undertake standardization only to meet recognized wants, and that periodic revision of the standards should be undertaken so that improvements might be incorporated, the various industries thus being prevented from becoming stereotyped and their methods hidebound."

The purposes of standardization of the British association, as of our own associations, are "to secure interchangeability of parts, to cheapen manufacture and to expedite delivery," all of these desiderata being closely connected with reduction of first cost and maintenance cost. Is it time for our engineering associations to get together on standardization to these ends?

Modern Track Needs Good Ballast

By R. C. CRAM
Assistant Engineer Department of Way and Structures,
Brooklyn Rapid Transit System

Well-Ballasted Track Is Economical to Maintain — The Author Shows Why, Describes Types of Construction, Gives the Properties and Materials Necessary for an Ideal Ballast, and Discusses Ballast and Ballasting from the Standpoint of the Best Engineering Practice

BALLAST is the name given to any material which is placed upon the subgrade (subsoil) in order to hold the track in line and surface. The name was derived from stone or gravel which had been brought to England as ship ballast and was there first used on some railroads to hold the ties in place. In the early period of electric railway development ballast other than natural soil was little used, largely because of the comparatively light weight of the cars, particularly in city service. During the early interurban construction period, ballast other than natural soil was considered rather unimportant, but as this class of road developed the construction practice began to take pattern after steam railroads and the use of ballast finally became a fixed part of electric interurban and high-speed railway track construction practice. To-day we have many electric railways which have ballasted track construciton equal in character to that of first-class steam railroad track.

The use of ballast for track construction in streets was quite slow in establishing itself as a feature of city track construction practice, although the desirability of ballast for this service was called to the attention of street railway managements as long ago as 1892 in a report to the American Street Railway Association, when the use of 6 in. or 8 in. of broken stone or gravel under the ties was recommended.

In recent years there has been a revival of interest in the subject, particularly on account of the important investigations which were made by the Pennsylvania Railroad engineers and more recently by the committee

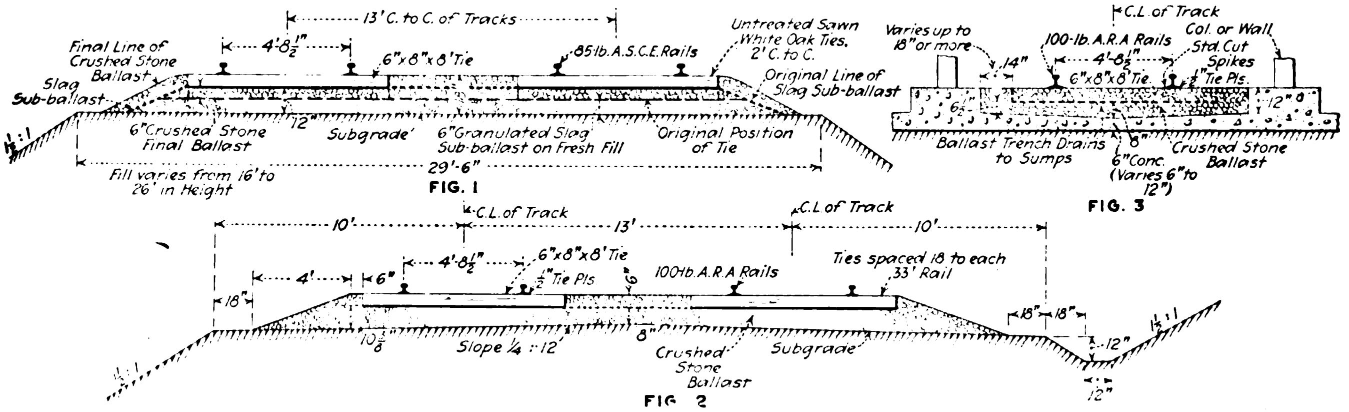

13' C. to C. of Tracks
4'-8½"
Final Line of Crushed Stone Ballast
Slag Sub-ballast
6"x8"x8' Tie
85-lb. A.S.C.E. Rails
Untreated Sawn White Oak Ties, 2' C. to C.
Original Line of Slag Sub-ballast
1½:1
6" Crushed Stone Final Ballast
12"
Subgrade
6" Granulated Slag Sub-ballast on Fresh Fill
Original Position of Tie
29'-6"
Fill varies from 16' to 26' in Height
C.L. of Track
Varies up to 18" or more
14"
100-lb. A.R.A Rails
4'-8½"
Col. or Wall
Std. Cut Spikes
6"x8"x8' Tie
½" Tie Pls.
6½"
12"
Ballast Trench Drains to Sumps
8"
6" Conc. (Varies 6" to 12")
Crushed Stone Ballast
C.L. of Track
C.L. of Track
10'
13'
10'
18"
4'
6"
4'-8½"
6"x8"x8' Tie
½" Tie Pls
6
100-lb. A.R.A Rails
Ties spaced 18 to each 33' Rail
18"
18"
10⅜
Slope ¼ : 12
8"
Crushed Stone Ballast
Subgrade
12"
12"
1½:1
1½:1

FIG. 1

FIG. 3

FIG. 2

TYPICAL SECTIONS OF ROADWAY AND BALLAST CONSTRUCTION

Fig. 1—Roadbed and ballast section, International Railway, new Buffalo-Niagara Falls line. Illustrates use of granulated slag sub-ballast as mat on fresh fill and final ballast of crushed stone.
Fig. 2—Typical sections of roadway and ballast, tangent tracks on fill or in earth cut. Type VI track, Public Service Commission, First District, New York, for subway lines above ground.
Fig. 3—Section of subway track, New York Municipal Corporation, showing method of ballasting.

on stresses in track of the American Railway Engineering Association.

The current electric interurban railway practice was the subject of a report by the way committee of the American Electric Railway Engineering Association in 1916, while the practice as related to tracks in streets was reported upon by the same committee in its 1914 and 1915 reports on the subject of proper foundation for tracks in paved streets. Much of the following discussion is taken from these reports or from Willard's "Maintenance of Way and Structures."

WHY BALLAST IS AN ESSENTIAL PART OF GOOD TRACK

Ballast is necessary for the following reasons: (1) To provide drainage for the ties, (2) to protect the subgrade by providing a uniform distribution of loads over the subgrade, (3) to hold the ties in place and the track in proper line, (4) to prevent vegetable growth, and (5) to provide material which will allow the track to be surfaced without disturbing the subgrade.

Experience has taught that in new construction, ballast should not be placed until the subgrade is completely finished to grade and that ballast should not be used to bring up low embankments to grade because it is too expensive a material to be so used, and furthermore in order to secure uniform operating conditions the depth of the ballast below the ties should be uniform throughout the entire length of the line. In order to overcome the difficulty which arises from such situations it is becoming a practice to first install an inferior ballast on the subgrade at levels which will permit it ultimately to take the position of subballast under the ballast proper, which latter is to be installed after the roadbed has ceased settling under traffic. This method is called for in the plans of the International Railway in construction of the new Buffalo-Niagara Falls line as described in the JOURNAL for Aug. 10, 1918. The roadbed and ballast section for this line is shown in Fig. 1.

Such a method cannot be employed as a rule for tracks in streets, but a quite similar final result is reached by the customary practice of rolling the subgrade before placing the ballast. Thus the roadbed is consolidated and settled beforehand, while a comparatively uniform depth of ballast is assured through the elimination of pockets and because the ballast under load will tend to penetrate the subsoil to a uniform depth. It is the practice on many roads in street work to roll the ballast also, in which case it is finished at a grade 2 in. or 3 in. below the ties and the final tamping is done with finer stone or gravel to bring the ties to true subgrade. This method greatly increases the ability of the ballast to distribute the load more evenly over the subsoil and creates more uniform conditions in tamping.

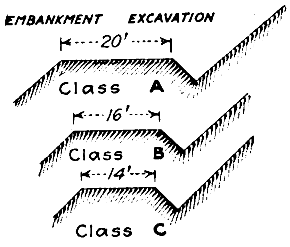


FIG. 4

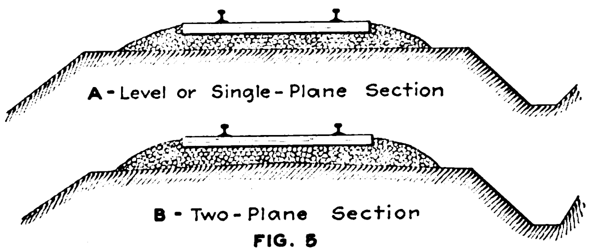


FIG. 5

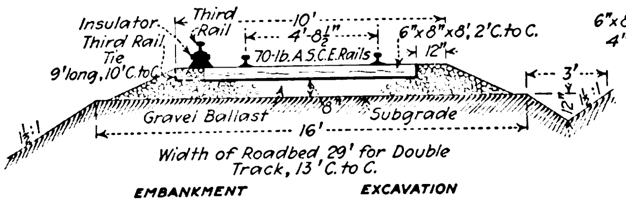


FIG. 6

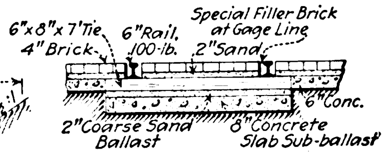


FIG. 7

MINIMUM WIDTHS OF ROADBED AND SOME TYPICAL ROADBED SECTIONS

Fig. 4—Minimum widths for single-track roadbed recommended by the American Railway Engineering Association.
Fig. 5—Typical roadbed sections.
Fig. 6—Roadbed and ballast section, Michigan United Railways.
Fig. 7—Construction for interurban track in paved streets, Michigan United Railways.

In order that ballast may perform the functions previously outlined it should possess as many of the following properties as it is possible to obtain with the material selected: (1) It should retain no water; (2) it should have a firm grip upon the tie; (3) it should not disintegrate under action of traffic, tamping and the elements; (4) it should be easily worked and tamped; (5) it should be free from dust and not form dust; (6) it should not heave from action of frost; (7) it should prevent growth of vegetation, and (8) it should be of low first cost.

The selection of a suitable ballast material is governed by a number of controlling factors. The engineer may desire to use some particular material but financial conditions will prevent its use. Perhaps it may not be available in the locality. In such cases he is forced to find the best provided by nature and use it. The desirable uniformity is not to be found in any natural ballast, but with crushed stone or screened gravel the qualities desired can be obtained through control of the manufacturing process.

The kind of ballast selected will have an influence on the cost of maintenance of rolling stock as well as of the track. For instance, a dusty ballast will cause a more rapid wear of journals and other exposed moving parts of cars, while the differing character of materials requires varying degrees of tamping and replenishment. Ballast which does not drain readily will hasten the destruction of ties from decay, and material which requires frequent tamping will cause damage to the ties from the tamping tools. Rail and tie-plate cutting of ties is found to be much more rapid in ballast which contains grit.

From the foregoing it will be seen that it may often be found that a more expensive ballast, hauled from long distances, will ultimately prove to be the most economical and, as stated by Willard, "that ballast is the cheapest which, for a unit length of track and a given volume of traffic, section of rail and kind of tie, makes a minimum of the following items: Annual interest on first cost of ballast, plus yearly cost of tie renewals, plus yearly cost of replenishing ballast, lining and surfacing."

The materials used for ballast in order of desirability are as follows: (1) Broken stone; (2) coarse slag; (3) screened and washed gravel; (4) chats, granulated slag and disintegrated granite; (5) burnt clay; (6) bank-run gravel; (7) cinders; (8) chert and cementing gravel; (9) sand; (10) shells, and (11) earth.

Gravel is the material most commonly used both on steam and electric railways, but in city tracks it appears that crushed stone is used to a considerably greater extent than gravel. In selecting ballast the first consideration should be to obtain a material as free from clay and loam as possible, in order to afford an opportunity for water to drain off rapidly. Crushed stone possess most of the qualities of an ideal ballast; while screened and washed gravel is a fairly close second, and is quite extensively used in city track work. However, bank-run gravel is in more general use, due to its availability and comparatively low first cost.

Crushed stone should not be smaller in size than will pass through a ¾-in. ring nor larger than will pass through a 2½-in. ring. Gravel should be graded wherever possible and should not be of coarser size than will pass through a 2½-in. ring. Larger sizes have too many voids, while the smaller sizes seem to wear the ties less, are less noisy and more easily tamped and give a better surface generally with less labor.

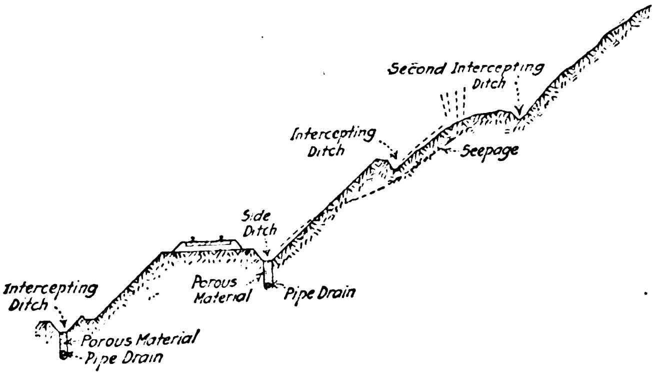


FIG. 8—ROADWAY DRAIN

Gravel varies greatly in quality in different localities, and bank-run gravel will vary in clay, sand and gravel as follows: Dust and clay, 0 to 20 per cent; sand, 5 to 60 per cent, and gravel, 35 to 90 per cent. Good gravel ballast, therefore, should not contain more than 10 per cent clay and 20 per cent sand, as greater proportions of these materials seriously interfere with drainage. It has been stated that ties will last from two to three years longer in washed gravel ballast as compared with bank run, and this is attributed to the lesser amount of water retained.

Slag, being available only in the vicinity of blast furnaces, has not been used as ballast by electric railways generally. Coarse slag, however, is said to be almost as durable as crushed stone and to equal it in many other ways. In certain cases it is stated that dry rot attacks the ties more rapidly in slag than in stone ballast. Granulated slag, however, is much inferior to the coarse variety, but is still superior in drainage qualities to cementing gravel, cinders or sand.

Granulated slag was used on the new Buffalo-Niagara Falls line of the International Railway for sub-ballast on fresh fill to allow for settling. It has been the intention, as shown in Fig. 1, finally to place 6 in. of crushed stone ballast on top of this but, as the depth of slag has now reached an average of about 10 in. and such good results are being secured, it is probable that the crushed stone will not be placed.

Chats, disintegrated granite, burnt clay, sand and shells are not much in use for ballast on electric railways but cinders are in quite general use, largely through their availability as a by-product from power stations. The quality of cinders has tended to depreciate in some localities in recent years, as indicated in the abandonment of them for use in concrete in several instances where they were at one time largely used. There is a wide divergence of opinion as to their value, due to the claim that sulphur in them tends to decrease the life of the ties. Cinders stand eighth in the order of desirability for ballast materials, but when of good quality they serve a good purpose as sub-ballast and for ballast in yards and sidings or upon main lines having comparatively light traffic.

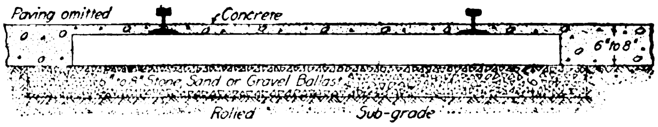


FIG. 9—PLAIN BALLAST CONSTRUCTION

The comments of A. Swartz, traveling track specialist for the Doherty properties, may be quoted here. He says in the JOURNAL for Oct. 7, 1916:

> A great many properties have cheap ballast right at their own doors and can save money by using it. On one property visited, in a coal mining district, piles of shale which was the accumulation of years, provided a natural source of ballast at little cost. This forms an excellent ballast, furnishing good drainage. I noted the tendency of small railways not to make proper use of cinder ballast for track foundation but to allow the track to be maintained on ordinary soil. Power-house cinders, which are usually sold for less than their value or not used at all, could have been used here greatly to improve the riding qualities of the track. I strongly believe in the use of good cinders under ties, especially on open tracks in outskirts of cities or on interurban systems. Continued use will eventually make a good subgrade and the finest foundation for stone ballast.

Steam roads make a practice of cleaning crushed-stone ballast periodically but there is very little information to indicate that electric railways have done so to any extent. The Kansas City Railways, however, has a converted concrete mixer which, by means of screens, is used for cleaning ballast, reclaiming it from ballasted tracks under reconstruction and using the stone either for ballast or concrete. The device was described in the JOURNAL for Dec. 2, 1916.

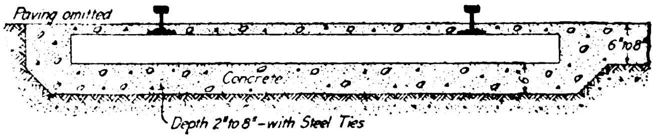


FIG. 10—BALLAST CONCRETE CONSTRUCTION, EITHER WOOD OR STEEL TIES, 2 FT. TO 5 FT. CENTER TO CENTER

WHAT IS THE PROPER DEPTH OF BALLAST FOR ELECTRIC RAILWAYS?

The determination of the proper depth of ballast to insure a uniform pressure over the subgrade has presented a problem which is difficult to solve, but the investigations made by the committee on stresses in track will doubtless result in dependable data upon which a formula may be based. Meanwhile, the formula for computing the bearing on the subgrade proposed by T. H. Johnson[1] seems to give results which check closely with Pennsylvania Railroad experiments. It appears that for heavy steam road conditions a depth of 24 in. is necessary with stone ballast, but nearly the same results will be produced if 8 in. to 12 in. of cinder sub-ballast is used with 16 in. to 12 in. of stone. It will be noted that this depth is the same as the tie spacing in general use.

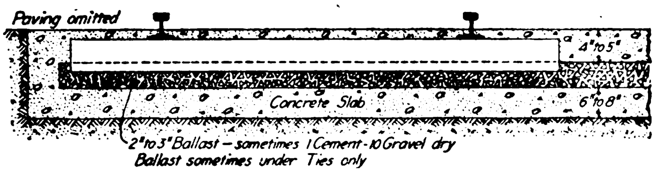

Paving omitted
4" to 5"
Concrete Slab
6" to 8"
2" to 3" Ballast – sometimes 1 Cement - 10 Gravel dry
Ballast sometimes under Ties only

FIG. 11—CONCRETE SLAB SUB-BALLAST CONSTRUCTION

In general it may be said that the depth of ballast depends upon the nature of the soil in the subgrade, the size and spacing of the ties, the strength of the rail as a beam, the weight of the wheel load and the number of loads. A depth of 6 in. under the ties, regardless of the kind of ballast, has been in most common use on electric railways, although a few roads have required 8 in. and some specify 12 in. The recommendations in the A. R. E. A. Manual for 1915 are as follows: Minimum depths of ballast for Class A traffic, 12 in.; for Class B traffic, 9 in., and for Class C traffic, 6 in. A recommendation made last year calls for an increase to 24 in. for Class A traffic. A great many electric railways have a traffic substantially equal to Class B (see ELECTRIC RAILWAY JOURNAL for Feb. 23, 1918, page 359 for these classifications), and several are well within Class A. On this basis the customary 6-in. depth seems inadequate and the recommended minimum depths given in Table I from the 1916 A. E. R. E. A. way committee report should not be considered excessive.

It will be noted from Fig. 2 that the Public Service Commission for the First District of New York requires 8 in. as the minimum depth of ballast for tracks on fill or in earth cut. Furthermore, steam locomotive axle loads may run as high as 60,000 lb., but we have interurban car-axle loads of 27,500 lb. and some freight equipment with axle loads of 37,500 lb. Hence the electric railway axle loads range from 50 to 60 per cent of the steam-road axle loads and these percentages, when applied to the 12-in. depth of stone ballast now largely used by steam roads, result in depths of from 6 in. to 7.2 in. The latter, in turn, are but one-fourth to one-third of the 24-in. depth now being considered for Class A steam roads, while the comparative axle loads would call for from 12 in. to 14.4 in. for electric railways. The way committee recommends a minimum of 6 in. of ballast upon a rock subgrade and it is interesting to note in this connection that the New York Municipal Railway Corporation requires a depth of from 6½ to 8 in. for subway tracks laid upon the concrete tunnel invert, which simulates a rock subgrade, as shown in Fig. 3. The ballast section there shown is substantially the same as the section used in all the subway lines in New York City.

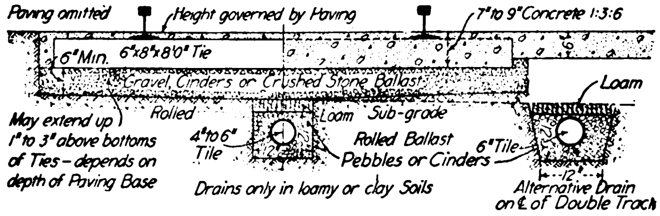

Paving omitted
Height governed by Paving
7" to 9" Concrete 1:3:6
6" Min.
6"x8"x8'0" Tie
Gravel, Cinders or Crushed Stone Ballast
Loam
May extend up 1" to 3" above bottoms of Ties – depends on depth of Paving Base
Rolled
Loam
Sub-grade
4" to 6" Tile
Rolled Ballast
Pebbles or Cinders
6" Tile
12"
Drains only in loamy or clay Soils
Alternative Drain on ℄ of Double Track

FIG. 12—"TYPE B" CONSTRUCTION FOR MOST SOILS EXCEPT VERY HEAVY CLAYS

Good for frequent service with cars up to 35 tons. Surface drain should be provided

TABLE I—MINIMUM DEPTHS OF BALLAST RECOMMENDED BY COMMITTEE ON WAY MATTERS, A. E. R. E. A.

Ballast Material	Main Tracks, In.	Side Tracks and Yards, In.
Broken stone	8	6
Washed gravel	8	6
Bank run gravel	12	8
Cinders	12	8

The size and spacing of the ties determines the load each tie transmits to the ballast. The closer the ties are spaced the greater the number of points of contact between the ties and ballast and the more uniform the distribution of the loads. With a close tie spacing and uniform ties the subgrade will receive a more uniform distribution of the loads with a lesser depth of ballast than is required for a wider spacing. The minimum tie spacing is determined by the amount of room necessary to use hand tamping tools efficiently, which has been considered to be about 24 in. and is that generally used on electric railways. However, a lesser spacing can be used if mechanical tampers are employed. It will be noted from Fig. 2 that some roads are now spacing the ties at 22½-in. centers with 18-in. centers at the joints. Most electric railways use 6-in. x 8-in. x 8-ft. ties regardless of their spacing.

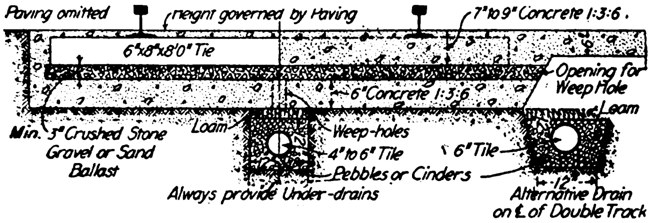

Paving omitted
Height governed by Paving
7" to 9" Concrete 1:3:6.
6"x8"x8'0" Tie
Opening for Weep Hole
6" Concrete 1:3:6
Loam
Min. 3" Crushed Stone Gravel or Sand Ballast
Loam
Weep-holes
4" to 6" Tile
6" Tile
Pebbles or Cinders
12"
Always provide Under-drains
Alternative Drain on ℄ of Double Track

FIG. 13—"TYPE C" CONSTRUCTION FOR HEAVY WATER-RESTRAINING SOILS AND OTHER UNCERTAIN MADE GROUNDS

Good for heaviest cars. Surface drains should be provided

The strength of the rail as a beam determines the number of ties over which a given load will be distributed. Hence a comparatively slight increase in weight and depth of rail will have a decided influence upon the amount of ballast necessary to transmit the load. Any trackman will say that he has less trouble, with identical ballast and traffic conditions, in keeping a track in line and surface when laid with 80-lb. rail than when laid with 60-lb. rail.

The wheel loads and amount of traffic are important in deciding upon the amount of ballast needed for uniform distribution of the load over the subgrade. As in building work the foundation is proportioned to the size and weight of the structure, so in track work must the ballast be proportioned against the load of the train. A track without ballast would probably sustain the load of a hand car indefinitely, but it would soon go out of business if required to carry a 55-ton interurban car very long.

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[1] See Willard—Maintenance of Way and Structures, page 217.

The nature of the soil in the subgrade is the first thing to be considered when determining the depth of ballast. A poor soil or one which retains moisture for long periods will require more ballast than a good soil. Soft wet clay, quicksand, marshy alluvial soils, silt and some clays which retain a high percentage of moisture have a bearing power less, or not greatly exceeding, the loads carried upon electric railway tracks, which will range from 1.75 to 2.6 tons per square foot. In order to assist the subsoil in sustaining the load, consideration must be given to proper drainage of both ballast and roadbed and the following general rules from the A. E. R. E. A. Manual may be followed to advantage: (1) As far as possible, water should be kept off the roadbed; (2) intercepting ditches should be constructed for protection of cuts; (3) intercepting ditches or pipe drains should be provided for protection of banks built on saturated soils; (4) side ditches should be constructed in cuts through all classes of materials; (5) pipe drains should be provided for drainage of wet cuts. Three kinds of drains are shown in Fig. 8.

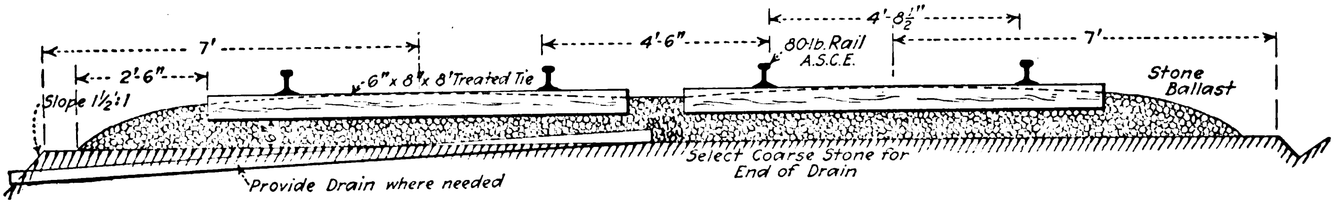


FIG. 14—SAMPLE SUBURBAN DOUBLE-TRACK CONSTRUCTION

PRESENT PRACTICE IN REGARD TO WIDTH OF ROADBED

The width of the roadbed at subgrade should be sufficient to provide adequate support for the ballast as well as good drainage, especially in cuts. An investigation of electric railway construction practice made by *Engineering News* in 1910, and covering eighteen interurban railways having about 3000 miles of track, developed the following:

> The width of roadbed is very much the same as in steam road practice. For single track it ranges from 14 ft. to 16 ft. on banks and 20 ft. to 24 ft. (over ditches) in cuts. For double track it ranges from 24 ft. to 32 ft. on banks and 34 ft. to 41 ft. in cuts. The American Railway Engineering Association has recommended a uniform minimum roadbed width for banks and cuts of 20 ft. for heavy high-speed traffic (Class A); 16 ft. for medium speed and traffic (Class B), and 14 ft. for low-speed and light traffic (Class C). The general opinion, however, is that 16 ft. should be the minimum for both steam and electric railways, especially in cuts.

The foregoing widths are simply increased by the width of track centers for double tracks. It will be noted from Fig. 1 that the width recommended for Class A traffic is being followed by some modern high-speed lines. It may not be out of place to note also that a minimum of 13 ft. for track centers is largely used, although instances are reported where centers up to 16 ft. are used by such railways as the Union Traction Company of Indiana and the Inland Empire System.

The general steam road practice calls for 13-ft. track centers, and it is believed that electric railways can well afford to pattern after them. This distance will permit single-pole bracket trolley construction, with poles in the center between tracks, and will also permit an interchange of equipment with steam roads, to say nothing of the freight haulage which may develop. Fig. 4 illustrates the minimum roadbed widths as recommended by the A. E. R. E. A., while Fig. 5 illustrates the two principal roadbed cross-sections in general use on steam roads and on electric railways as well. In Fig. 5 Section *A* is a level section while Section *B* is a two-plane section, wherein the two planes intersect at the center of the track. Figs. 6 and 7 represent the ballast and roadbed practice of the Michigan United Railways Company for private right-of-way and in paved streets respectively. This is a modern high-speed interurban railway.

BALLAST PRACTICE DIFFERS SOMETIMES WHEN TRACKS ARE IN STREETS

Ballast when used under tracks in streets has often been called the foundation. The greater proportion (see Table II) of electric railway tracks in streets in the United States are laid upon stone, gravel, slag or cinder ballast, usually from 6 in. to 8 in. deep under the ties, with the 6-in. depth predominating. It is quite customary to roll the subgrade before placing ballast and to roll the ballast also. In some parts of the country, the natural soil is largely gravel or good sandy loam, and some roads situated in such territory use no other material for ballast than that found in the subgrade. On the other hand, in localities where heavy, water-retaining clay is found some form of ballast is always used. The quality of the soil and the frequent trenching under tracks for sewers and water mains has led to the use of concrete as ballast. In these cases, either a solid concrete ballast is installed for the full width of the trench, from 6 in. to 8 in. below the tie and extending upward to form the paving base, or a 6-in. concrete slab is installed as sub-ballast and from 2 in. to 3 in. of gravel, sand, or fine stone is used as ballast proper under the ties, in which case the concrete paving base is placed on top of the real ballast. These three types of ballast installations are shown in Figs. 9, 10 and 11, while the recommended practice of the American Electric Railway Engineering Association is indicated in Fig. 12, showing plain ballast construction. The way committee also proposed the concrete slab sub-ballast construction shown in Fig. 13, which is a type being used more and more frequently although never adopted by the Engineering Association. It is believed that the tendency is also toward the abandonment of the solid

TABLE II—TYPES OF BALLAST CONSTRUCTION USED UNDER TRACKS IN THE UNITED STATES. BASED ON REPORTS COVERING 7330 MILES OF SINGLE TRACK IN STREETS OF FORTY-ONE CITIES *

	Percentage
Plain ballast—6 in. stone or gravel	47
Solid concrete ballast	21
Concrete slab sub-ballast	3
Natural soil ballast (usually gravel or sandy loam)	23
Concrete beams, stringer and other modifications†	6
	100

* Report Committee on Way Matters, 1915.

† This type is being abandoned rapidly.

concrete ballast construction in favor of either the plain ballast type or the concrete slab sub-ballast type.

In connection with ballast in streets a great deal of attention is now being paid to proper drainage, and some form of tile drains are installed after the manner indicated in the accompanying figures. The question may be raised as to why a 6-in. minimum depth of ballast is specified by the way committee under such conditions, while an 8-in. minimum is specified for ballast in open tracks. This is explained by the fact that cars for street operation are generally much lighter than interurban cars and also because the ballast is confined in a trench, often well drained, at a somewhat greater depth below the surface of the subgrade soil, which is more compact than on the regular roadbed in the open and protected as a rule by pavement which should and does prevent most of the surface water from reaching the subgrade. Under the latter condition the subsoil is bound to remain more stable and a lesser amount of ballast may be used.

Cost of Ballast Varies Widely With Conditions

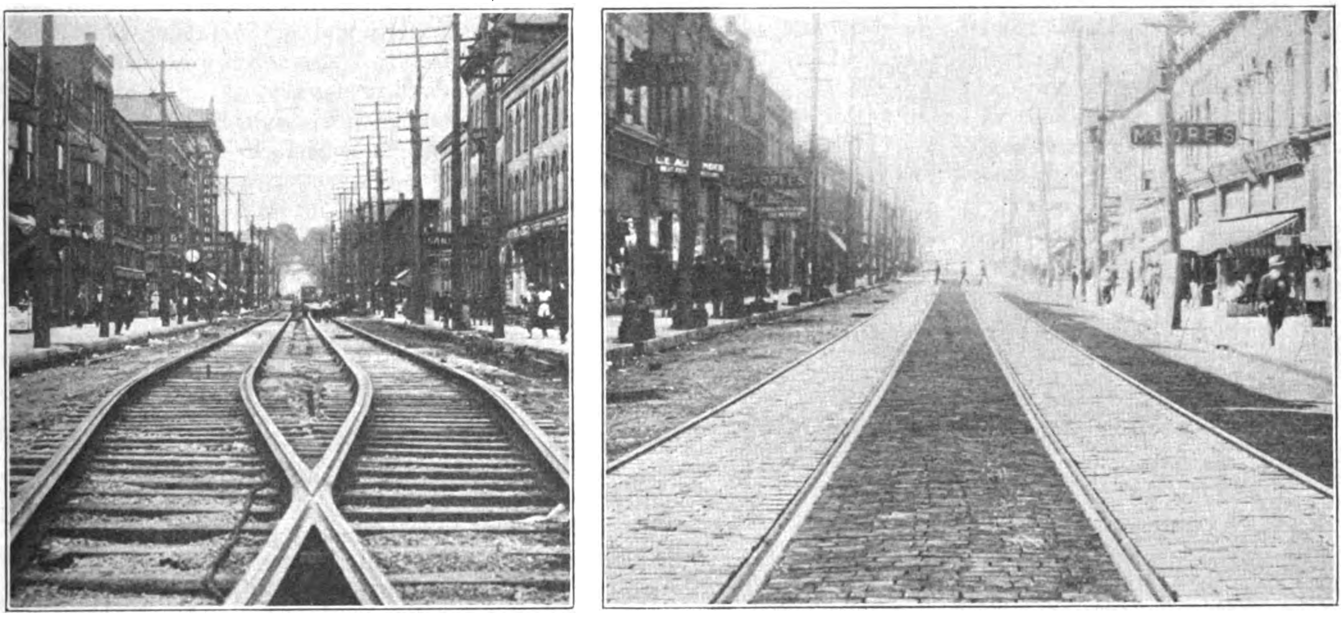
The cost of ballast varies greatly, being dependent upon its kind, depth and availability. The quantities in common use will vary from 2000 to 3000 cu.yd. per mile single track, and L. E. Fischer stated in the JOURNAL for Sept. 6, 1913, that the costs found for ten interurban roads ranged from 75 cents to $1.50 per cubic yard unloaded along the track, giving approximate costs of from $1500 to $4500 per mile of single track. Quite a few electric railway companies operate their own quarries or gravel plants for the production of ballast, but little information is available as to their production costs. The Michigan Central Railroad's crushed stone ballast plant in 1913 produced ballast at a cost of $0.759 per cubic yard in place in the track, with an average haul of 129 miles. A steam railroad gravel washing plant between Washington and Richmond, in 1908, produced gravel at a cost of $0.575 per cubic yard in place in the track.

Winter Track Construction at Sharon, Pa.

Some Details of Work Done Under Difficult Climatic Conditions to Provide Transportation for Workers in War Industries Plants

By A. B. STITZER
Chief Engineer Republic Engineers, Inc., New York City

SHARON, PA., is one of the rapidly growing "steel cities" of western Pennsylvania, its industries now including the Sharon Steel Hoop Company, Carnegie Steel Company, American Steel & Wire Company, American Steel Foundry Company, National Malleable Steel Casting Company and Savage Arms Company, all operating at capacity to meet war-time needs. The expansion of the city, which has been consequent upon the war activity, necessitated the extension of the lines of the Mahoning & Shenango Railway & Light Company, which operates the street railways from Sharon to Sharpsville, Pa., to the extent of 3½ miles of new line to meet the emergency. Surety bonds in the sum of $20,000 were given to the municipality with a guarantee that the lines would be in operation by May 2, 1918. The engineering and construction work was placed in the hands of the Republic Engineers, Inc., and in spite of difficulty of obtaining labor and materials the line was completed and placed in operation on May 1. Some of the more interesting details of construction and methods employed are covered in the following paragraphs.

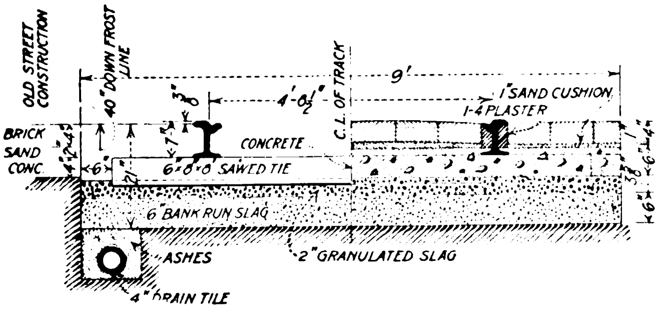


TRACK CONSTRUCTION AT SHARON, PA., BEFORE AND AFTER "PAVING IN"

The track is built of 7-in. American Electric Railway Association rail section, Lorain Section 103-478, in 60-ft. lengths, laid on 6-in. x 8-in. x 8-ft. oak ties, placed on 2-ft centers. Lorain brace tie plates were used every 8 ft. The joints are Continuous six-bolt joints, bonded with No. 0000 concealed bonds. The tracks are paved with vitrified brick on a 1-in. sand cushion and 6-in. concrete foundation; joints between bricks being filled with Barrett's paving pitch. To insure perfect drainage of the subgrade, a 4-in. tile drain was laid in the bottom of the trench and surrounded with cinders.

The authorization to proceed with this work was not given until Nov. 21, 1917, and, due to the limited time between this date and the date of operation guaranteed the city, no effort was made to do the paving until after the line was actually operating. Immediately after that date a track trench 9 ft. wide was excavated to a depth of 21 in., allowing for 8 in. of ballast under the ties. A Keystone steam shovel was used and the excavated material dumped from the bucket directly into the wagons. Motor trucks were used to haul away the material excavated on paved streets and they proved very satisfactory.

During the extremely cold weather the ground was frozen to a depth of 40 in., making it impossible for the steam shovel to progress with a 21-in. excavation. Since it was impracticable to dig below the frost line with the shovel and then to raise the frozen earth, a plan was devised by which material was removed very satisfactorily. A narrow trench 21 in. deep was cut along each side of the strip to be excavated. These two trenches were parallel and approximately 9 ft. apart. They were cut out with bull chisels. Cross trenches were cut between the side trenches about every 8 ft. A pipe connection was made to the steam shovel, a 50-ft. length of ½-in. hose attached, and a piece of ¼-in. pipe about 6 ft. long was inserted in the end of the hose. Steam from the shovel was turned through the hose and the ¼-in. pipe was forced into the frozen ground like a steam jet, making a hole of sufficient size to permit the placing of dynamite under the frozen sections of earth. A small charge of dynamite was ample to loosen and split these sections, so that removal and loading could be done by the steam shovel.



TRACK SECTION, SHARON, PA., BEFORE AND AFTER "PAVING IN"

Where the new extension left the existing line there was quite a large fill to be made, with no material available except that obtained from excavation on other parts of the work. The connection was, therefore, nearly the last part of the construction completed, and it became necessary to do all hauling by team or motor trucks. Motor trucks of the "quad-drive" type were found most satisfactory in the snow and ice, the drive on both front and rear wheels making it possible for the tracks to continue in service even with one driving axle out of commission.

A Gallion unloader was erected at a convenient point for the transference of ballast from hopper cars to wagons and motor trucks. Bank-run slag was used for ballast, and it was dumped directly into the track trench behind the steam shovel to a depth of 8 in. This bank-run slag after being rolled with a steam roller, provided a very firm foundation.

The 60-ft. rails were hauled by motor truck and a heavy two-wheeled "dolly," similar to the type used by telephone companies for hauling poles. The rails were chained up near the center under the dolly and one end was hung to the end frame of the motor truck.

On account of the difficulty of obtaining other material for tamping up the track, granulated slag was used, this being a by-product of the iron furnaces. Granulated slag is produced by pouring hot slag into pits filled with water, this treatment causing the slag to disintegrate into a light fine grain form that greatly resembles sand in color and appearance, although the shape of the granules is more or less feathery.

To avoid labor shortage, men were imported from New York, and special efforts were made to make the outdoor work as agreeable as possible in bad weather. For this purpose two movable "comfort stations" were constructed. They consisted of sheds 10 ft. x 20 ft., mounted on 6-in. x 8-in. skids. They were equipped with stoves and benches and moved along the street as the work progressed. These sheds were used by the men for storing their dinner pails, warming and eating their food and protecting them from the weather so that they could "thaw out" from time to time.

The writer takes this opportunity to express appreciation of the fine co-operation of the engineers of the company in planning and carrying out the work described under unusually difficult conditions.

Twenty Questions on Boiler-Room Practice

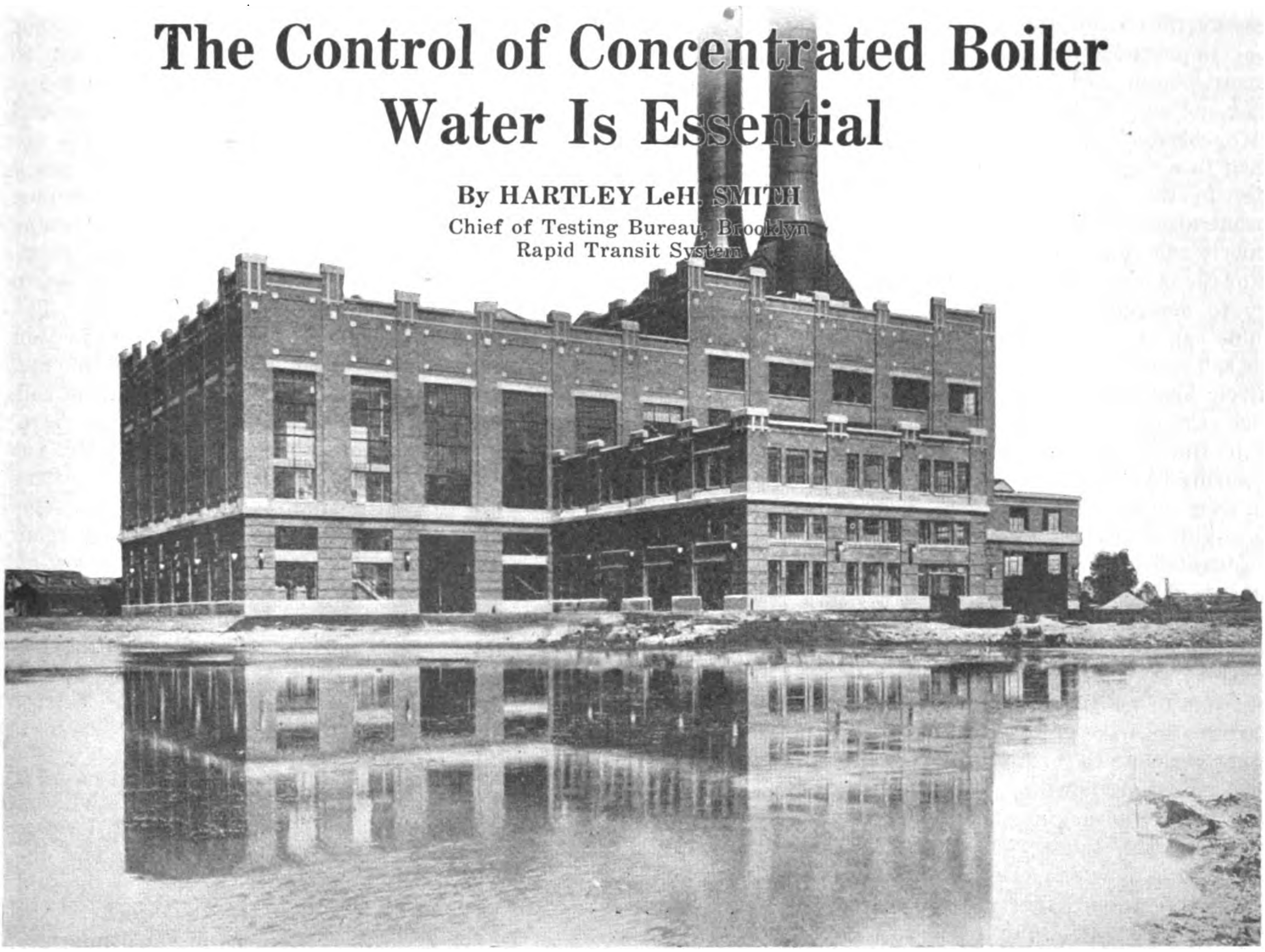
ENGINEERS of the Westinghouse Electric & Manufacturing Company have formulated the following questions as suggestions to boiler users:

Is some one man in your plant responsible for the firing of your boilers? Do you make weekly inspections of draft leaks and steam leaks? Is black smoke issuing from your stack? How much coal do you find in your ash? Are you laboring under the delusion that to soak coal before burning increases its value? How much of your coal is so poorly stored that some of the thermal value is lost by weathering? Have you any control for your flow of air as it passes through the burning fuel? Are the dampers in good condition and operated from the front where they are handy? Is there a leakage of air through cracks in the boiler walls or through porous bricks, and have you ever gone over these walls with a lighted candle to find these leaks with a view to repairing them with plastic cement?

Is there leakage because the iron doors on the boiler-setting have not been packed with abestos to make them air tight? Are the baffle walls tight so that gases are properly deflected over the boiler surface instead of escaping directly to the flue? Are you guessing at the draft over the fuel bed or do you have a draft gage? Do you, also, have a draft gage at the flue damper? Is the fire level and free from holes? Are the air spaces in the grates clogged? Do you periodically clean the boiler tubes of soot, clinkers and scale? Is the fuel bed kept too thick or too thin for proper combustion? Do you constantly see places where steam is visibly wasted? Have you ever consulted a combustion engineer? Have you ever lived in a house heated with coal stoves in each room, and ventilated through the cracks in the windows and doors, and is a similar system economy in a power plant?

The Control of Concentrated Boiler Water Is Essential

By HARTLEY LeH. SMITH
Chief of Testing Bureau, Brooklyn
Rapid Transit System



The Writer Discusses the Methods Used for the Control of Concentration in Boilers, Shows How the Ratio of Concentration from Feed Water to Boiler Water Is Determined and Describes the Calculation of Boiler Concentration Control Charts

THE concentrated water in the boilers of steam power plants very often receives no consideration whatever, even though the plant engineer may be duly concerned about the quality of feed water with respect to scale formation and corrosive properties. This is due to ignorance. Very often it is not known that invariably analysis of water samples taken from the feed lines and from the boiler drums will show differences not only of degree but total differences of kind. It is the feed water, to be sure, which contains the ingredients potentially capable of causing scale formation or corrosive attack on the boiler steel, or both. But the actual deposition of the scale, its physical form if deposited and the evidence of the corrosion, if corrosion actually occurs, are due solely to the chemical nature of the water in the drums and tubes. This is totally different from that of the feed water and is not a mere difference of concentration.

Illustrations of the above are easily given, both for the case of plants in which no chemicals are added for feed-water treatment and for the case of plants where chemicals are added. In the first case let it be supposed that the feed water contains calcium sulphate in solution to the extent of four parts in 100,000 parts of water. Samples of water taken from boilers supplied with this feed water might show twenty parts of calcium sulphate in solution but the ratio of concentration would not thereby be established as fivefold. The true ratio of concentration might easily be fiftyfold or eightyfold or higher. The cessation of concentration of the calcium sulphate would be caused merely by the limit of its solubility under the conditions of pressure and temperature in the boiler. After this has been reached at twenty parts per 100,000, it would concentrate no further but would precipitate instead, and after precipitating it would cement itself as hard scale in stonelike layers on the heating surfaces.

In the second case, where chemicals are added to the feed water for scale prevention or to guard against corrosion, as a very common illustration take the addition of soda ash in slight excess above the quantity required to convert the calcium sulphate to calcium carbonate. The excess of soda ash which will be very dilute in the feed water will concentrate in the boiler water, and part of the concentrated excess will convert itself to caustic soda.

REAL RATIO OF CONCENTRATION FROM FEED WATER TO BOILER WATER IS IMPORTANT

The real ratio of concentration will then not be shown by the calcium sulphate in solution in the untreated boiler water nor by the excess soda ash nor the caustic soda in treated boiler water. Yet the real ratio of concentration from feed water to boiler water is of great importance in plant operation in all cases. It measures accurately, for instance, the summation of water got rid of by deliberate blowing-off of boilers and by blow-off valve leakage, as the writer has mentioned in a former article. It is of very great significance in the question of boiler priming. The true concentration must be known and controlled in every properly run boiler plant.

For the measurement of concentration it is only necessary to determine the strength of some permanently soluble salt in the feed water and in the boiler water. This salt should have the inherent property of remaining entirely apart from all of the many chemical reactions which take place while the very hot water is concentrating in the boilers. The practically omniprevalent salt answering this specification in boiler feed water is common salt, sodium chloride. The quantitative determination of its strength both in the feed water and in the concentrated boiler water is also a matter of the very simplest chemical laboratory processes easily capable of being carried out in any power plant, whether the plant has a laboratory or not. Sodium chloride determinations are therefore used to measure the true concentration of boiler water. The methods of making the determinations are on record in scores of references and are not germane to this article. The methods of control of concentration, however, will be considered.

The control of concentration is, of course, effected by controlling the salinity of the feed water, by controlling the blow-off leakage and by controlling the quantity of water deliberately blown off through the blow-off valves. It is only in tide-water stations using surface condensers that any control of the salinity of feed water is necessary. In other stations the salinity of the feed water is fixed. In every boiler plant blow-off valve leakage is bad and should be kept at a minimum by proper diligence in maintenance work. The control of boiler-water concentration then is determined by the amount of blowing-off required to reduce the concentration from the observed and undesirably high value to any desired value looked upon as suitable or standard. In a boiler plant of any size this means in practice determining how much each boiler should be blown to reduce its individual concentration to standard concentration.

LARGE QUANTITIES OF WATER SHOULD BE BLOWN OFF IN INSTALLMENTS

The problem would be simple were it not for the fact that where steaming rates are high and feed water is in any way bad the quantities of water required to be blown from some boilers may be very great. These quantities are greatest at a time when the feed water itself is bad. The requisite quantity cannot be blown from a boiler showing high concentration by giving the boiler one extremely large blow, because to do so would lower the water level below the gage glass and so make it impossible for the engineer to see what he was doing. The desired quantity of water should be blown off in immediately successive installments. When the feed water is bad and large blows are accordingly needed the filling up after each successive blow introduces very considerable quantities of salt into the boiler. Hence, if real control of concentration is to be effected—that is, if boilers showing really high concentration are to be successfully reduced to standard concentration—rigorously correct methods of determining the required total blowing must be used.

In actually blowing boilers it is customary to begin blowing with the water at the center line of the drums, and as gage glasses are usually mounted this means with the water showing at the middle of the gage glass. Each installment of a big blow is then made so as to lower the level to the bottom of the gage glass. The rigorous calculation required is then the determination of the correct number of such fairly small installments.

Quite obviously the closest analogy holds between this sort of thing and big gun pointing in modern warfare. Great underlying fundamental rigor is a necessity, yet practical application must mean nothing more than mere reference to charts from which the proper solution of all possible solutions is easily and quickly read.

With the foregoing as justification the following formulas required for the making of a boiler blowing concentration control chart are given in natural order. No attempt is made to prove the formulas used because to do so would be to exceed all reasonable space limitations of this article.

HOW VOLUME OF WATER BLOWN OUT IS CALCULATED

At the commencement of a blow the water level is assumed to be at the middle of the drums and at the middle of the gage glass. At the completion of the first installment the water has been lowered just to the bottom of the gage glass. Therefore, at the commencement the volume of water in each drum has semicircular cross-section and at the completion the cross-section of the water volume is the segment of a circle. The difference of the areas of the semicircle and the segment multiplied by the length of the drums, and by the number of drums, is the volume of water blown out by one installment.

The calculation of the semicircular cross-section presents no difficulties, but calculation of the segmental cross-section is more complicated. Any standard text on mensuration will give the formula

$$A = R^2 \cos^{-1} \frac{R-h}{R} - (R-h)\sqrt{2Rh - h^2} \text{ where}$$

A = Area of the segment;

R = Radius of the circle (radius of the boiler drum);

h = Height of the segment (height of water in drum after blowing).

It must be understood that the angle whose cosine is $\frac{R-h}{R}$ is expressed in radians, not in degrees.

To illustrate, suppose the drum is 42 in. in diameter and that a 10-in. gage glass is used. Then $R = 21$ in. and $R - h = 5$ in. Hence $h = 16$ in., that is, there is 16 in. of water in the drum after the completion of one installment of the blowing; after which the boiler is filled up to the center and the second blow proceeded with, etc. Now $\frac{R-h}{R} = \frac{5}{21} = 0.238$ and $\cos^{-1} 0.238$

$= 76°14'$. But as a radian equals $\frac{180°}{\pi} = 57.2958$ deg., it follows by simple arithmetic that $76 \times \frac{14°}{60} = 1.331$ radians. The formula then becomes in the illustration above designated:

$$A = (21)^2 \times 1.331 - 5\sqrt{2 \times (21) \times (16) - 16^2}$$
$$= 484.5 \text{ sq.in. or } 3.365 \text{ sq.ft.}$$

The area of the semicircle is $\frac{\pi(21)^2}{144} = 4.81$ sq.ft.

The cross-section of the volume of water blown out would then be 4.81 sq.ft. — 3.365 sq.ft. = 1.445 sq.ft.

Then if the length of the steam drums is 22 ft. and if there happen to be three drums the total volume of water removed by the first 5-in. blow would be: $1.445 \times 22 \times 3 = 95.37$ cu.ft.

The total quantity of water in the boiler with the water level at the center of the steam drums must be figured, and in doing this accurate account must be taken of the volumes of the front and rear circulating tubes, the front and rear headers, the water tubes, the mud drum, as well as the volumes of the steam drums to the center line. Not all of these items can be calculated with equal accuracy, but effort should be made to attain good approximation with each one.

To proceed with the illustration, based upon a three-drum Babcock & Wilcox boiler having twenty-one tubes across and fourteen sections high, that is, a total of 294 tubes each, 4 in. diameter, and happening to have the four lower rows of tubes of No. 9 gage while the remaining ten rows are No. 10 gage, the tabulation of total volume stands as follows:

Front and rear circulating tubes	12.8 cu. ft.
Front and rear headers (estimated)	30.0 cu. ft.
Eighty-four water tubes of No. 9 gage	113.2 cu. ft.
210 water tubes of No. 10 gage	287.0 cu. ft.
Mud drum	5.5 cu. ft.
Three steam drums filled to center line	317.7 cu. ft.
Total	766.2 cu. ft.

Now suppose that the observed salinity of the water in such a boiler is S parts of sodium chloride per 100,000 parts of water and that this salinity is too high and must be reduced by blowing off. The first 5-in. blow removes 95.4 cu.ft. of water, as shown above, and if the boiler operates at, let us say, 215 lb. per square inch absolute pressure the temperature of the water will be 388 deg. Fahr., and at this temperature the density of water is 54.02 lb. per cubic foot. The salt removed by the first 5-in. blow will then be:

$$\frac{S}{100,000} \times 95.4 \times 54.02 = \text{lb. of sodium chloride}$$

The original salt content was:

$$\frac{S}{100,000} \times 766.2 \times 54.02 = \text{lb. of sodium chloride}$$

The salt content remaining is therefore:

$$\frac{S}{100,000} \times 54.2 \times (766.2 - 95.4) = 54.02\left(\frac{S}{100,000}\right) \times 670.8$$

After this blow-down the boiler is immediately filled up to the center line of the steam drums with feed water, and let it be supposed that the temperature of the feed water is 200 deg. Fahr., making the density 60.12 lb. per cubic foot, and let it be further supposed that the salinity of this feed water is s parts of sodium chloride per 100,000 parts of feed water. Then in filling up to the center line the quantity of sodium chloride put into the boiler is:

$$\frac{s}{100,000} \times 95.4 \times 60.12 = \text{pounds of sodium chloride}$$

The total sodium chloride in the boiler then is:

$$54.02\left(\frac{S}{100,000}\right) \times 607.8 + 60.12 \times \frac{s}{100,000} \times 95.4 \text{ pounds}$$

It may be assumed that the boiler is receiving heat at a moderate rate from its furnace and that therefore, as it is pumped up to the center line, the entering feed water is at once raised from 200 deg. Fahr. to 388 deg. Fahr. so that the density of the mixture of old boiler water and new feed water is 54.02 lb. per cubic foot. The weight of water in the boiler, filled up to the center line of the steam drums, is then 54.02×766.2 lb.

The parts of salt per part of water that is the ratio of salt to water is:

$$\frac{54.02\left(\frac{S}{100,000}\right) \times 670.8 + 60.12 \times \left(\frac{s}{100,000}\right) \times 95.4}{54.02 \times 766.2}$$

The parts of salt per 100,000 parts of water would obviously be 100,000 times as much, that is:

$$\left[\frac{54.02\left(\frac{S}{100,000}\right)670.8 + 60.12\left(\frac{s}{100,000}\right)95.4}{54.02 \times 766.2}\right] \times 100,000$$

This of course reduces to:

$$\frac{54.02 \times (670.8) \times S + 60.12 \times (95.4) \times s}{54.02 \times 766.2} = S_1$$

Where S_1 is the salinity expressed as ports of sodium chloride per 100,000 parts of boiler water after the first 5-in. blow has been given and the boiler has been immediately filled up again to the center line of the steam drums, the feed water used in filling it up having not negligible salinity but rather salinity amounting to s parts per 100,000.

Now by exactly the same process of reasoning the salinity of the boiler water after the second 5-in. blow and filling up to the center line of the steam drums has occurred, and so on for any number of repetitions is a geometrical progression having the form:

$$S_n = \left(\frac{670.8}{766.2}\right)^n S + \left[\left(\frac{670.8}{766.2}\right)^{n-1} + \ldots \left(\frac{670.8}{766.2}\right)^0\right] \times \left(\frac{60.12}{54.02}\right) \times \left(\frac{95.4}{766.2}\right) s$$

Any text-book dealing with the summation of a series will show that when summed up the equation takes the form:

$$S_n = \left(\frac{670.8}{766.2}\right)^n S + \left[\frac{1 - \left(\frac{670.8}{766.2}\right)^n}{1 - \left(\frac{670.8}{766.2}\right)}\right] \times \left(\frac{60.12}{54.02}\right) \times \left(\frac{95.4}{766.2}\right) s$$

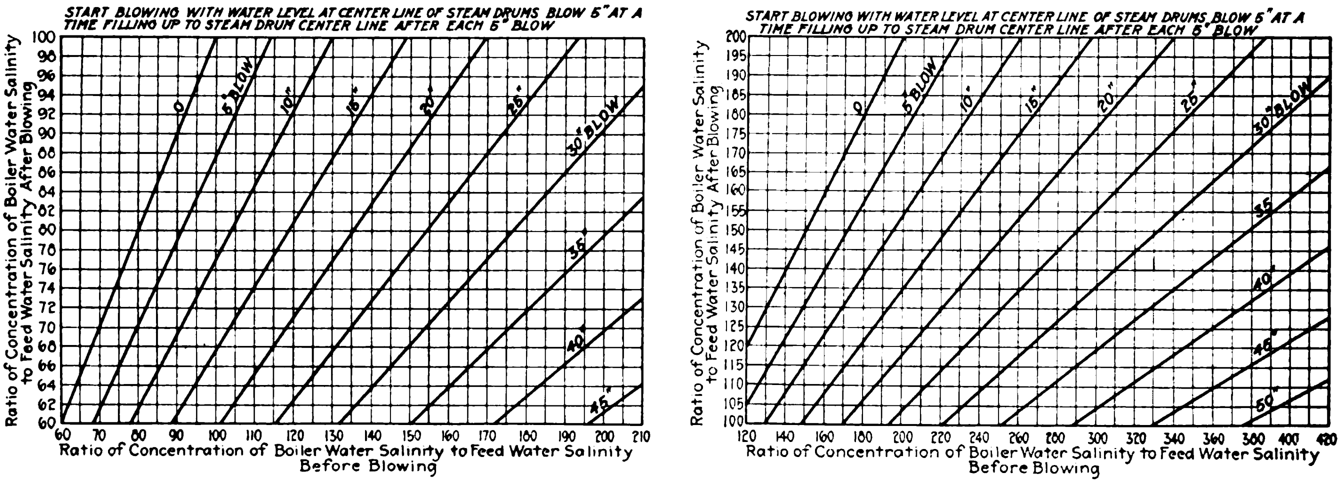
From this it is at once obvious that

$$\frac{S_n}{s} = \left(\frac{670.8}{766.2}\right)^n \times \frac{S}{s} + \left[\frac{1 - \left(\frac{670.8}{766.2}\right)^n}{1 - \left(\frac{670.8}{766.2}\right)}\right] \times \left(\frac{60.12}{54.02}\right) \times \left(\frac{95.4}{766.2}\right)$$

Now this last has the great merit of simplicity although perhaps its simplicity needs a word of explanation. It expresses a linear relation between the ratio $\frac{S_n}{s}$ and the ratio $\frac{S}{s}$, and a linear relation is the engineer's desideration where the application of mathematics to the routine of daily work is concerned. It is understood that S_n is the salinity of the boiler water after any number of 5-in. blows have been given, each one followed by the filling up of the boiler to the center line of the steam drums with feed water which itself has salinity s.

The salinity S_n may therefore designate the desired and standard salinity of the boiler water, and the ratio $\frac{S_n}{s}$ is then the concentration ratio standard for the day. The ratio $\frac{S}{s}$ is the observed concentration ratio. A linear, that is straight line relationship holds between the two ratios, as the equation shows. Hence it is very easy to rule up a blowing chart, not in terms of standard concentration and observed concentration but between the ratios which these respective quantities make with the observed salinity of the feed water which may or may not vary from day to day, depending upon the power plant.

The exponent n is the unknown quantity. That is, how many times does a blow of 5 in. need to be repeated (the boiler being filled up to the center line of the steam drums after each repetition) in order that the observed concentration ratio may accurately be brought down to the standard concentration ratio? The equation last written could not possibly be solved directly with the exponent n made the dependent variable. But the linear relationship between the concentration ratios and the reading of the desired information graphically from a chart come to the rescue of the engineer. It is simply necessary to assume n equal successively to 1, 2, 3, 4, etc., on up to any number found necessary and with each numerical value so taken to calculate two properly-spaced points on the straight line and then rule each straight line on the chart. From the chart for any values of observed concentration ratio and the standard concentration ratio the corresponding numerical value of n may be read off, thus obtaining graphically the solution which could not possibly be obtained analytically. This is the legerdemain of the graphical method in the field of mathematical application, and as such is a resource of great power to the engineer.



CONCENTRATION CONTROL CHARTS FOR BLOWING BOILERS

The term $\left(\frac{670.8}{766.2}\right)^n$ is evaluated in the work of calculating the straight lines to be ruled upon the chart by the logarithmic method. That is, if we let $y = \left(\frac{670.8}{766.2}\right)^n$ then:

$$\operatorname{Log} y = n \log \left(\frac{670.8}{766.2}\right)$$

From this by assuming that n has the values 1, 2, 3, etc., the values of log y are easily calculated, and hence the values of y, that is the values of $\left(\frac{670.8}{766.2}\right)^n$ are read from a logarithmic table.

The linear or straight line relationships resulting take the following form, values of n being selected at random for illustrative purposes:

$$n = 0 \qquad \frac{S_n}{s} = \frac{S}{s}$$

$$n = 1 \qquad \frac{S_n}{s} = 0.8755 \times \frac{S}{s} + 0.1386$$

$$n = 4 \qquad \frac{S_n}{s} = 0.5875 \times \frac{S}{s} + 0.4591$$

$$n = 7 \qquad \frac{S_n}{s} = 0.3942 \times \frac{S}{s} + 0.6743$$

The meaning of $\frac{S_n}{s} = \frac{S}{s}$ when $n =$ zero is that if the observed concentration ratio equals the standard concentration ratio the boiler needs no blowing.

The calculation of two points conforming to any one of the straight-line equations above written through which two points the straight line on the chart would be ruled need hardly be given, since to any reader who has perused the article thus far such illustration would be superfluous.

The two charts which are shown cover standard concentration ratios ranging from 60 to 100 and from 100 to 200, and observed concentration ratios from 60 to 210 and from 120 to 420, the values of n going up to $n = 9$ and $n = 10$ respectively. On the charts the values of the total blows are listed; that is where $n = 1$ the blow is 5 in.; where $n = 3$ the total blow is 15 in., in three installments of 5 in. each, etc.

It is a question to be decided in each specific power station whether a fixed concentration standard or a fixed salinity standard should be adopted. The charts are applicable to either. Thus suppose in a given power station that the standard salinity $S_n = 170$ has been chosen and that a boiler shows actual salinity $S = 260$ on a day when feed-water salinity is $s = 2.0$. Then $\frac{S_n}{s} = 85$ and $\frac{S}{s} = 130$. Reference to the chart Fig. 1 shows that a total blow of 16 in. would be needed. Three successive blows of 5 in. would be given, followed by a 1-in. blow.

Again suppose that the standard concentration is $\frac{S_n}{s} = 65$ and that the observed salinity of a boiler is $S = 481$ when the feed-water salinity happens to be $s = 3.1$. The observed concentration is $\frac{S}{s} = \frac{481}{3.1} = 155$. Hence, by Fig. 1 the total blow required is 33 in. This would be given as six blows of 5 in. followed by a blow of 3 in.

Or take the case of another power station with very good feed water, say with $s = 0.8$. Suppose the standard concentration value is $\frac{S_n}{s} = 150$ (and this is equivalent to blowing off two-thirds of 1 per cent of the water fed into the boilers) and that a particular boiler shows an observed salinity of $S = 145$. Then $\frac{S}{s} = 181$ and reference to Fig. 2 shows that a 7-in. blow would be needed, secured in practice by one 5-in. blow followed by a 2-in. blow.

It must be understood that the charts of Fig. 1 and Fig. 2 and the equations on which they are based are applicable numerically only to the Babcock & Wilcox boiler discussed in this article, but it is obvious that the method by which the equations were derived would lead just as certainly to proper numerical equations having the same form but applicable to any other boiler of Babcock & Wilcox or other make.

Possibilities for Railroad Development in Europe

Jules Cels, the new French Under Secretary of Public Works, points out that, merely by the provision of links that national jealousies have hitherto prevented, a through railway may be built mainly on existing lines from Bordeaux through Lyons, Milan, Venice, Trieste, Agram, Belgrade and Bucharest. Such a road would have valuable present and future connections with the mid-Adriatic ports to be opened to Jugo-Slavia by the forthcoming peace treaty.

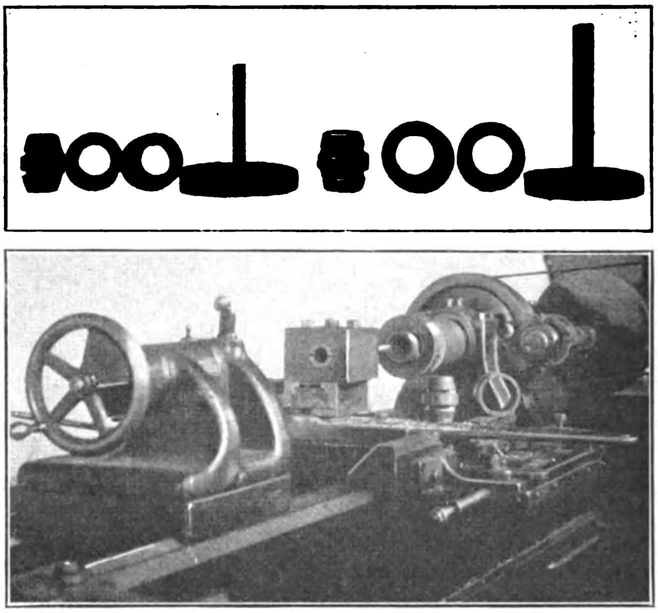
The common impression as of a land criss-crossed by railways is correct enough for some parts of Europe. But there is another Europe, a railroadless Europe, cursed by the militaristic policy that has built railways only for war or barred them to spite a neighbor. For vast sections so described there may be waiting a swift development recalling that of the very rapid development which has taken place in the vast sections of the Mississippi River in the United States and the benefits to be derived may be commensurate therewith.

Babbitting Compressor Armature Bearings

The Author Describes an Original Outfit and the Procedure Which He Has Found to Be Effective

By JAMES W. BROWN
Superintendent of Shops Wilkes-Barre & Hazleton Railway, Hazleton, Pa.

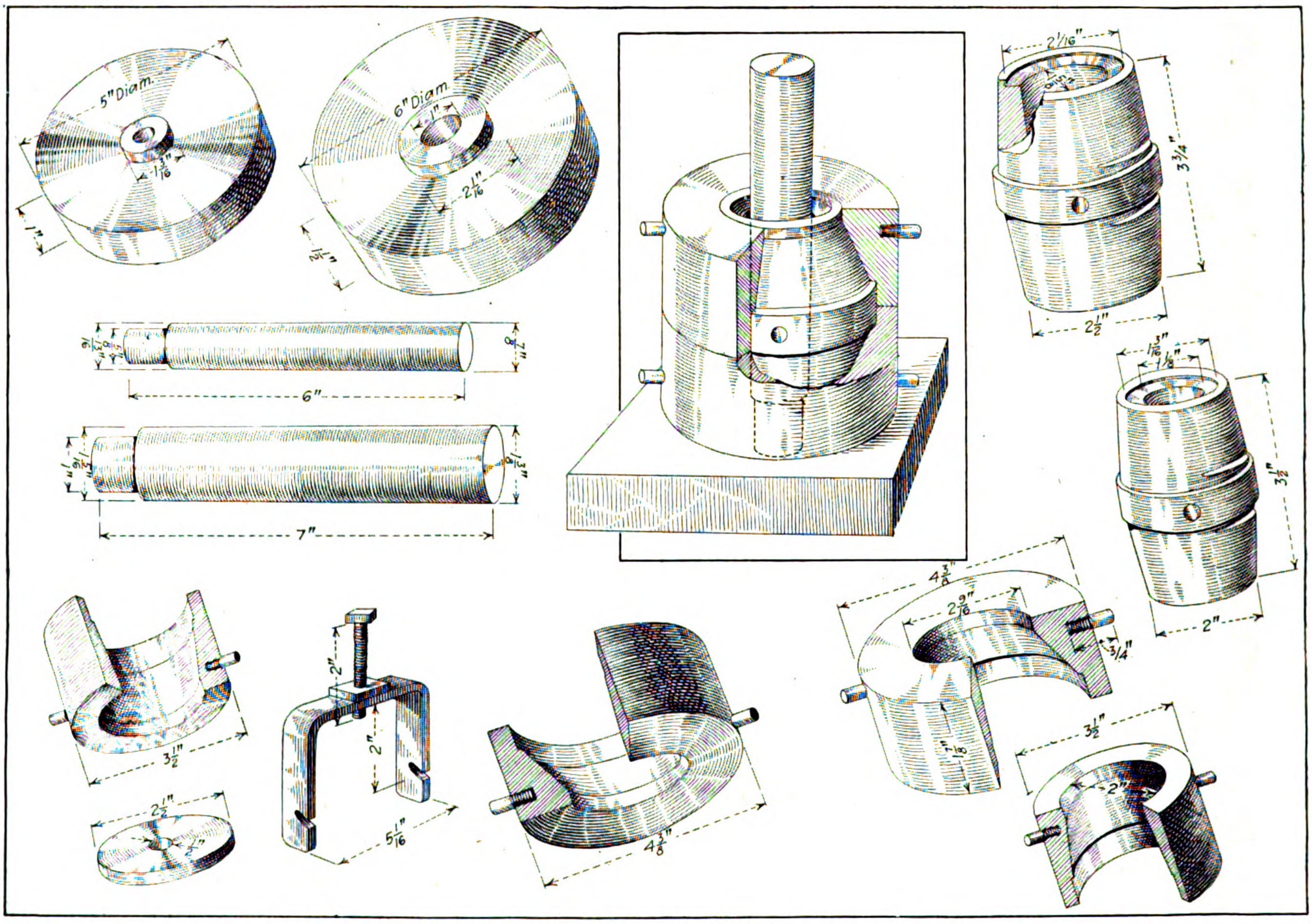
The armature bearings for the Westinghouse D.I.E.G. compressor are of cast iron lined with babbitt. Owing to their being arranged for ring lubrication they are somewhat difficult to babbitt, due to the shape of the castings. The accompanying illustrations show a device which was designed in the shop of the Wilkes-Barre & Hazleton Railway to eliminate the trouble of holding babbitt in the bearing shells when pouring. As the commutator and pinion end bearings are of different sizes two babbitting devices are necessary. These are the same in construction but different in dimensions.



AT TOP, THE ESSENTIAL PARTS NECESSARY FOR BABBITTING A BEARING. AT BOTTOM, SELF-CENTERING CHUCK USED IN TURNING BEARING

The device consists essentially of four parts. The first is a cast-iron baseplate which is finished straight on one side and has a boss turned on the opposite side of such a diameter that the bottom end of the bearing will fit over it. A hole is drilled through the base of this plate to hold the mandrel core for the bearing. This mandrel is the second essential part of the device. It is 7 in. long for the pinion end bearing and of a diameter so that it will leave about $\frac{1}{8}$ in. of metal to be bored out of the bearing after it has been babbitted. This mandrel has a taper of about $\frac{1}{16}$ in. in its length. This provides for easy removal after the bearing has been babbitted. The third and fourth parts consist of two cast-iron shells, each one-half the length of the bearing. These castings are bored out to suit the outside diameter of the armature bearing. From the illustration of the armature bearing it will be seen that on the outside surface there is a narrow strip which is true with the inside counterbore. The two babbitting castings are bored straight for a short distance to receive the true surface of the bearing. The remainder is bored on a taper and made to fit the rough part of the bearing with a close fit. Where bearings are found very uneven it is sometimes necessary to file off the rough parts in order that they may fit the jig properly. When the two castings are placed together they form a straight casing entirely inclosing the bearing.

The bearings are prepared for rebabbitting by first removing all the old babbitt and cleaning them thoroughly. The bearing shell, together with the babbitting device, is then heated to a temperature that will remove any dampness that may be on the iron. It is our practice to paint the mandrel while hot with clay wash. This is applied with a brush and dries very quickly. The application of this clay wash insures a perfectly clean bearing and also facilitates the removal of the mandrel. The bearing shell is then assembled in the device by placing the mandrel in the bottom plate and the bearing casting around this with the large straight bored portion upward. The bearing is then placed over the boss on the base plate that is turned to fit the end counterbore. The top part of the shell casting is then placed in position and the bearing is ready for babbitting. To remove the bearing after poring we make use of the yoke shown in an accompanying illustration. This yoke is made of wrought iron with a thumb screw and washer for removing each half of the device from the bearing. After the bearing has been removed the fins are removed from the outside and the bearing is then bored out in a lathe in a special self-centering chuck. This chuck was designed in our shops for this class of work. It insures the bearing being bored out accurately and in true alignment with the narrow finished portion on the outside of the bearing. After the bearings are bored they are taken to a shaper and placed in a chuck when slots are cut to the proper width and depth to suit the oil ring.



DETAILS OF BABBITTING DEVICE

As will be seen from the reproduction of the photograph there are no clamps or bolts necessary with this device. All parts can be quickly and easily assembled and the pouring can be carried out at any place that is convenient to the babbitt. As the upper portion is open any air or gas in the molten metal readily escapes and prevents blowholes. Also any impurities rise to the top and insure a perfectly clean bearing.

Motor Vehicles for Snow Removal

In a recent report to the American Society of Municipal Improvement, by several engineers of high standing, attention was called to the importance of providing for snow removal by means of motor vehicles. The point was made that in the case of heavy snowfalls usually the first streets open to traffic are those containing surface car tracks, and in the Northern cities the railways are mostly equipped to keep the tracks clear. The result is that motor-vehicle traffic is at once diverted to these streets, resulting in congestion and delayed traffic.

Some Mysterious Car Ailments

Little but Important Troubles That Tend to Keep Equipment Men Interested in Their Work

Contributions Are Invited From the Field

More About Troubles With 600-Volt Fuses on Battery Circuits

A SHORT article in this department published in the Nov. 16 issue describes trouble due to tell-tales not blowing on 600-volt fuses when used on low-voltage circuits. Inquiry has been received as to why these indicators did not blow at the same time as the fusible element. The fuses were used on low-voltage control circuits with a 14-volt battery. Under normal operation the fuses were in series with the control magnets which would reduce the voltage drop across the fuse to as low as 3 volts. The fusible element of the fuse blew due to overload or a momentary short-circuit, which immediately cleared itself.

The tell-tales consisted of a very fine wire which was connected in parallel with the fusible element at the end caps of the fuses. Approximately 0.6 amp. was required to blow the tell-tales. They did not blow on overload at the same time as the fusible element due to the high resistance of the tell-tale which prevented sufficient current from passing through it. After the fuse had blown the resistance of the tell-tale in series with the control magnets was so high that not more than 0.2 amp. could pass through at the low voltage. It was therefore impossible for the tell-tale to blow.

The changes which the fuse manufacturer made consisted in shortening the very fine tell-tale wire, thus decreasing the resistance.

Trolley Wheels That Persistently Wore Out at the Wrong Place

RECORDS of defects which caused the removal of trolley wheels from service disclosed a peculiar condition on one electric road. At one car shop of the system a large number of wheels were reported as removed for excessive wear between bushing and wheel, or to use a shop term "the bushing hole was worn too large." Records from other shops on the same system showed none removed for this cause.

Tests to determine if the outside diameter of the bushings used was sufficient to insure a tight fit in the wheel showed that this was all that could be expected. It was evident that as long as the bushing turned freely on its axle there could be no wear between the outside of the bushing and the wheel. As this wear was occurring it must be due to binding between the bushing and the axle.

A close examination of the bushings and axles showed some to be pitted and burned slightly from carrying current. The shunts and washers were evidently not performing their duties properly. Further investigation showed that the side springs and washers were being allowed to become excessively worn at this shop before replacement. The conditions were called to the attention of the trolley man at that shop and the necessity of providing proper spring pressure to assist in conducting the current from the wheel to the harp was explained to him. Beneficial results were obtained at once and this class of trouble was almost entirely eliminated.

How the Enigma of Increased Fuse Requirements Was Solved

THE purchasing department of a large electric railway property called the attention of the department of equipment to a large increase that was occurring in the number of fuses used. The fuses were of 250 and 300-amp. capacity and were used to protect the main power circuits of the cars. Contact between the fuse block and the fuse terminals was made through phosphor bronze contact clips. Investigation at the various maintenance shops of the system showed that the fuses were blowing while in service. A check of the number used as compared with previous years showed that in-

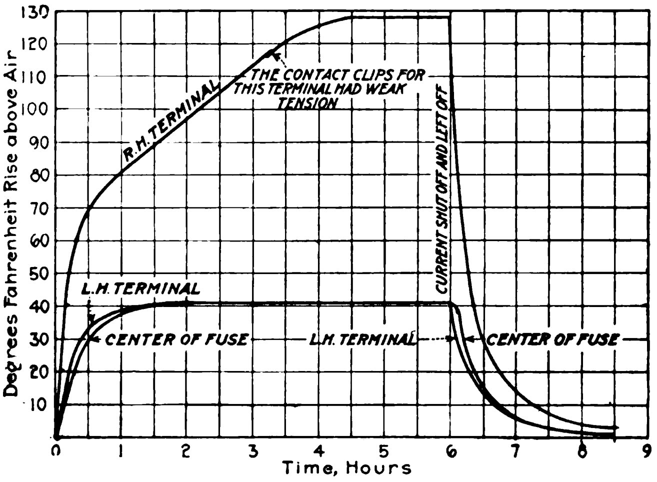


FIG. 1—GRAPHS SHOWING HIGH TEMPERATURE DUE TO POOR CONTACT PRESSURE ON THE FUSE TERMINAL

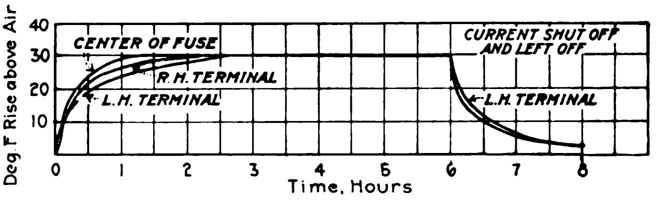


FIG. 2—GRAPHS SHOWING REDUCTION IN TEMPERATURE RISE WITH THE USE OF NEW FUSE BLOCK

creases were occurring only at a few of the shops. When this was called to the attention of the foremen at these particular points they stated that they believed the motormen were crowding their equipment harder than at other points and thus overloading the fuses.

Inspectors were detailed to watch operations on those lines and a record was started showing the car numbers on which fuses were blowing and the particular service in which these cars were used. After the record had been continued for a month it was evident that the trouble was confined to certain cars and that the most frequent cases of fuses blowing was where these cars were continued in service for long periods without rest. This seemed to indicate that the continuous rating of the fuses did not provide sufficient margin for the service requirements.

In order to determine the time that was required for the fuses to blow with various overloads a series of tests was made. The manufacturer of the fuses co-operated in making these tests and offered many valuable suggestions. Tests were first made on the 300-amp. fuses by blowing them cold with 450 amp. continuously. With this current the fuses blew in from three minutes and forty-nine seconds to four minutes and five seconds. Temperature tests were next made under conditions approximating actual service. This test service consisted of passing a current of 200 amp. through the fuses for thirty seconds, and then cutting it off for thirty seconds after which it was again turned on, etc. Fuse blocks and boxes which had been in service on cars for a considerable time were used. The results were surprising.

It was found that in most cases the temperature of the fuses mounted very rapidly and the fuses would blow due to excessive heating. The cause of the excessive temperatures was the poor condition of the fuse clips and terminals. On the same fuse a difference of 90 deg. Fahr. was found between the two terminals. The graphs for one such test are shown herewith as an example of the high temperatures that may be caused by poor contact pressure on the fuse terminals. Fig. 1 shows results of the first test made when a temperature rise of 128 deg. Fahr. above the surrounding air was obtained at the right-hand terminal, while the left-hand terminal and center of the fuse showed but 41 deg. rise.

The result of a second test made with the same fuse but with a new fuse block is shown in Fig. 2. The maximum rise of all parts of the fuse in this second test was but 30 deg. Fahr. and the temperature became constant after 3¼ hours. It can be readily seen from these graphs how important it is to maintain proper contact of the fuse clips.

A few tests of this nature showed where the trouble was located that caused the fuses to blow. A careful inspection of all fuse blocks was made by specially instructed men detailed for the work. Where weak tension or improper contact of the clips, improperly soldered connections or bad joints were found these were replaced. In a few cases the warping of the fiber cartridge of the fuse was found as the cause of poor contact. After the equipment was placed in good condition the number of fuses used dropped to the normal standard.

Fuses That Were Always on the Job

WHILE standing on the station platform near one of the terminals of a large electric railway system the writer was surprised to hear the shoe fuses blowing on a long line of subway cars which had been laid up for the day. These cars were being stored during off-peak hours on a section of express tracks not in use. After being laid up the main switches on the cars were opened so that potential was removed from all equipment.

What could cause shoe fuses to blow on a long line of idle cars with no one anywhere near them was a somewhat puzzling question. After making certain that the apparent occurrence was not a dream an investigation was started to find out the cause. The first information received consisted of a telephone message which stated that a car had been derailed about a mile further down the track and had short-circuited the third-rail so that the circuit breakers for that section in the power house had blown and that power had been cut off from that section. It took some time to associate the short-circuiting of the third-rail with the blowing of the shoe fuses on the idle cars. Ultimately, however, it was realized that the cable connecting the contact shoes through the fuses on the same side of the car formed a parallel circuit to the third-rail. This circuit, being of copper, was of very low resistance so that a large proportion of the current caused by the short-circuit had followed this path. This excess current passing through the shoe fuses had caused them to blow and what appeared like a very ghostly happening was really only a practical demonstration of the law of multiple circuits.

Overheated Resistor Trouble Solved

A LARGE amount of trouble was experienced at one of the shops of a large railway property due to overheated resistors. The transportation department was requested to take necessary steps to prevent motormen from running on resistance points, as it was evident that this was the primary cause. Special bulletins were issued to the motormen explaining conditions and cautioning them against improper operation. However, the symptoms failed to yield to local treatment and the last panels of the grid resistors continued to be overheated. In all cases the electrical equipment and the brake adjustment on the cars were found "O.K." The cars in question were equipped with type-K platform controllers, and the handles were kept by the operating department's motormen.

One car pulled into the shop while the writer happened to be present, and the mystery was soon unraveled. The handles which were of the solid-head type with bushings, were becoming excessively worn but were not worn beyond the limit set by the gages furnished for checking them. Some of the controller shafts were also slightly worn at the handle fit. The combined wear of the handles and shafts was such that with the handle thrown all the way around and up against the stop on the cap plate of the controller, the cylinder would still be left on the last resistance point with the last panel of resistance still in circuit. The motorman was not at fault in his operation, as he had his handle in running position. Careful checking of handles and shafts decreased the trouble.

How to Record Materials Received

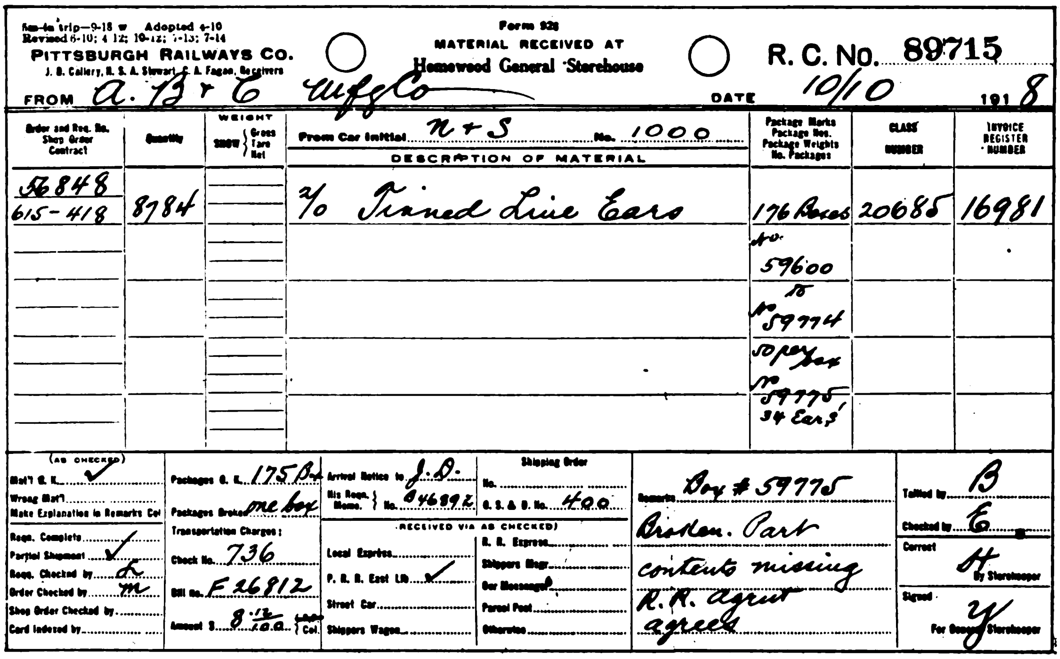
Pittsburgh System, Based on Preservation of Original Complete Tally as Only and Final Record—Saves Labor and Safeguards the Payments for Materials and Supplies —Not an Experiment, Adopted by Many Other Roads

By B. J. YUNGBLUTH
General Storekeeper for Receivers Pittsburgh Railways

RECORDING the receipt of materials purchased is a function which should be performed with extreme care and protected by as many safeguards as possible. Upon it depends the payment of bills. Payments run up into thousands, and by some companies into millions of dollars annually. Delayed or disputed payments affect credit.

THE PROBLEM IS STATED

The honesty of shippers may be taken for granted, but unfortunately everyone makes mistakes sometimes. In these abnormal times particularly, when everyone is working in "high" and much of the help is inexperienced, the work must be systematized and simplified. Memory should not be permitted to play any part where an actual expenditure of money is involved. All materials received should of course be tallied—counted, weighed or measured—and examined in every sense. It is probably true that this is done generally to the best of one's ability. How can the work be simplified so that an inexperienced employee can determine just what it is necessary to ascertain about each lot of goods received and to record the information and save time doing it? In addition to satisfying ourselves of the quantity of goods received, the shipment must be tallied in such a way that should a controversy arise, we have a specific record of how it was received, how packed or bundled, that we may support any possible claim. If it is contended, for instance, that 4350 pieces were received against a reported shipment of 5000, and we can show that of nine boxes received, five boxes contained 500 each, two boxes contained 600 each and one box 650, the burden of the proof rests upon the shipper.



Ren-to-trip—9-18 w Adopted 4-10
Revised 6-10; 4-12; 10-12; 7-13; 7-14
PITTSBURGH RAILWAYS CO.
J. B. Callery, H. S. A. Stewart, C. A. Fagan, Receivers

Form 926
MATERIAL RECEIVED AT
Homewood General Storehouse

R. C. No. 89715

FROM A. B & C Mfg Co

DATE 10/10 1918

Order and Req. No. Shop Order Contract	Quantity	Weight Show {Gross Tare Net	From Car Initial N + S No. 1000 DESCRIPTION OF MATERIAL	Package Marks Package Nos. Package Weights No. Packages	Class Number	Invoice Register Number
56848 615-418	8784		2/0 Tinned Line Ears	176 Boxes	20685	16981
				No. 59600		
				to		
				No 59774		
				50 per box		
				No 59775		
				34 Ears		

(AS CHECKED)
Mat'l O. K. ✓
Wrong Mat'l
Make Explanation in Remarks Col
Req. Complete
Partial Shipment ✓
Req. Checked by L
Order Checked by M
Shop Order Checked by
Card Indexed by

Packages O. K. 175 Bx
Packages Broken one box
Transportation Charges:
Check No. 736
Bill No. F 26812
Amount $ 8 12/100 Ppd. Col.

Arrival Notice to J. D.
His Req. Memo. No. 84689Z

Shipping Order
No.
O. S. & D. No. 400

(RECEIVED VIA AS CHECKED)
Local Express
P. R. R. East Lib. ✓
Street Car
Shippers Wagon
R. R. Express
Shippers Msgr.
Our Messenger
Parcel Post
Otherwise

Remarks Box # 59775 Broken. Part contents missing R. R. agent agrees

Tallied by B
Checked by E
Correct H By Storekeeper
Signed Y For General Storekeeper

FORM 926, COMPLETE ORIGINAL TALLY AS WELL AS ONLY AND FINAL RECORD OF MATERIAL RECEIVED

We are all familiar with the fellow who is content to record receipts on his cuff, on the wall or on an old envelope from his pocket and who figures on ultimately practicing penmanship by writing the record in a nicely bound book. If procrastination does not get the upper hand and he is able to decipher some of his quickly made hieroglyphics, errors will frequently be made in transcribing, subjecting the whole transaction to doubt. With such uncertainty, one would hardly be justified in making a claim for "shortage" or a report of "overage" as is frequently the case. This condition is surprisingly prevalent to-day.

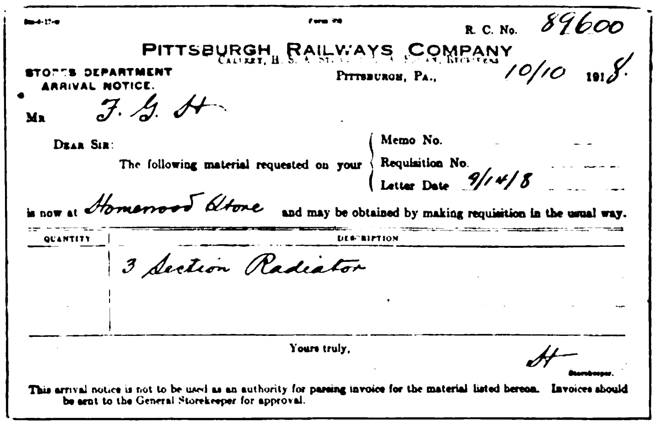
Form 926, (5 in. x 8 in.), of which a reproduction is given on this page, is an original tally which is at once a single and final record of each individual receipt. The form suggests to the receiving clerk all the information which it is necessary for him to supply. As much of the necessary wording as possible is printed so that a check mark or the least amount of effort is required properly to complete the record. The form is padded in a convenient size and shape to be carried in one's pocket and taken directly to the work, whether that happens to be in a railroad car, by the side of an auto truck in the yard, or at a job on the road.

The individual record secures individual attention by each person interested. The form is used in triplicate, numbered consecutively. The original goes to the auditor, the card copy to the clerk for checking against invoice and the third copy remains in the book. All copies are made at one writing.

All goods received must be determined to be either correct or wrong. The record must show positively which is the case. If correct, the goods are placed in stock, and if they were ordered for some special purpose an "arrival notice" (form 930) is sent to the persons interested, making it unnecessary for him to inquire continually for goods before and even after their arrival. If the goods are wrong, the reason must be given in the "remarks" column, whereupon an immediate investigation is made to learn if they can be used or should be returned. In the latter case, a shipping order for prompt return is made out and the shippers so notified.

In the event of "overs, shorts or damage" an "O S & D" report is sent to the purchasing agent who secures either a corrected invoice or an additional invoice. In the event of damage, frequently a claim against the transportation company is necessary. The form has provision so that the person making it out can indicate positively whether packages are O. K. or broken.

The fact that the blank calls for a record of the transportation charges and whether prepaid or collect eliminates the possibility that such charges will be paid twice, namely, when added as they occasionally are to the invoice and again upon the delivery of the goods.



R. C. No. 89600

PITTSBURGH RAILWAYS COMPANY

STORES DEPARTMENT
ARRIVAL NOTICE.

PITTSBURGH, PA., 10/10 1918.

MR F. G. H

DEAR SIR:

The following material requested on your
Memo No.
Requisition No.
Letter Date 9/14/18

is now at Homewood Store and may be obtained by making requisition in the usual way.

QUANTITY	DESCRIPTION
	3 Section Radiator

Yours truly,

H
Storekeeper.

This arrival notice is not to be used as an authority for passing invoice for the material listed hereon. Invoices should be sent to the General Storekeeper for approval.

FORM 930, NOTIFICATION SENT TO PERSONS INTERESTED IN THE ARRIVAL OF CERTAIN MATERIALS

The individual records show all this information concisely and completely and enable one to pass upon all the circumstances intelligently and with a finality which is refreshing for its businesslike dispatch to both shipper and consignee.

HOW THE BLANK IS USED

The auditor receives his copy within twenty-four hours after the receipt of goods and uses it as a memo-posting in the stock ledger, so that if the invoice is not rendered promptly (a common thing these days) it acts as a potential debit against which requisitions may be posted. The card copy is checked against the requisition. It is then initialed by the storekeeper who examines it to familiarize himself with the day's receipts. It is then passed to the invoice clerk who checks the invoice at once or holds the card in alphabetical file until the invoice is received. When the invoice is passed to the auditor for payment, the receiving cards are filed in their numerical order, which also is their chronological order. The open file then contains only such cards as represent "material received not paid for," and each card regardless of its age is readily accessible and serves to keep "up front" all such unfinished business.

At inventory time, the value of unpaid-for items is a deduction from the assets, and it is vital that they should not be overlooked. The unfiled cards provide for this. When one's attention is called to the matter by these cards he will be surprised to find the large number of cases of delinquent billing on the part of the shippers, who repeatedly are requested to render invoices.

ADVANTAGES ENUMERATED

Briefly to review the advantages of this card, they are: A complete original tally is preserved as the only and final record; an individual receiving record is had, consecutively numbered; the form suggests all the information that is necessary; much of the information may be indicated simply by check marks; the indication of wrong material prevents passing invoice pending adjustment; difficulty in handling freight bills is overcome; the record facilitates the passing of invoices; it also assists inexperienced help.

The Future of the Steam Turbine

Wider Working Range of Pressure and Temperature With Better Heat Balancing Promise Considerable Further Increase in Efficiency

IN A REVIEW of the lines of progress in which the steam turbine may be expected to develop, engineers of the Westinghouse Electric & Manufacturing Company make, among other statements, those given in substance below:

Attention is now being directed generally to employing higher boiler pressures, as high as 600 lb. To-day 200 lb. pressure at 200 deg. Fahr. superheat is regarded as common practice in large plants. At 600 lb. pressure, steam having the same heat content as that contained at 200 lb. pressure and 200 deg. Fahr. superheat will have a superheat of about 128 deg. Fahr. This steam expanded to 29 in. of vacuum is theoretically capable of giving 13 per cent more energy than when generated at 200 lb. To utilize this ability the turbine will probably be of lower efficiency than the best present ones, but a net saving of from 6 to 7 per cent is possible with the higher pressure. Another source of improvement in large multiple-cylinder machines may be obtained from intermediate reheating by means of a separately fired superheater. This might produce an improvement of about 3 per cent but until lately the capital expense involved would hardly have been warranted.

Heat balancing between the feed water and the turbine is receiving attention at present, in some cases valves being provided to take steam from the turbine whenever there is a deficiency of auxiliary exhaust steam for heating feed water and to take steam from the heating system when the feed water heater is incapable of condensing all of the exhaust steam from the auxiliaries. Still more complicated schemes of heat balancing have been proposed. Further economy also may be expected by making more extended use of the economizer.

Progress in the construction of turbines has not been to reduce intrinsic cost. The higher operating conditions, pressure, superheat and vacuum, each involves greater expense. In spite of this the price of large turbine units, under pre-war conditions, has been reduced to approximately 40 per cent of the cost of the earlier turbines of 5000-kw. capacity or thereabouts. The efficiency ratio has been increased in this size approximately 8 per cent. Considering the larger sizes that now obtain, the cost per kilowatt is further reduced and efficiency ratios have been improved 12 per cent. Actual heat consumption of B.t.u. supplied at the throttle has shown a reduction of 24 per cent between the 7500-kw. turbine of 1905 and the Interborough Rapid Transit turbine of 1914. The modern large turbines have accomplished a saving over the best reciprocating engine installations of approximately 47 per cent. The cost of energy has no doubt been reduced to one-half, if consideration is given to reduced size of buildings, etc.

Latest Practice in Electric Arc Welding*

The Systems of Electric Arc Welding Are Described And Some Limitations In Their Use Are Given

IN NO other industry in normal times are iron and steel made use of in greater quantities than on the great railway systems of America, and in this field lies the greatest opportunities for the electric welding process to effect economies. In the case of the railways the greatest economies can be made through reclamation work, and until very recently reclamation was the only class of work which the arc-welding process had invaded to any great extent, and even this was done on a comparatively small scale, and on only a few roads. It is now known that the arc-welding process can successfully be made use of in a very extensive manner in the construction and maintenance of cars and track.

THREE SYSTEMS ARE USED IN METALLIC ARC WELDING

The power consumed in the metallic arc will depend on the nature and mass of the metal forming the electrodes. For ordinary metallic arc welding, 50 to 200 amp. per operator at from 15 to 25 volts (measured at the arc) will be required.

If the proper arc length is maintained uniform, on clean work the drop across the arc will never greatly exceed 22 volts for bare electrodes, and 35 volts for coated electrodes. These conditions, however, seldom prevail, as slight variations in the arc length are unavoidable, and as more or less dirt and oxides are usually present on the surfaces to be welded. In order that the arc may be maintained with reasonable ease under conditions as above mentioned, the voltage across the welding circuit, before the arc is drawn, must be two or three times as high as it is after the proper arc length is established. This higher voltage will support the arc and prevent it from being broken by overcoming the ordinary changes in the resistance, due to the variations of arc length and the dirt and oxides on the parts to be welded.

In some instances, a reactance coil is placed in the welding circuit to assist in holding back the first heavy rush of current, also to stabilize the arc momentarily. It may be said that the reactance coil is to a welding arc what the flywheel is to an engine. Furthermore the open-circuit voltage does not need to be so high with the coil as would be necessary if it were not used.

The three systems now in general use in this country for metallic arc welding are as follows: The multiple-operator, the single-operator system of stationary type, and the single-operator system of portable type.

The multiple-operator system is one in which more than one operator receives current for welding direct from the same machine, which is centrally located. A control panel is provided for each operator, of such design as to enable currents of different values to be obtained in any one circuit without interference with the other operators.

A single-operator, stationary-type system is one in which a separate machine is provided for each operator. As many of these machines are stationed at different points in a shop as the demands require, each machine receiving its power direct from the power circuit.

A single-operator, portable-type system differs only from the single-operator, stationary system in that the machine is mounted on a truck in order that it may be moved from one point to another as the occasion requires, receiving its power from receptacles conveniently located about the shop.

If the inherently low cost of the electric arc-welding process is to be fully realized, the flexibility of the system, whether portable or stationary, must be such as will permit welding to be done at any haphazard location in the shops or yards without making it necessary that the work be brought to the welders or welding equipment.

CABBON ARC WELDING FIRST TO BE DEVELOPED

The carbon-arc process was the first method of welding metals with the electric arc that was developed, and it has been in use for more than thirty years. The arc is drawn between the work to be welded and a carbon or graphite electrode, and the manipulation of the arc is very similar to that of the oxy-acetylene flame.

The current required for carbon-arc welding is usually between 300 and 450 amp. at approximately 50 volts. The design and control of the machines for carbon arc and metallic arc welding are practically the same.

The advantages of the carbon arc, where it can be used, are greater speed and lower cost. The class of work this process may be put to includes building up operations, repairing broken parts, electric cutting, etc., but not work where strength is of first importance, such as side sheets or frames. An experienced operator can produce a very good grade of metal in the welds, and one which can be machined without difficulty. The character of the work secured depends on the operators. It is not possible to weld on a vertical wall or overhead with the carbon arc. The carbon is made the negative in order that particles of carbon from the electrode will not be carried over into the weld, which would make it exceedingly hard and therefore difficult to machine. There is a considerable amount of welding on a railway which can profitably be done with the carbon-arc process. Its lower cost will no doubt lead to its adoption for repairing the commoner classes of broken and worn parts.

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*Abstracted from 1918 report of sub-committee "A" on welding of Association of Railway Electrical Engineers.

Bankers Say Situation Is Serious[*]

Owners, Operators and Regulators Should Unite on Principle That the Public Needs and Must Pay for Adequate Transportation

By O. B. WILLCOX
Chairman Public Service Securities Committee, Investment
Bankers Association of America

INVESTMENTS in public utilities are not protected merely by the constitutional provision against taking property without just compensation and by the moral obligation of the state to protect invested capital and promote enterprises upon which the industries of the country in war and peace are so dependent. It is also now appreciated and publicly declared that the interests of the state and of the public are served and promoted by permitting rates which are sufficient both to insure adequate service and to create such credit for the operating companies as will attract the necessary capital to provide up-keep of the properties and their expansion. Thus private investment in public utility securities is protected in principle not only by the law but by the recognized interests of the state, the community and the public served.

While these principles have been so widely recognized by many commissions in recent months, and increased rates have been granted to many companies, the increases in rates to the utilities of the country as a whole have by no means equalled the increases in the costs of operation resulting from higher prices of fuel and materials and high wages. The development of commission regulation and the appreciation of its obligations to the public to encourage efficient service must operate to increase rates too low to protect interest or attract additional capital for utility expansion.

ELECTRIC RAILWAYS PARTICULARLY AFFECTED BY WAR

Electric railways have been particularly and seriously affected by the war through increased demands for service, fixed fares, high money rates and attenuated credit. The fundamental cause of the present condition is the inadequacy of receipts to meet the cost of that character and extent of service rendered by many companies. The demand is constantly for service costing more than it returns. It will of course be difficult, if not impossible, to decrease the amount or lower the character of the service to which the public has become accustomed.

In the congested centers much may be done in decreasing the costs of operation through the introduction of one-man cars, skip stops, standardized equipment, staggered hours and reroutings, and the elimination of unprofitable runs. The authorities may aid in reducing the costs of operation by eliminating franchise charges and special taxes, street paving, street watering and the like.

These modifications of operating costs are at the best merely palliative. They do not alter the fundamental fact that under the present conditions and the present costs of material and labor, many street and interurban railways are furnishing, in response to the demand of the public, a service which costs more than they collect in fares. Appeals for higher rates have been inadequately met by local authorities, by state commissions, and, in cases where it has jurisdiction, by the Interstate Commerce Commission, and in some cases increased fares have caused a falling off in travel and resulted in little, if any, actual increase in gross revenue.

The community with adequate and efficient street-car service is busy, growing and prosperous; while the town, large or small, which has inadequate local transportation is dull and dead, or dying. As the prosperity of the community as such is more important than the convenience and comfort of the individual, so is the interest of the community in adequate transportation greater than the interest of the individuals who enjoy it. It follows that if efficient local transportation adequate to the needs and welfare of the community costs more than can be collected from the fares paid by the patrons, the excess of costs over receipts must be paid by the community in some form, or the community will suffer from the lack of that kind of transportation which it requires for its industrial and social needs.

In cases where street car operations are unprofitable because of local imposition and taxation, these burdens must be removed or private capital will not provide the service required by the public. If street-car operations are unprofitable because the fares are too low, the public is and always will be the chief loser from low fares and the chief beneficiary from a higher fare which will permit successful and profitable operation. If the cost of service for any reason is so much above the receipts that an increase of fares to cover the deficit would result in a decrease in the use of the service and therefore no increase in revenue, the public interest may demand that the service required be supplied at public expense supported by taxation.

The recent Bay State, and Boston Elevated acts are particularly interesting in recognizing the necessity for the continuance and expansion of efficient traction service to the extent of providing, in the Bay State case, that certain serial bond payments if not earned shall be made up out of taxation, and in the Boston Elevated case that all deficits in operation, including depreciation, renewals and interest and dividend payments shall be made up out of taxation. These two Massachusetts acts and the general one all provide for flexible fares, readily changeable, either up or down, to meet varying costs of operation and requirements of service. The result of operation under these acts will be watched with great interest, both by electric railway operators and by investors in the securities of public service corporations.

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[*] Abstract of committee report presented before meeting of Investment Bankers Association of America in Atlantic City, on Dec. 10, 1918.

In other cases where the receipts are not sufficient to provide the costs of the service required by the public, the states or the communities served will be faced with the alternatives of either paying deficits in operation or of taking over the properties by purchase and operating them as state or municipally owned institutions. The result will be the same so far as the service costs more than the revenues—the public must pay the difference through taxation. But taking over the properties involves the withdrawal of large amounts from the taxable property of the community and all the problems and difficulties of public ownership and operation, which it is believed the American people do not desire to undertake. The whole situation is difficult and very serious.

It is believed that the study of electric railway problems by owners, operators and regulating officials, particularly if they find a basis for co-operation in the principle that the public demands and must pay for adequate local transportation, will point the way to a solution of the electric railway problem which will protect existing investment, assure the companies the credit required for expansion, and give the public the local transportation necessary to its welfare and health. The interest of the investors presents the study of this problem as one of the first duties of the public service securities committee of the Investment Bankers Association during the reconstruction period.

DEPRECIATION SHOULD BE PROVIDED FOR

The war and the results of operation under war conditions and high costs have given the subject of depreciation more than an abstract or academic interest, since it is observable that those companies which have made adequate provision for depreciation meet the present emergencies with less difficulty than those companies which have not done so.

Public utility commissions, operators and investment bankers should all be equally interested in seeing that funds devoted to public use are not impaired through failure to make ample provision out of earnings for both maintenance and replacements, in such a way as to maintain the full efficiency of the property and preserve the integrity of the investment. No other course is honest, rational or expedient. It is honest, because the public should pay for the depletion of property and capital through wear and tear and obsolescence exactly as it should pay for other costs of using private capital and property for public use; rational, because in time the public would otherwise be deprived of the property and consequently of the service through its destruction in public use without replacement; expedient, because private capital can be attracted to public service only if protected against loss.

NATIONAL ASPECT OF UTILITIES

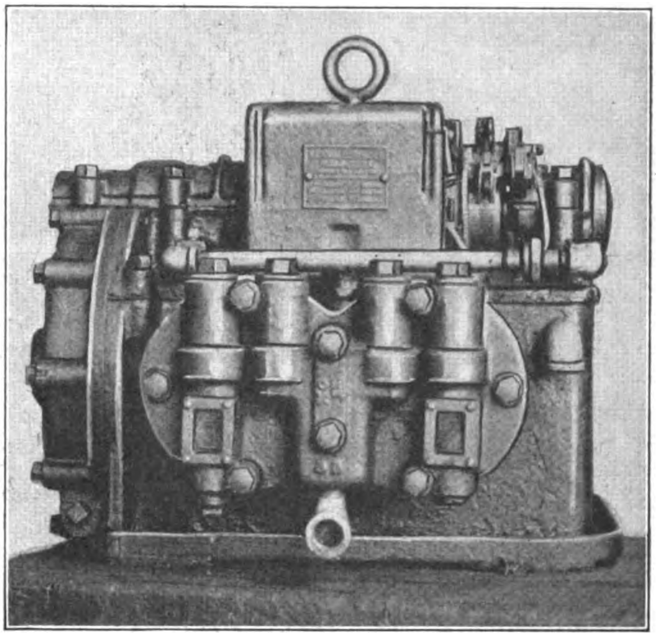
The experiences of the war have confirmed the conviction of the American people that, for rapid and economical industrial production private capital under private management is more efficient than government ownership or operation, and that co-ordination in the national interest of national effort to a common end may be effected by national agencies, through general consent and co-operation without government ownership or operation or the exercise of the powers of absolute control.

State regulation and supervision is sufficient for local service; national supervision, and not only supervision, but encouragement and support, may be urged, as public service becomes increasingly national in scope and is better understood in its relations to such subjects as power supply, fuel conservation, labor economy, and the distribution of population and of wealth-producing agencies in industry.

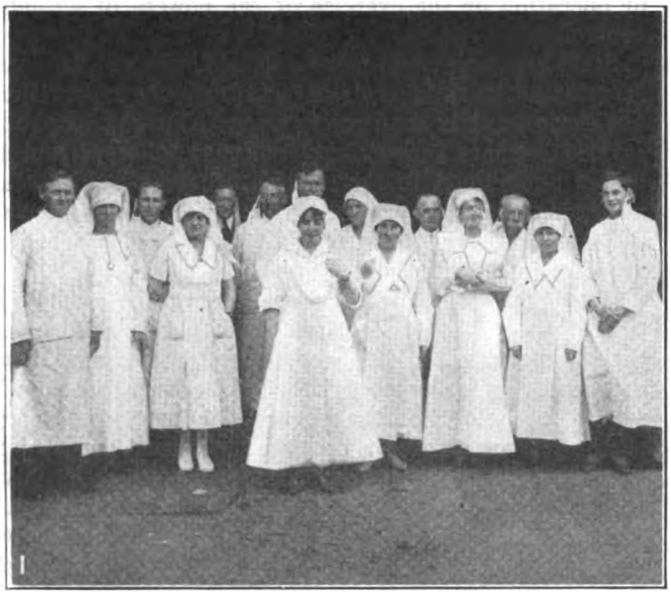
If our national representatives take up the consideration of federal aid or supervision of public utilities as their importance to the whole country becomes more apparent, they will approach the subject with full knowledge of the effects on the country's industrial efficiency of the loss of credit of the steam railroad companies, resulting from restrictive legislation and repressive regulation by the Interstate Commerce Commission. And it may be hoped that they will give due weight to the experience of public regulation of utilities through state commissions, that the interests of the state and of the public are best served and promoted by permitting rates which are sufficient both to insure adequate service and to create such credit as will induce the investment of capital needed for expansion.

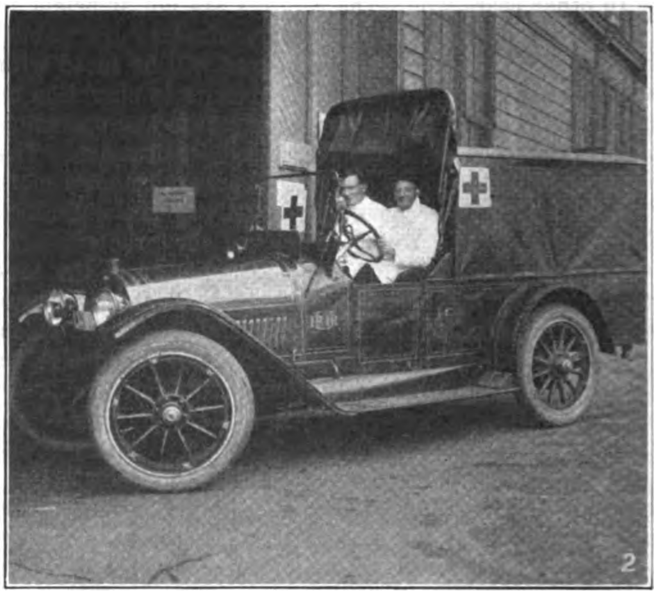
Providing Lubrication for Air Compressors

WITH the National AA-1 compressor, the motion of the pinion churns oil up into the oil well and keeps the pinion end lubricated, but it is necessary to occasionally lubricate the commutator end. In the shops of the Denver (Col.) Tramway, a ⅜-in. pipe has been attached between the drainage holes on the pinion and commutator ends, as shown in the accompanying photograph. The churning of the pinion thus forces oil around into the commutator end and keeps it equally well lubricated. A fiber disk has also been placed in the open commutator end to keep out the dust.



PIPE ATTACHMENT TO SUPPLY LUBRICATION TO COMMUTATOR END OF COMPRESSOR





Views Showing How the United Railroads of San Francisco Aided in the Recent Spanish Influenza Campaign.

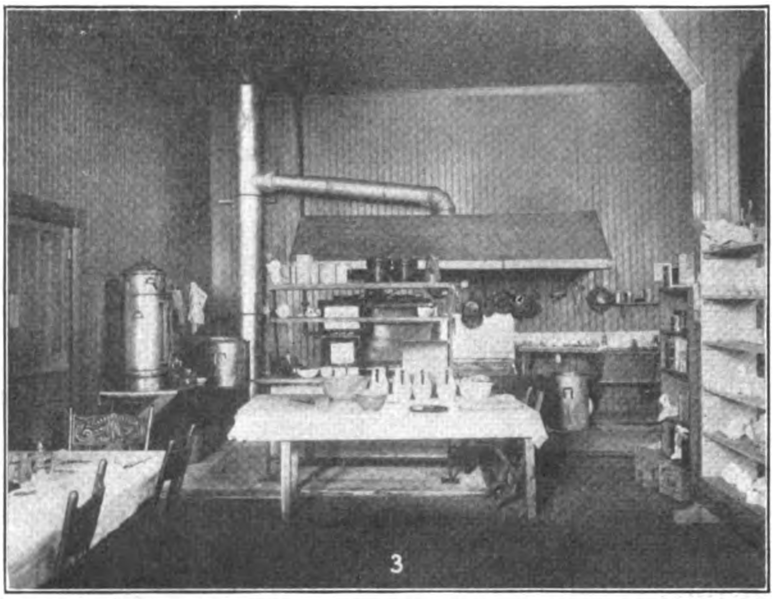
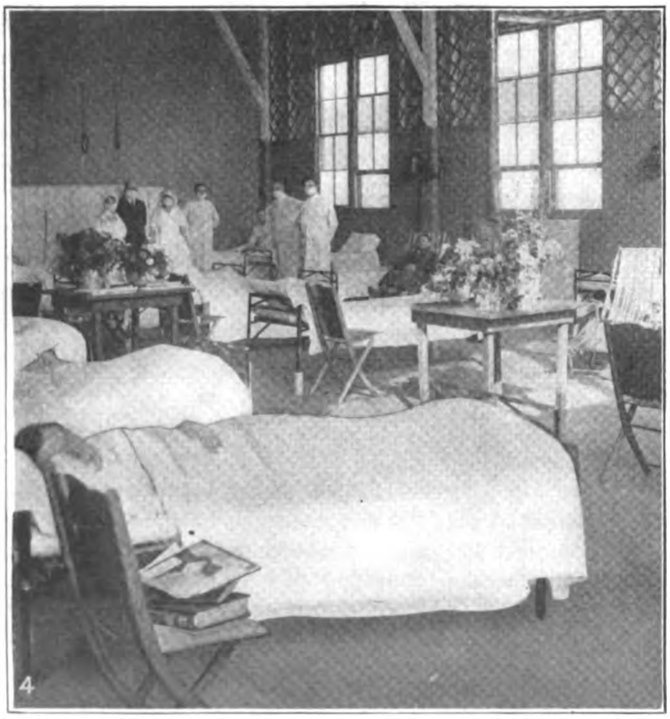


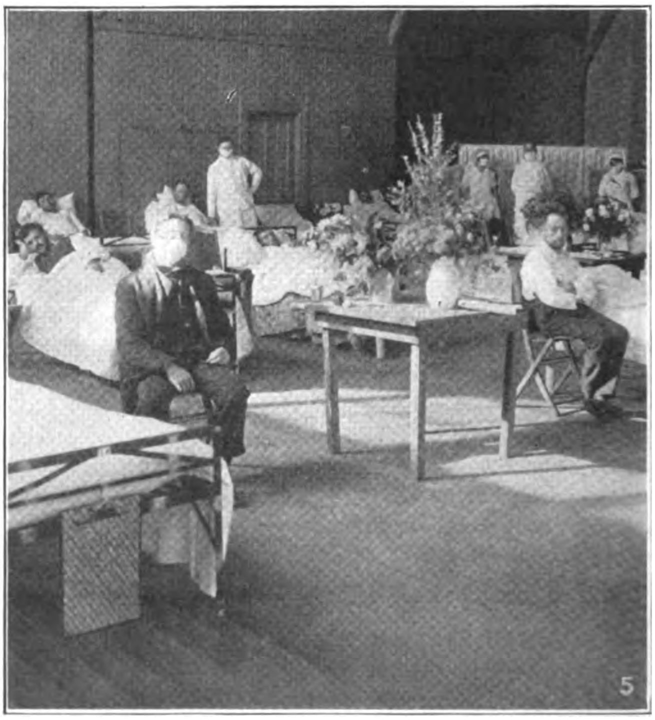
Fig. 1—Staff of doctors, nurses and helpers at the United Railroads' Hospital.

Fig. 2—An emergency repair car which did duty as an ambulance.

Fig. 3 — Hastily-improvised kitchen in the influenza hospital.

Figs. 4 and 5—Views of sections of the influenza hospital. Note the abundance of sunlight.

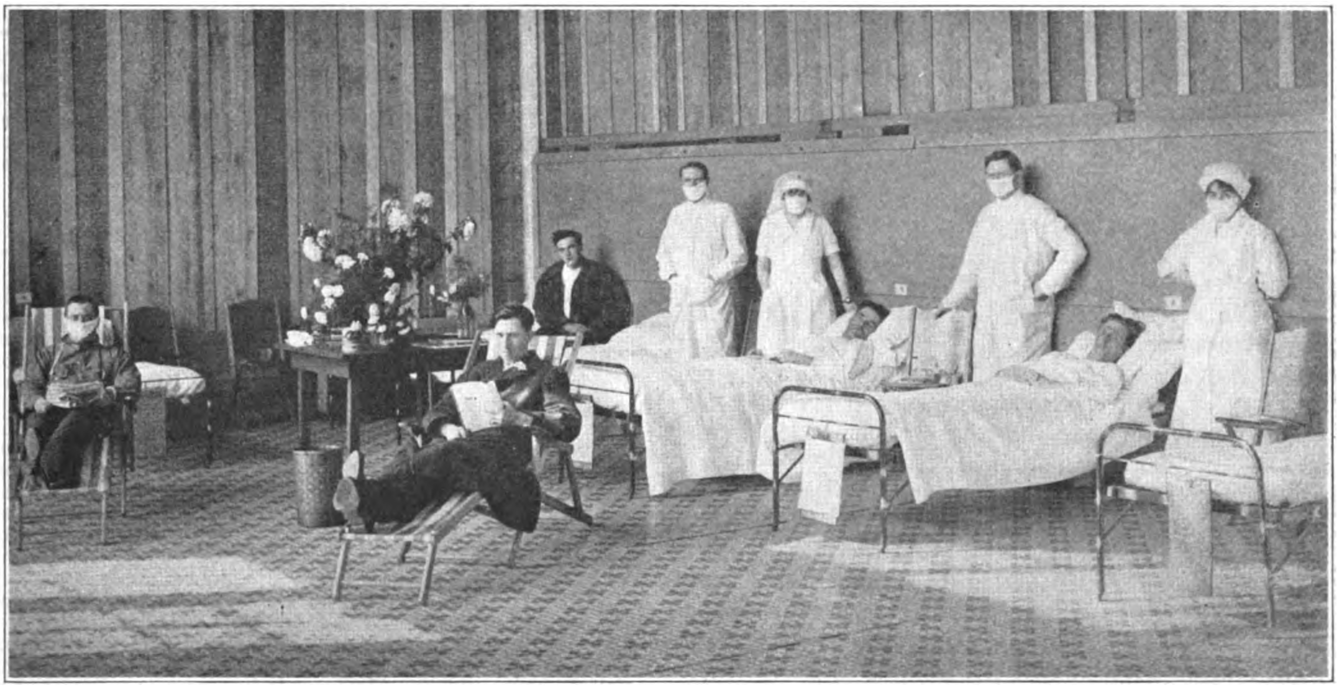




Fighting Influenza on the Coast

Successful Record Against the Recent Epidemic Made by the United Railroads of San Francisco

ONLY two deaths due to influenza out of 750 cases among a total of 2800 employees is the record to which the United Railroads of San Francisco points with pride. The good record was attained, it is believed, because as soon as the epidemic became general the company equipped a hospital of its own where all employees not otherwise adequately provided for could be accommodated. In addition, trained nurses made regular calls upon employees who were being cared for at their own homes. Company officials realized at the outset that a private hospital would be the only way of preventing a very heavy mortality among employees living in lodging houses or private rooming houses. In many such cases the proprietors refused to go near lodgers for fear of contagion and there was slight prospect of getting them into municipal hospitals because of the congestion there.



VIEW OF CORNER OF UNITED RAILROADS IMPROVISED INFLUENZA HOSPITAL

The hospital was established in a room previously used as a gymnasium for employees. It was made serviceable for the emergency use by putting in a large gas range and temporary kitchen facilities, sixty cots and several light partitions which made convenient quarters for the doctors and nurses. The entire medical staff of the company, totaling seven doctors, was assigned to the work and seven trained nurses, four male orderlies and two cooks, besides ambulance driver and helper, completed the emergency hospital staff.

At first the hospital had unused capacity and patients from the city hospital were accepted until the company employees filled all the cots. The hospital was opened on Oct. 26 and closed Nov. 15. In this time the number of patient-days (total number of patients multiplied by the number of days' treatment) was 642, of which 175 were taken over from the city hospital and the remaining 467 were cases among the company's own employees.

The cost of equipping the hospital was about $6,000 and the payroll of the staff amounted to about $500 per week. In addition to service in the hospital, two trained nurses, one working north of Market Street and the other covering the district south, made a total of 890 calls on patients who were cared for at home. In the two fatal cases reported the patients were not reached in time to receive proper attention. It is felt that if these cases had been reported in their early stages the record might have been 100 per cent.

HAD IMPROVISED AMBULANCE

Another difficulty met early in the campaign against the epidemic was the scarcity of ambulances to carry the invalids to the hospital. In consequence, company officials cast about for their own equipment which could be adapted for this use, and it was found that the remodeled Haynes used as a runabout emergency repair car by Chief Electrician S. L. Foster could be made to serve admirably by simply removing the tools and adding side curtains. Fortunately, the car body was just long enough to accommodate a canvas cot. The car was accordingly pressed into service and used almost continuously during the height of the epidemic.

Ten-Cent Fare Refused to Bay State

Commission Insists Upon Two Months' Trial of Seven-Cent Fare for Combined Inner and Outer City Zones and Five-Cent Fare for Two-Mile Zones on Country Lines—Says Company Should Test One-Man Car Operation in Immediate Future

THE right to charge a flat 10-cent fare in cities and a 10-cent minimum with 5-cent zones on country lines has been denied to the Bay State Street Railway by the Massachusetts Public Service Commission, in a decision made public on Dec. 13. Instead of a continuance of the present zone system, however, the commission recommends a two-months' trial of a simpler zone system, including a 7-cent fare for the combined inner and outer zones in cities and a 5-cent fare for 2-mile zones on the country lines. The rates asked for by the company have been suspended until Jan. 1, and the commission will substitute its proposals as soon as the company files a supplement or new schedule.

THE COMPANY NEEDS MORE MONEY

In introducing its remarks the commission points out that the public-trustee and service-at-cost act approved by the Governor on June 3, 1918, has not been accepted by the company, although the Legislature had felt that reorganization would follow within a comparatively short time. The principal reason why relief has not been sought under the act is that under war conditions it has been exceedingly difficult to raise the necessary capital. A secondary reason is the fact that the increase in the rates effective on June 24, 1918, has not produced the anticipated results.

Since Dec. 13, 1917, the company has been in the hands of a receiver. On Dec. 1, 1918, a total of 30.4 miles of unsafe track was closed down with the approval of the court, and a petition to discontinue 288.2 miles at least during the winter months because of failure to earn operating expenses is now pending.

The company, it is said, is in dire need of more money. For the year to end Dec. 31, 1918, the total deficit will be $2,804,223, and a full year's operation with present fares and present wages will mean a deficit of $3,825,920. Were the company to obtain all the increase estimated for the fares proposed, it would not be likely under existing conditions to become prosperous.

WILL THE PROPOSED FARES BRING IN THE MONEY?

In fulfilment of its duty to the public, however, the commission believes that it should go farther and require satisfaction that there is "at least a reasonable prospect" of the new fares producing the increase in revenue. It is said to be within the commission's knowledge that many electric railway officials are skeptical as to the wisdom of a 10-cent minimum rate.

Continuing the commission says in part:

> Our experience in many other cases leads us to place little faith in the estimates of gain submitted, and to share the fears expressed by the representatives of the communities. The best that can be said of the new schedule, from the point of view of the company, is that it is a chance, the risk of which is increased by the fact that the service is poor and will continue to be poor, under the most favorable conditions which can be anticipated, for some time to come.
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> To view the new rates from the public point of view, there is a certainty of a most disturbing effect. It is impossible to raise fares within a period of two years to such an extent without disrupting and dislocating the conditions to which community life has become adjusted. The new schedule means that the company will practically abandon the short-haul business in the city centers, and from the centers to the nearby suburban towns the rates will be so increased that it is difficult to believe that much regular daily traffic can in the long run be preserved. Still more disturbing, moreover, is the fact that, even if the new fares should prove unsuccessful in producing the revenue desired, experience has shown that it would be well-nigh impossible thereafter to reduce them.
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> It seems safe to say that the present unsatisfactory situation will lead to further action of some sort by the Legislature. Without undertaking to predict what that action may be, there are certainly many who are coming to believe that it is wiser to place a part of the burden of the cost of necessary electric-railway service directly upon the community as a whole, than to suffer increases in fares which do not produce the results that they are designed to produce, and which are seriously disturbing to social and economic conditions.
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> We believe we are justified in disregarding speculative estimates or arbitrary rules and in taking the action which our best judgment leads us to believe will secure the best net results for all concerned. The company is in dire need of additional revenue, if only to provide a safe margin above necessary expenses of operation. Stating our proposition broadly, we propose to authorize for a brief trial period an increase in rates which seems likely, in our opinion, to produce a larger actual gain in receipts than the tariff proposed by the company and will at the same time result in less serious damage to the community.
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> It seems to be the general opinion that one important reason why the present schedule of fares has failed to produce anything like anticipated results has been its great complexity and the confusion which has been created by so radical a change not only in the fares themselves but in the methods by which they are collected. To quote from the testimony of the vice-president of the company: "I am confident since the zone system has been in effect it has not been given anything like a fair trial, because it was immediately loaded down with a mass of tickets in city centers, and off-peak tickets and that sort of business, outside of the fact that the conductors and the communities themselves were wholly unacquainted with the method."
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> There seems to be no doubt that, along with the loss of traffic occasioned by the high rates, there has been another and a substantial loss arising from the fact that the new system has provided greater opportunities for the percentage of dishonest conductors and dishonest passengers bound to exist among so large a number, and from the still more important fact that it has led, through congestion and confusion, to the missing of many fares where no question of dishonesty was involved.

RATES THE COMMISSION WANTS TRIED

Taking into consideration all circumstances and conditions, the commission has decided to authorize the immediate adoption of a new schedule as follows:

1. For the city lines the company may combine the present inner and outer zones into one area, charging a 7-cent fare by the sale of five tickets or metal tokens for 35 cents. To encourage the use of tickets the cash rate may be made 10 cents. These new rates shall apply as far from the center on all lines as the 8-cent cash fare now in force, except in Gloucester and Hyde Park, where it shall cover the present central area, there being but a single zone in each of these two districts under the existing schedule. Half-fare tickets

for school children shall be sold at the rate of ten for 35 cents, as long as such tickets are required by law.

2. In regard to the country lines the commission says that the difficulty in collecting fares on the mileage plan now followed is, perhaps, sufficient reason for substituting the simpler 2-mile blocks without overlaps with a 5-cent unit, for the disadvantages of the present method affect the public as well as the company. To this extent, therefore, the schedule proposed on the country lines will be approved. The commission is unwilling to accept, however, a minimum of 10 cents as a general proposition. On lines where discontinuance is threatened because of failure to earn operating expenses, the commission will permit any rates to be charged which are agreed upon by the communities and the company for the purpose of keeping the road open, but on lines which are not in this category it feels that 10 cents is too high a minimum rate. The company may either make the minimum rate 5 cents or follow the same plan as in the cities, selling tickets or tokens, good for a single zone ride, at the rate of 5 for 35 cents. The commission is not at all sure that the former alternative is not the better for the company as well as the community.

3. As for workingmen's tickets, the commission deems it desirable that reduced-rate tickets, sold at not higher than 70 per cent of the regular cash fare, should be provided between certain points as "absorbers" of the "shock" of the increase. The financial effect upon the company will be slight, for it estimated but $83,000 gain from the elimination of all these tickets, and the management now concedes that they should be retained between the points where they are most extensively used.

In proposing this new schedule the commission emphasizes strongly the need for full co-operation on the part of the communities. It says:

> Whatever may have been the sins or errors of the past, the water is over the dam. Moreover, it is clear that the chief factor in the present unfortunate plight of the company is the recent extraordinary rise in wages and prices, rather than any of these things. It is a condition by which the public is now confronted. The problem is not one of securing any immediate return of any particular amount on the investment, but of meeting the necessary and unavoidable cost of furnishing the service. If the railway should be sold at receiver's sale, and even if it should be split up into a number of different parts, the same problem would remain under present conditions.
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> Unless present earnings are materially increased, or aid is provided from the public treasury, the service must inevitably become even worse than it now is, or be in whole or in part abandoned. As long as the car riders are required by law to bear the entire cost of operation, individual fares must be determined by the number of passengers among whom the total cost may be divided. It therefore follows, to speak broadly, that fares must go up as riding falls off.
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> It is natural that the public, incensed at increases of fare which, judged by former standards, seem unjust and unreasonable, should be disposed to encourage jitney competition, to indulge in spite walking or to adopt other measures which will result in a decrease of riding and a consequent decrease in revenue. The inevitable effect of such action, however, is to increase the fares for those who must continue to use the service. It is highly important, therefore, that city and town officials and the public generally should further the spirit of good-will and co-operation in order to insure a fair trial for the fares proposed by the commission.

The commission wants its fare system to be tried for two months. If at the end of that time this has, in combination with any other factors, produced an increase in gross earnings, in comparison with the corresponding period of the previous year, of 15 per cent

This Is the Bay State Fare History in Outline

Since Oct. 1, 1916, the Bay State Street Railway has had four increases of fares in Massachusetts. The first, which went into full effect on Oct. 16, 1916, covered all the interurban lines and the city lines in Woburn and Gloucester. It was felt that it would yield about $350,000 increase in revenue. The second was in Fall River, where the reduced fare tickets sold at the rate of six for 25 cents were eliminated on March 15, 1917, the company estimating that the change would produce about $50,000 additional revenue. The third, effective on July 15, 1917, covered all the city lines not included in the first advance. The probable gain was placed by the company at $720,000. The fourth went into effect on June 24, 1918, and the management estimated the increase at $1,671,000.

REVENUE GAINS FALL BELOW ESTIMATE

The total expected gain from all four increases was thus about $2,791,000, and all the estimates made allowance for probable shrinkage of traffic. In contrast, the company's estimate of revenue for a full year under present fares, according to experience to date, is $10,466,000, an increase of only $1,099,783 over the revenue for the year ended June 30, 1916. During this period the company had a substantial increase in freight receipts (included in the above revenue figures) amounting to more than $100,000. The gain will probably be not more than $250,000 over the revenue actually received in 1917.

The following table shows the course of receipts immediately before and immediately after the fourth increase became effective, in comparison with the receipts of the corresponding period of the previous year:

Prior to increase—	
First six months of 1918	0.25% decrease
Subsequent to increase—	
July, 1918	5.44% decrease
August, 1918	1.87% decrease
September, 1918	0.46% increase
October, 1918	10.17% decrease

The large falling off in October, it is said, was undoubtedly due in great part to the influenza epidemic. Accurate figures are not available, but the commission understands that the November earnings show an increase of about 7 per cent.

PRESENT SCHEDULE AND PROPOSED TEN-CENT RATES

Under the present schedule, all of the cities served by the Bay State company, excepting three of the smaller communities—Gloucester, Woburn and the Hyde Park district of Boston—have an inner and an outer zone. The radius of the inner zone averages somewhat more than 1⅛ miles, but less than 2 miles. The width of the outer zone averages about 1 mile. Within the inner zone the cash fare is 6 cents, but tickets, good to and from the center, are sold at the rate of 5 cents each. Similar tickets, good only during the so-called "off peak" hours, are sold at the rate of 4⅛ cents each. The cash fare between the outer and the inner zones is 8 cents, but tickets similar to those just mentioned are sold at the respective rates of 7 1/7 cents and 6¼ cents each.

On the country lines which are operated outside of the city zones, the fares are on a mileage basis. For 249 miles of track the rate is 2 cents per mile; for 37 miles, 2½ cents, and for 117 miles, 3 cents. The variation in rate is dependent upon traffic density and consequent earning power. On a number of the routes workingmen's tickets, good during the morning and evening rush hours, are sold at about 70 per cent of the regular rate.

The company, in the new schedule which the commission has now refused to allow, proposed to eliminate all tickets, including the workingmen's tickets; to establish city zones, substantially the equivalent in most cases of the present inner and outer zones combined, with a uniform fare of 10 cents; and to divide the country lines into zones about 2 miles in length, with a minimum fare of 10 cents good for two zones, and 5 cents for each zone thereafter. It estimated that this change would produce from $2,000,000 to $2,500,000 of additional revenue.

100 TO 400 PER CENT INCREASE IN FARES OVER 1916

The new schedule, the Massachusetts Public Service Commission says, has been spoken of as if it represented a mere increase from 6 cents to 10 cents, similar to the recent increase of the Boston Elevated fare from 5 cents to 8 cents. Such a comparison, however, is said to be misleading, because of the radical revision of fare zones on the Bay State lines which took place last summer.

Starting in each of these cases with the fare which existed as late as October, 1916, the maximum Boston Elevated increase is 60 per cent, while the proposed Bay State fares would vary from a minimum of 100 per cent (subject to a few exceptions in the case of rides covering two zones or more) to a maximum certainly as high as 400 per cent and perhaps higher.

Moreover, the Boston Elevated is still carrying passengers a maximum distance of about 18 miles for a single fare, although this has risen to 8 cents, while the maximum distance for 10 cents under the new Bay State tariff from one side of a city zone to the other would be about 5½ miles.

or more (after allowance for loss of revenue on any lines discontinued), the experiment should be continued for a similar period, in the hope that the situation may be further improved by action of the Legislature or by change in economic conditions. If, however, such an increase in revenue is not realized during the two months or is not substantially maintained thereafter, the commission will not stand in the way of a trial of the schedule which the company has proposed. In such an event, the commission says, the situation will be so critical that it would not be justified in interposing further obstacles to this experiment. Before any resort to such a schedule, however, it would earnestly recommend serious consideration, both by the company and by the cities and towns, of the provisions of the General Acts of 1918 permitting direct financial aid from the latter.

ONE-MAN CARS SHOULD BE TRIED

Undoubtedly the management of the Bay State Street Railway has been industrious along the line of trying to secure economy of operation, but the commission expresses the belief that one-man car operation should be tested, that the question of obtaining greater car mileage per car-hour should be studied further and that a close tally should be kept of receipts and operating results on the various lines and divisions.

In regard to one-man cars the commission says in part:

> In 1917 a new one-man safety car of modern type was purchased, and an old single-truck car was remodeled along somewhat similar lines for this form of operation. On Oct. 13, 1917, the commission approved the operation of both of these cars, specified fifteen routes upon which they might be used and authorized the company to purchase as many more new cars of similar design as it might desire to acquire. The further remodeling of old cars we refused to approve until comparative tests of the old and new type had been made in actual practice, but this question was left entirely open without prejudice, pending the submission of the results of such tests. Notwithstanding this action by the commission, however, we find that neither one of these cars has since been operated, but both have been allowed to remain unused in storage.
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> Upon inquiry we are informed the new car is too complicated; but no effort has been made to test its operation in actual service, and it appears that it is precisely the same type of one-man car which is being operated with apparent success in other parts of the country. We are informed also that the old car has been remodeled again, but no petition for the approval of the car so altered has been presented to the commission, nor has even the right been sought to test it in actual operation. It seems to the commission from this record that the management is trifling with a matter of very vital importance.
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> We have done what we could to encourage the use of one-man cars of proper design, not only by the Bay State Street Railway but by other companies in the State, not because such operation is any pet theory of the commission, but because it is coming to be recognized very generally in practical electric railway circles as one means of helping to solve the problem. From such knowledge as the commission has, it is led to believe that the Bay State Street Railway has many lines which are suitable for the operation of such cars, and upon which they would lead to a very desirable measure of economy. The management will, in our judgment, be open to very justifiable criticism if it does not take steps to test, in the immediate future, this form of operation.

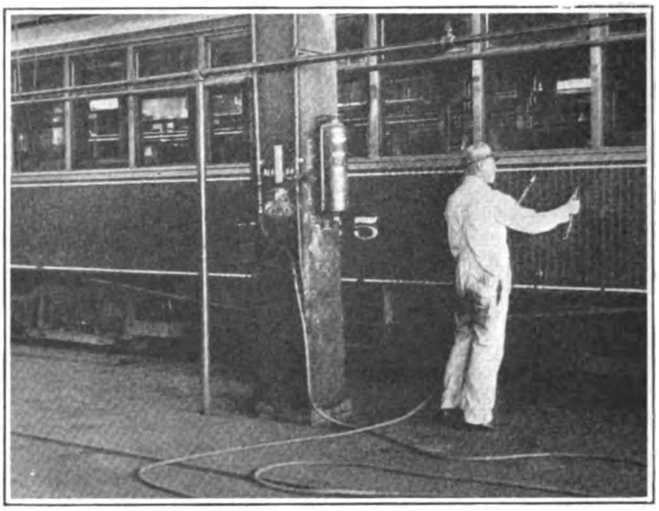
Extensive plans have been prepared in Rome for the development of the port of Ostia, 15 miles from Rome at which the latter city has access to the Mediterranean. The plans for improvement include the construction of an electric railway between Rome and Ostia.

Omaha Uses Portable Gas Torch With Single Hose Line

By Its Use Greater Flexibility of Operation Is Secured—Cost of Burning Reduced 40 Per Cent

THE Omaha & Council Bluffs Street Railway, Omaha, Neb., is using in its paint shop several portable gas torches, which not only accomplish 100 per cent more work than the ordinary blow torch, but also have great advantages over the two-line gas torch.

The Omaha torch has only one hose line, and this feature makes it very easy for the operator to handle the torch and makes it possible to work all around a car from one wall connection. The gas and air connections as illustrated are so distributed that the torch will reach any point in the paint shop or car-repair shop. A regular hose coupling is used at the gas end, and a bowes coupling in the air. These two pieces of hose are very short as indicated, and the air and gas are brought into the same line by a connection which includes a ¼-in. T into which is screwed a ¼-in. L. The hose is ½ in., and the three pieces of pipe are ¼ in., the end of the ¼-in. pipe from the air being connected to a $\frac{1}{32}$-in. hole inside the T, and inserted far enough to just pass the end of the L connection.



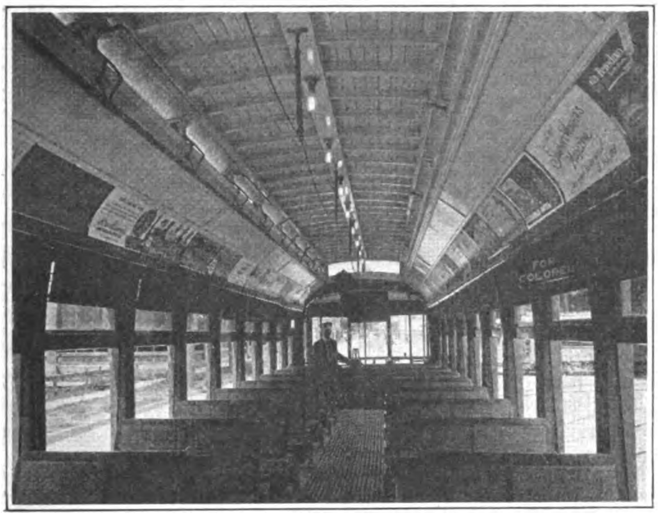
PORTABLE GAS TORCH IN USE AT OMAHA PAINT SHOP
NOTE WALL CONNECTION SHOWING AIR AND GAS BROUGHT INTO ONE LINE

The torch itself consists of a length of ¼-in. pipe, onto the end of which is screwed a ¼-in. x ¾-in. reducing coupling. A plug is screwed snugly into the large end of this coupling, and two concentric grooves, $\frac{3}{32}$-in. deep are made in the end. Six $\frac{1}{16}$-in. holes are bored in the small ring and fourteen holes in the larger. After the torch is lighted the flame is adjusted at the wall connection, and no further attention is needed. The ¼-in. pipe does not become excessively heated and may be held in the hand close up to the burning end.

Trouble was constantly experienced with the old type of blow torch, it being found practically necessary to hold a second torch in readiness at all times. With the new torch, which has now been in use about two years, the time required to burn a car has been reduced from 100 hours by the old method to sixty hours at present; thus cutting the cost about 40 per cent.

Better Lighting with Fewer Car Lamps at Dallas

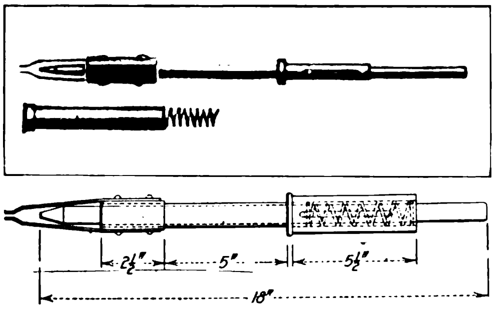
THE Dallas (Tex.) Railway has been rewiring the lighting circuits of its cars and refinishing the interior in lighter colors to improve the diffusion of light. Originally twenty lamps each of 23 watts were used. These were connected in four circuits. In the remodeled cars two circuits of 36-watt Mazda lamps are used, or only half as many lamps as formerly. The sockets for the new lamps are of the locking type and are set on a board running the length of the headlinings. This board together with the headlinings and carlines are painted white. The energy consumption is reduced from 460 to 360 watts per car.


INTERIOR OF DALLAS (TEX.) CAR WITH REARRANGED LIGHTING

Nail Gun Saves Temper of Workmen and Speeds Up Work

A HANDY tool to facilitate the driving of nails in inaccessible places has been devised by the Topeka (Kan.) Railway for use in its shops. The men have named it the "nail gun."

The construction of the gun as indicated in the accompanying illustration consists of a ½-in. drill rod, 18 in. long, placed in a ½-in. brass tube taken from an old window guard. In each side of the tube near one end two slits lengthwise of the tube were cut perhaps ¼ in. wide and 4 in. long, and the outside of the tube was threaded on that end. A little below the end of the slit a shoulder was soldered onto the tube, and a piece of brass ¾ in. square and 2½ in. long, formerly used for a terminal on a blow-out coil, was drilled with a ⅝-in. hole and soldered onto the other end of the tube. Two strips of ⅝-in. x 1/16-in. spring steel were fastened onto opposite sides of this with two screws each, and the two projecting ends of the steel were crimped together. A pinion was placed through the drill rod to run in the slits in the ½-in. tube, a ring was slipped down against the pinion and then a long coil spring down against the ring. A piece of 1-in. brass tubing 5½ in. long, in one end of which is a threaded plug bored with a ½-in. hole, was then slipped on over all and screwed into place.



APPEARANCE AND DIMENSIONS OF NAIL GUN

A nail placed in a small groove between the prongs of spring steel is firmly held. The tool is then pushed into the inaccessible place, and with a few sharp blows on the end of the drill rod the nail is driven securely in place.

Brake Lever Stops Prevent Accidents

TO INSURE the action of brakes on double-truck cars in case any breakage occurs in the levers or rods pertaining to one end of the equipment, the Denver (Col.) Tramway has installed a simple device on all cars. A strip of ⅝-in. x 2-in. steel is bent up into the shape shown in Fig. 1 and applied to the underframe of the car by four lag screws, as indicated in Fig. 2.

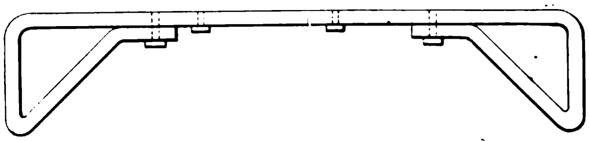


FIG. 1—DESIGN OF BRAKE LEVER STOP

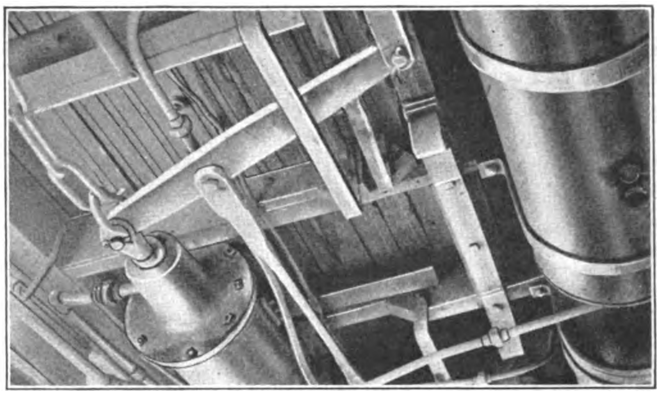
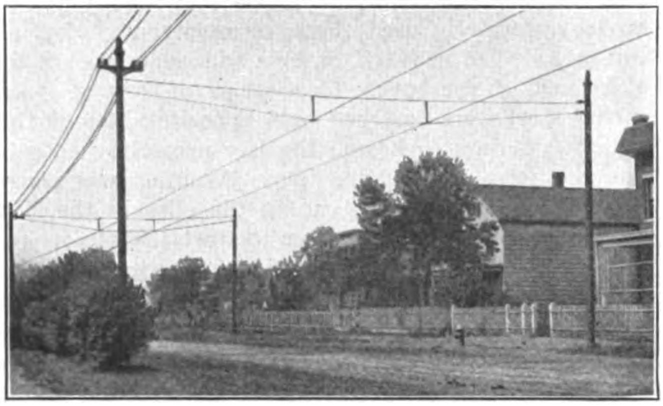


FIG. 2—APPLICATION OF BRAKE LEVER STOP TO CAR

This provides a stop for both brake levers. The bending is done to give such a length between stops as to provide, in case of a broken lever, a maximum travel of 7 in. for a piston with an ordinary travel of 4 in. or 5 in. In case of a break, the lever is thrown back against the stop. This still leaves 4 in. of piston travel, which is sufficient to allow the other lever to perform its proper function.

This device is inexpensive and is easily made and applied, care being taken that the bending is so done that when applied the stops will provide for the correct distance of piston travel. The lever stops were put on the cars as a result of some serious accidents and it is known that they have fulfilled their mission in several instances.



DOUBLE SIDE FEED SPAN CONSTRUCTION

SINGLE SIDE FEED SPAN CONSTRUCTION

Safety and Cost Determine Construction of Side Feed Spans

By G. H. McKelway

Engineer of Distribution Brooklyn (N. Y.) Rapid Transit System

THERE are two general types of side feed construction. In one, which is by far the most usual, the side feed span is made of an insulated copper wire which not only carries the current from the feeder to the trolley wire but also supports the latter. The ordinary means of support of this construction consists of a side feed yoke, the lips of which are hammered around the side feed span at a point where the insulation has been removed.

With the other construction the function of the side feed is merely to carry the current to the trolley wire and it is relieved entirely of the weight of the latter, which is carried by a separate span of galvanized iron or steel wire installed beneath the insulated wire. Connections from the side feed span to the trolley wire are made by taps hanging from the former and terminate in special side feed ears on the trolley wire.

The advantages claimed for the first type of construction are cheapness and ability to use the same type of ears at all points on the line. The advocates of the separate span construction claim that the construction is safer. Further, while a special type of ear has to be used with it, yet the ordinary straight-line hanger can be used on all of the spans. In the other construction yokes must be used on some of the spans.

When the insulated wire is placed above the span wire the latter protects it from any danger of being broken by wild poles, and also lessens the danger of the trolley wire being broken. When a break occurs, with the single-span construction the trolley wire may drop low enough to cause trouble and perhaps be broken, while with the two-span construction, if the lower span is broken the trolley wire will be supported from the taps hanging from the insulated span. Another safety point made by the advocates of the double construction is that there is less chance of the side feed being burnt off with it than with the other type, as the weight of the trolley wire tends to pull apart the single span when it is overheated, while that strain is absent when the two wires are used.

The whole question as to which is the better type to use can be reduced to the decision as to whether the increased safety obtained with the double span is worth the increased cost of installing it.

For important lines with heavy traffic when delays are expensive both as to fares lost and because of the good will of the traveling public that might be sacrified the best construction will be the cheapest in the long run and the insurance of good service will be well worth the comparatively small increased cost. For relatively unimportant lines the use of the double side feed spans will not pay as the cheaper construction will be good enough for them.

Southwestern Quarterly Conference

At Gathering at Houston, Tex., Fuel, Labor and Fares Were Discussed

THE second quarterly conference of the Southwestern Electrical & Gas Association was held at the Bender Hotel, Housten, Tex., on Dec. 9. The principal topics considered were fuel, labor, rates and fares.

In regard to fuel it was decided that, while the present supply of gas in the northern portion of the state and the present and future supply of Mexican oil and residual in the Gulf Coast section shows no sign of early diminution or increase in price, there is in the interior of the state a great need for a cheaper fuel and one whose continuity of supply for a long time in the future may be relied on. While Texas has within its state lines and lying contiguous to its principal fuel-using sections over 6,000,000,000 tons of lignite which can be cheaply mined and carried, its character is such as to make it an inefficient and unsatisfactory substitute for coal, fuel oil or natural gas at the present time. It was shown, however, that the experiments now being made are virtually solving this question and that by the "carbonization" of lignite, by changed methods of distilling it for gas and residuals, it can be made a very close competitor with all the other available fuels in efficiency, with the further vital requisite of an uninterrupted continuity of supply for a century or two in the future.

With reference to the problems of the employees returning from government service it was unanimously agreed that they would be immediately reinstated in their former positions where such positions had not been abolished under the exigencies of war times, and that under the latter condition other equal positions should be open to them, their seniority in service being preserved, and that in all cases preference would be given to those who returned maimed, wounded or in any way injured while serving their country in government service.

The matter of the standardization of rate and fare bases throughout Texas was also fully discussed, and action was taken to have the association office make this a matter of immediate action. The consensus of opinion on the best method of increasing fares was that no hard-and-fast rule could be laid down but that both the public and its representatives should be approached on this matter with the utmost candor and that all statements made and figures offered should be strictly true and uncontrovertible.

It was also decided to hold the next convention of the association at Galveston, Tex., between May 15 and June 10, 1919. There will be no other "conference" of the association before the 1919 convention.

LETTERS TO THE EDITORS

Process of Repairing Bagged and Ruptured Tubes of Water Tube Boilers by Welding

STEAM BOILER AND FLYWHEEL SERVICE BUREAU.
NEW YORK CITY, Dec. 17, 1918.

To the Editors:

An article in reference to the repair of bagged and ruptured tubes in water-tube boilers, appeared on page 285 of the Aug. 17, 1918, issue of the ELECTRIC RAILWAY JOURNAL, as follows:

> In the boiler rooms of the Doherty properties in Toledo, Ohio, all bagged and leaking boiler tubes are being welded by the oxy-acetylene process. William Long, superintendent of production, states that as many as fourteen welds have been made on one tube before it was discarded. The process is first to heat the bag on the tube, with the torch, using a slow heat until the bag is a bright cherry red. The bag is then driven back, beginning at the outer edge and working in toward the center. In case there is a hole in the bag this is first welded shut. Boiler tubes are also being reclaimed by welding sections of tubes onto damaged tubes that have been removed. The cost of welding is approximately 75 cents per single weld, including all labor, material and cost of setting up the apparatus. When several welds are made on one boiler, the cost is less.
>
> Crystallized boiler tubes are also being successfully annealed by use of the oxy-acetylene process. The two ends are heated to a bright cherry red and allowed to cool, after which they are rerolled and given a hammer test. After treatment the tubes are found to be as soft as new ones.
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> The Toledo Railways & Light Company reports that by use of these methods a great saving is being made in boiler tube costs. The process is another illustration of the extent to which modern welding is being applied in all technical fields.

This article appears to have received rather wide publicity. It has recently been quoted in a letter sent out by W. G. Williams, district engineer of the Mid-Continent Division, United States Fuel Administration, evidently with the intent of conserving tube material.

The boiler-insurance engineers believe that any general introduction of the methods of tube repair proposed in this article cannot help but increase the already too numerous accidents caused by tube failures in the water-tube type of boiler.

There is a class of tube accident which occurs in connection with water-tube boilers with more or less frequency, which is produced by the blowing out of a piece of the tube, and while it is very difficult to assign a definite cause for this class of accident, it may be most logically explained as being produced by repeated local heating and cooling of the failed section. It would appear that in a structure as rigid as the ordinary boiler tube the proposed method of welding and driving up small bags, as practiced by the Toledo Railways & Light Company, might contribute to this class of accident, due to severe internal stresses that may be produced by local heating.

The welds made in the manufacture of the welded type of boiler tube are frequently the cause of tube accidents. The best engineering practice requires the use of seamless tubes for water-tube boilers, or at least that the first few rows of tubes exposed to the products of combustion and which are the ones generally concerned in tube failures, should be of the seamless drawn type.

Owing to the fact that tube accidents are often accompanied by a loss of life or the very serious personal injury of the attendants, besides a large amount of property damage, it is believed that only the best material should be used for tubes, especially in boilers of the water-tube type.

Tube failures are of such frequent occurrence that the engineers of the companies doing steam-boiler insurance business feel that the danger should not be increased by this practice of heating and welding.

STEAM BOILER AND FLYWHEEL SERVICE BUREAU.

Zone System Advisable for Large Cities

EDMONTON (ALTA.) MUNICIPAL STREET RAILWAY
EDMONTON, ALTA., Dec. 10, 1918.

To the Editors:

The address by L. S. Storrs in reference to the zone system, presented at the recent New York conference of the American Electric Railway Association and published in the ELECTRIC RAILWAY JOURNAL of Nov. 2, elicits the following comments:

Mr. Storrs maintains that the European system of collecting fares is no guide for the adoption of the zone system on American electric railways. From my experience I would say that there is no better system for large cities. A large proportion of the electric railways in the old land are able to pay dividends to the stockholders and, where municipally owned, hand over to the treasury large sums of money after taking care of interest, sinking fund and depreciation. For instance, the city of Glasgow paid over to the treasury in 1917 the sum of $250,000. Without a doubt that speaks well for the zone system there.

Mr. Storrs also gives figures comparing Glasgow with Columbus, and Bridgeport with Aberdeen, and discusses the railway facilities afforded on this continent and in Great Britain. The whole bone of contention appears to be the system to adopt for the collection of fares. According to his figures there are more miles of track in this country per 1000 of population than in Great Britain, which clearly indicates that there are not so many passengers to be carried per car-mile—all the more in favor of the zone system.

I might say that the Glasgow Corporation Tramways carry about fifteen passengers per car-mile, and each passenger receives a punched ticket which represents a receipt for fare paid. If the conductors over there can punch tickets at the rate of 150 per car-hour, the conductors on this side should be able to perform the same duty. The different denominations of money might make it somewhat more difficult, but not enough to retard the conductors in getting all the fares.

A great deal of discussion has arisen over passengers overriding the distance paid for, but a conductor should be able to keep an eye on all passengers and see that this does not occur. The tickets or checks used are of different colors, and by these a conductor knows where a passenger should leave the car.

Discussion has also arisen as to the possibility of conductors stealing fares, but with the system of checks used this is almost impossible. The checks are numbered in series, and each conductor must turn in the amount of cash received for the number of checks issued.

It would be impossible, of course, to have such low fares here as in Europe, but that is a matter for each railway to decide. It seems to me that the best fare to adopt here would be 4 cents for the first zone and 1 cent for every additional zone to the end of the line. If this should not produce sufficient revenue, the zones should be shortened, but it would be inadvisable in any case to increase the fares.

A 10,000
4c. Fare

From	To
N. Ed.	80 St
80 St	95 St
95th	111 Av
111 Av	106 Av
106 Av	101 St
101 St	109 St
109 St	122nd
122nd	108 Av
108 Av	118 Av
To	From

B 20,000
5c. Fare

From	To
N. Ed.	95 St
80 St	111 Av
95 St	106 Av
111 Av	101 St
106 Av	109 St
101 St	122nd
109 St	108 Av
122nd	118 Av
To	From

C 30,000
6c. Fare

From	To
N. Ed.	111 Av
80 St	106 Av
95 St	101 St
111 Av	109 St
106 Av	122nd
101 St	108 Av
109 St	118 Av
To	From

D 40,000
7c. Fare

From	To
N. Ed.	106 Av
80 St	101 St
95 St	109 St
111 Av	122nd
106 Av	108 Av
101 St	118 Av
To	From

E 50,000
8c. Fare

From	To
N. Ed.	101 St
80 St	109 St
95 St	122nd
111 Av	108 St
106 St	118 Av
To	From

F 60,000
9c. Fare

From	To
N. Ed.	109 St
80 St	122 St
95 St	108 Av
111 Av	118 Av
To	From

G 70,000
10c. Fare

From	To
N. Ed.	122nd
80 St	108 Av
95 St	118 Av
To	From

H 80,000
11c. Fare

From	To
N. Ed.	108 Av
95 St	118 Av
To	From

I 90,000
12c. Fare
From To
North Admonton
to
118th Av

TYPICAL TICKETS FOR A NINE-ZONE SYSTEM

I attach sample of checks which might be used on such a system. For example, a person who wished to ride one zone would purchase a 4-cent check; two zones or one zone and a portion of another, a 5-cent check, etc. If the person wished to ride the entire distance, he could buy a 12-cent check.

The collection of fares and issuing of checks is really very simple. For example, a person takes his seat in a car, say at some point between North Edmonton and Eightieth Street, and wishes to ride to 109th Street. In this case the conductor would collect 9 cents and issue a 9-cent check, punched in the column denoting the zone where the person boarded the car. This check would indicate the destination of the passenger. Should the latter override the distance, the conductor would collect an additional 4 cents. This would probably prevent any person attempting to defraud the company a second time by overriding the distance originally paid for.

When a conductor starts on his day's work, he has a stock of checks of each denomination. The total number of each is marked down on a card or form which he carries with him. The checks are put up in pads of 100 and are numbered consecutively. At the commencement of each trip the number of the uppermost check of each denomination is marked on the card. At the completion of the day's work this card, with the unsold checks, will show exactly the day's sales, and the conductor must account for the money representing these sales. In case of a shortage of cash, he must make good.

The concensus of opinion at the conference of the American Electric Railway Association was that no zone system yet adopted by the railways on the American continent has proved satisfactory, and that the flat increase in the unit fare has not given the desired results. If the European system were given a trial, I am sure the results would be satisfactory.

I think it would be inadvisable for cities with a population of less than 100,000 to adopt the zone system. The reason is that with low fares a certain density of population is essential to obtain satisfactory results. In other words, the short-haul traffic is the traffic which pays best, and a low fare would tend to encourage this branch. In smaller cities a better system would be to adopt one-man cars and a higher fare.

Edmonton is experiencing at the present time the same difficulties as most electric railways, and probably a few more owing to the excessive capital investment per head of population. We are carrying 10,400,000 passengers a year on an average fare of 5.15 cents. The total earnings for the year are $535,000, and the total expenses $630,000.

If our fares were increased to four tickets for 25 cents instead of five for 25 cents as at present, and children's tickets ten for 25 cents (and there is an indication that this may take place in the near future), and if the number of passengers carried were 10,200,000 (a decrease of 200,000 being allowed because of the increase in fares), our fares would average 6 cents. The total revenue would then amount to approximately $624,000.

It would be out of the question to attempt the zone system with Edmonton's present population, as we would have to earn $90,000 more revenue to pay the additional platform expenses.

I have endeavored to demonstrate why the zone system should be adopted in large cities and the one-man car system in small cities. Should any reader desire further information with regard to the zone system, I would be very glad to take the matter up with him, as I believe this system will eventually have to be adopted. I. H. MOIR, Superintendent.

The Columbus Railway, Power & Light Company, Columbus, Ohio, has distributed to its employees copies of a booklet entitled "Courtesy," written by David Gibson. On the cover is a note from President S. G. McMeen addressed to the employees with the suggestion that "perhaps we can get more courtesy in 1919 by giving more."

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

$6,870,130 Damages Claimed

United Railroads, San Francisco, Asks That Amount for Injury to It by Municipal Line

Four claims for damages have been filed against the city and county of San Francisco, Cal., by the United Railroads, San Francisco. They aggregate $6,870,130. The basis for their presentation rests upon the provision of the Constitution of the United States and the similar provision in the Constitution of the State of California which hold in substance that private property shall not be taken for public use without just compensation.

The United Railroads contends that in constructing the outside tracks on Market Street and on Church Street between Market and Sixteenth Streets and operating cars of the municipal railway thereon the city has damaged the company's Market Street and other franchises in the amount mentioned. In litigation now pending in the Supreme Court of the United States the United Railroads contends that the city had no right to construct these outside tracks. If this litigation should result in a finding that the city was within its rights in constructing the outside tracks and operating cars upon them there would still remain to be settled the question of just compensation for private property taken or damaged in making such public improvement.

In estimating damages the test has been based on the extent to which the market value of the property taken or damaged has been depreciated by reason of the construction and operation of the public improvement. While the United Railroads contends that its entire system has been damaged, that is, depreciated in value, to the extent of the total amount claimed by reason of the construction and operation of the outside tracks, this total is represented by four different claims filed at different times because the city's work was done at different times on different parts of the street. The four claims therefore divide the company's damage as follows:

$856,250—Resulting from the construction and operation of the tracks on Market Street between Van Ness Avenue and Church Street and on Church Street between Market and Sixteenth Streets.

$288,500—Resulting from the construction and operation of the tracks on Market Street between Church Street and the Twin Peaks Tunnel.

$4,825,380—Resulting from the construction and operation of the tracks on Market Street between Van Ness Avenue and Geary Street.

$900,000—Resulting to the entire system of United Railroads as distinguished from damage to the Market and Church Street franchises.

The construction and operation of the outside tracks by the municipal line have rendered access to and egress from United Railroads cars, which are on the inside tracks, very dangerous. This, the company says, has greatly depreciated the earning power, not only of the Market Street franchise but the entire system of the company. In other words, it is not a mere case of fair competition, but a situation which enables the city to get the business by physically preventing the United Railroads from obtaining it. As market value ordinarily means such an amount as a willing purchaser would pay a willing seller, it is contended that a willing purchaser would pay a willing seller much more for the United Railroads system without the city operating the outside tracks than such a purchaser would pay with the city in possession of such tracks.

A Voice in the Wilderness

J. W. Perry, president of the Southwest National Bank of Commerce, speaking on Dec. 11 before the Kansas City Association of Credit Men, laid much emphasis on the necessity for bringing about closer sympathy between the public utilities and the public and the need for private, rather than public ownership. The meeting was held the night of the day on which employees of the Kansas City Railways quit work to enforce their demand for higher wages; and business men appreciated the fact that the railway, as the War Labor Board had declared, could not pay more wages unless it received more revenue. Mr. Perry said in part:

"It is up to us to strengthen our utilities. And we can't do that by robbing them. We must give the utilities, as well as everybody else, a fair deal. They are entitled to a profit on their merchandise, as any other business man is. The public don't recognize the elements of cost in service, and the plain justice of compensating the one who gives service. I know that you can't carry a passenger from Rosedale to Swope Park for 5 cents at a profit—anybody need only walk that distance once to get a clear idea as to what the service is worth.

"I have no suggestion to make for solving the problems of our utilities, but they are entitled to a fair deal. When the government took over the railroads, it raised the rates. Why weren't the rates raised before, while the railroads were being operated by their own officers?

"I hope to see the day when utilities will receive a reasonable profit. And labor should receive—and give—a square deal, too."

Free-for-All Suggestion

Lynn Merchant Steals a Page Out of "Looking Backward" for Practical Application

R. S. Bauer, the Lynn, Mass., merchant who some time ago retained Peter Witt, Cleveland, to report on conditions on the Bay State Street Railway in Lynn, considers the latest proposal of the railway, which provides for a 10-cent cash fare as an initial charge within each zone, not only an exorbitant car fare, but an extortionate one. Mr. Bauer has been conferring again with Mr. Witt. He seems to think that possibly the solution of Lynn's railway problem lies in municipal ownership with free rides. In a recent public statement Mr. Bauer said in part:

"The city of Lynn owns the public highways upon which this corporation operates; its equipment is in a way a part of our public highways. I propose that the city of Lynn purchase from the Bay State Street Railway the entire track and overhead feeding wire equipment, and carhouses in Lynn by a twenty-year bond issue, which should be large enough to permit the purchase of 120 one-man, front-entrance cars, giving the people in Lynn a service with not more than a ten-minute wait between cars, with a three-minute wait during the rush hours, and extending this service over every track in Lynn, including the belt line and other abandoned sections, and that the entire service in Lynn be operated by the city, making absolutely no charge for car fare anywhere; in other words, that the street cars under this municipal ownership and operation carry the people of Lynn wherever they want to go within the city limits absolutely free; the operating expenses to be met by a tax levy.

"Free rides would in my judgment in five years build up every vacant lot within the city limits. We would have within ten years 200,000 people in Lynn. Our merchandising interests, manufacturing interests, home-owning interests and rental interests would operate on stabilized land values, that would be increased fully 100 per cent all over the city by granting to the citizens of Lynn this opportunity of going back and forth wherever they want to go within the city limits, without the necessity of paying any car fare at all. Our taxable valuations in five years would almost double what they are to-day. Increase in values, and home-making and rental-making opportunities that would follow the adoption of this plan would more than take care of the expense of operation."

Effort to Fix Status of Women

Final Ruling Asked in Regard to Cleveland Women—Review of Case That Has Taken on National Interest

On Dec. 16 Miss Rose Moriority, representing the women conductors of the Cleveland (Ohio) Railway, was in Washington to file an application with the War Labor Board, asking for a final ruling in the case of the Cleveland women. The application includes mention of the calling of a strike, the insistence of the Cleveland branch of the Amalgamated Association on the Cleveland Railway making an agreement to dismiss the women by March 1, and the actual making of this agreement by the company. All of these things are claimed to be in violation of the order of the board issued on Nov. 29. The company and the union are being asked to show cause why they should not be decreed in contempt of the board.

The order of Nov. 29 was to the effect that the company withhold the discharge of the women in its employ, pending a decision by the National War Labor Board on the merits of the question and that the local branch of the Amalgamated Association withhold insistence upon the award already made pending such decision. This order was signed by W. H. Taft and Frank B. Walsh, joint chairmen, and the interested parties were instructed to govern themselves accordingly. The proceedings that followed offer the grounds for the complaint that has just been made.

How the Question Came Up

The controversy over the employment of women as conductors by the Cleveland Railway dates back many months and has many angles. In a statement which he made last September, J. J. Stanley, president of the Cleveland Railway, said that more than a year before that time the company began to feel the effect of war calls on the man-power of Greater Cleveland. While the number of car riders decreased, the service demands made by the city increased. The explanation for this seemingly contradictory statement is found in the great increase in the number of munition plant employees and the large amount of equipment necessary at certain specified times to handle the traffic thus presented. These demands the company was unable to meet. There were barely sufficient trainmen to take care of the regular schedules, but the company had no extra lists from which to draw men for rush-hour or special service.

On Feb. 10, 1918, the company advertised extensively for men, but only three men were secured. On Feb. 22 the City Council committee on street railways made a tour of inspection to investigate complaints that labor shortage was crippling the service. Two days later, William Rea, secretary of the local branch of the Amalgamated, was quoted in the Cleveland *Plain Dealer:* "About 400 of the old men have left since spring to take up more lucrative jobs."

Lack of Men Cuts Service

Street Railway Commissioner Sanders' check of service on March 13 showed that a number of rush-hour runs had been abandoned because of lack of men. He then came to the aid of the company by decreasing the service required. Following the declaration of war by this country, Mr. Stanley ordered that no applications be taken from aliens unless they had received or were securing their first papers. All orders for special cars were declined from that time.

When the men asked for an advance of 25 cents an hour in wages on April 15, the management requested the men to discuss with it a rearrangement of seniority lists and schedules and to permit the employment of women on an equitable basis with men. Mr. Stanley told them at that time: "We must and will employ women to run the street cars of Cleveland. It is a dire necessity of war and absolutely the only solution to the problem of the shortage of men." He said further that the shortage was between 400 and 500 and that runs were being suspended on all lines because of it.

On April 19 the company proposed an immediate increase in the wages of motormen and male conductors. It also suggested that conductors physically able and competent be shifted to positions as motormen, their places as conductors to be taken by women. Representatives of the union contended that sufficient men could be secured, if wages were paid equal to other industries, and that if this prophesy did not prove true, they would consent to the employment of women.

Effort to Secure Men Fails

The publicity given the expected increase in the wage schedule, after the matter was taken over by the National War Labor Board on May 28, failed to increase the number of applicants at the employment office. Newspapers prophesied an increase in wages all the way from 10 to 25 cents. When the board's award was made on Aug. 1 there was still no encouragement, and three weeks later the company began to advertise for women to be trained for conductors. It was stated that women would be paid the same as men and that no man would be forced to yield his job to a woman. Street Railway Commissioner Sanders called the move a step to prevent a breakdown in the transportation service. Officers of the union still insisted that the shortage was mythical.

As the women were trained and fitted for the work they were put in charge of cars. They showed much ability and good judgment in handling their work. On Sept. 3 William Rea, secretary of the local branch of the union, declared that all male employees would quit the cars at midnight the following Wednesday unless the women were dismissed by 2 o'clock on that day, and that they would remain out pending an investigation of the necessity for their employment. President Stanley asserted the right of the company to employ such persons as it saw fit.

Newspapers editorially supported the stand that in war times it was necessary to employ women at such work as they could do so that the men could perform duties required by the government for which the women were not fitted. The men, however, insisted upon a federal investigation which had been suggested by Mediator A. L. Faulkner to avert trouble. The company finally agreed to submit the following questions to two representatives of the United States Department of Labor, since the matter could not be carried to the National War Labor Board until all other means of settlement were exhausted:

1. Shall women conductors be taken from the cars pending an investigation of the main issue between the company and its employees?
2. Is the Cleveland Railway, because of a shortage in man-power, justified in employing women conductors?

H. B. Deilmann and Margaret Russanowska were sent to Cleveland by the United States Labor Department to make the investigation. On Sept. 9 they ruled that women should remain on the cars pending the final decision, as their removal now "would even more seriously cripple the present inadequate transportation of the vast number of workmen dependent upon the street car service."

By Sept. 21 the situation seems to have looked different to them, as they decided the second question in the negative and ordered that all women should be removed from the cars on and after Nov. 1. It was admitted that the company would have to lower its standard somewhat . . . "but the excellent street railway service of Cleveland will suffer no great detriment by lowering the strict standard adhered to by the company in the past."

Later the women conductors appealed to Secretary of Labor Wilson and stated that all other parties at interest but themselves had been represented in the investigation and they felt that there should be a new hearing on the matter. He informed them that unless grave error in the finding could be shown or additional evidence could be produced, he would be unable to reopen the case. They pointed out in another communication several alleged errors and mentioned the additional information that could be furnished, but nothing came of it. A long telegram from the Cleveland Chamber of Commerce, urging that the women be retained remained unanswered.

WOMEN FILE COMPLAINT

Then followed the complaint made by the women conductors, through Miss Rose Moriority and Attorney Florence Allen, in which all the facts were laid before the Federal War Labor Board. They were instructed by former President W. H. Taft, a joint chairman of the board, to ask for a restraining order against both the company and the local branch of the Amalgamated Association. This was followed by an interlocutory order from the board citing the defendants to appear before that body on Nov. 7. In the meantime the United States Labor Department had extended the time for the discharge of the women from Nov. 1 to Dec. 1, on the ground that a general investigation would be made with a view to fixing the status of women in the industries. On Nov. 29 the order mentioned at the outset was issued by the War Labor Board.

Union officials called upon Mr. Stanley on Dec. 2 and demanded to know what he was going to do about discharging the women conductors, as the preceding day was the last day of the extension named by Secretary of Labor Wilson. In replying to a question by Mr. Stanley, they said they had received the order of Nov. 29 of the War Board, but denied that it had jurisdiction in the case. Mr. Stanley informed them that the company would obey the War Labor Board's order, as it always had done before.

STRIKE THREATENED

Mr. Stanley was informed that a meeting had already been called for that night to vote on a strike, if the women were not removed at once. The vote was largely in favor of a strike and late that night the officials of the road were notified by telephone that the last cars would leave the Public Square at 4.30 on the morning of Dec. 3. The cars were idle for the following three days.

Mayor Harry L. Davis appeared before the War Labor Board on Dec. 3. On that day the board ruled that, owing to the fact that the Mayor had represented to it the grave situation created by the strike and stated that men were becoming available by virtue of the reduction of the forces of industry and the return of men from the camps, it would recommend that the Cleveland Railway employ no more women and that within the next thirty days the present force of women be replaced by competent men. It further recommended that the women be given other places in the organization as far as possible. Both the Mayor and the City Council took the matter up at this point and Mr. Stanley informed them that if the men would return to work and enable the company to resume service, he would see that the interests of the men were properly protected.

The City Council wired the War Labor Board, asking that it be made perfectly clear whether the board's communication was a recommendation or an order. The board replied that it was advisory, as shown by the language, and that the order of Nov. 29 was still binding on the company, and further that the men had broken their contract, since it provided that all disputes should be settled by arbitration and the employees should continue to work pending the announcement of the award.

On Dec. 5 the women, through Miss Moriority, offered to waive their legal rights to their employment, the rights already recognized by the War Labor Board and awaiting final ruling, and join with the company and the union in a telegram to the board asking for an immediate final ruling, without further hearing. Mr. Stanley agreed to this, but W. D. Mahon, representing the union, refused. The women then said they would do nothing which would cause a prolongation of the strike.

Mr. Stanley then announced that if the men would return to their cars at once, he would replace the women as fast as possible with men and find other positions for the women as rapidly as he could. After March 1, he said, the company would employ no women as conductors. Late on the evening of Dec. 4 the men voted on Mr. Stanley's proposition and the announcement was made that it had been carried by 583 for to 571 against it. However, more than 1200 of the men did not vote.

WOMEN SEEK TO JOIN AMALGAMATED

On the morning of Dec. 3 Mrs. Laura Prince, chairman of the women's organization, wired the War Labor Board that the men had gone out on a strike in violation of the board's order and in contempt of the board. This laid the foundation for the complaint that has now been made.

Before the strike was declared the women endeavored to become members of the Amalgamated Association, under orders which had been issued by the national officers, but they were refused application blanks. An application made by mail was ignored. They have complied with every requirement of the contract made between the company and the union.

Miss Moriority believes that there is an opportunity to secure a decision that will affect all the women in industries of the entire United States. The fight in Cleveland has assumed an aspect that promises to become nation-wide in its effect.

Women a Problem in Detroit

Review of Testimony Before War Labor Board, Which Will Pass on Their Continuing in Service There

Pending a decision by the National War Labor Board women conductors will continue in service on the Detroit (Mich.) United Railway. William H. Taft and Basil M. Manley, associate chairmen of the board, took testimony in the case at Detroit on Dec. 13. The next night members of the local railway union voted to reconsider their former demand that the women conductors be discharged from the service by Jan. 1. The union decided that the 260 women now on the cars might continue work for the time being but voted against issuing any more work permit cards to women. The union men will continue their protest against the employment of women when the War Labor Board hears further testimony in the case, at Washington, probably on Dec. 23.

The woman conductor question came to a crisis in Detroit about three weeks ago when the union notified the company that no new women must be employed and that those already in service must be discharged by Jan. 1. The union followed up this ultimatum by refusing work permits to a class of fifteen women who had completed preliminary training and were ready for practice on the cars.

The company promptly appealed to the National War Labor Board. It held that the union was violating the provision of the wage award made by the labor board in which the board declared, and the union agreed, that the company might engage women and colored men if necessity demanded. The company held that the union had admitted the necessity by issuing working cards and accepting union dues from the women now in service. The company also declared that the question as to whether there was no longer any necessity for the use of women was one which should be decided by the War Labor Board.

At the hearing the representative of the union attempted to drag in matter reflecting on the moral character of some of the women, but Mr. Taft ruled that the principal point to be decided was whether or not there was necessity for the employment of women by the company last September and whether the necessity still continues.

Efforts were then made by the union to show, by means of testimony of employment office agents, that the shortage of male labor was not now so acute. While this is true to a limited extent the company claims that the available labor supply is largely of a class not desirable for railway work. The union also contended that the women shirk such work as adjusting the trolley, fitting the air hose to the car, etc. The union also claimed that women are worked longer hours than allowed by State law, but failed to back up this claim with testimony.

LABOR SHORTAGE SEVERE

The company showed that on Dec. 9 of this year the total number of motormen and conductors in the Detroit city service, (including the women), was 2359 and that this number was 304 short of the number required to operate the schedules. Therefore if the company was denied the right to retain the women in the service there would be a shortage of 564 men to operate the schedules now in effect. The company, so testimony showed, has employed and is employing every male applicant who is qualified to act as motorman or conductor and yet there is a serious shortage.

The company did not deny the charge of the union that no men were being employed as conductor on the Woodward, Jefferson, Hamilton and Fort lines. In this connection the company explained that it had spent a large sum of money remodeling carhouses on these lines to accommodate women and that it desired to confine the employment of women to these lines.

In discussing the work performed by the women now in the service, Edward E. Ives, assistant general superintendent, declared: "The company's position in this matter is that the women have very splendidly performed their duties as conductors. The general character of service is very materially improved by reason of having women in our employ as conductors. Women have raised the standard of the work."

SEX AN INDIVIDUAL PROBLEM

Mr. Ives had prepared a statement regarding alleged immorality on the part of women, but did not submit it because Chairman Taft ruled the subject to be irrelevant. In view of the statements made by union officials it is of interest that Mr. Ives regards sex control and sex conduct as an individual problem. He holds that railway work does not intensify it. No report of sex difficulties has been made to the company.

A petition by Attorney Weadock that the board permit the company to continue hiring women conductors while the matter was under consideration was denied by Chairman Taft. In referring to the wage award of the War Labor Board, which fixed the rate of pay for the men and also gave the company the right to hire women conductors, Mr. Taft significantly remarked that this was a binding contract, having been accepted by both parties, and that if violated, either party would have recourse to a court of law. It was also agreed that in the present case if either the company or the men are dissatisfied with the ruling of the associate chairmen they have the right of appeal to the full board. The women conductors have engaged a woman attorney who represented them at the hearing.

Kansas City "Carries On"

Assured Protection, the Kansas City Railways Resumes Service at Wages Consistent With Present Fares

The Kansas City (Mo.) Railways resumed service on Dec. 13, two days after the strike of Amalgamated Association employees. Each day since as many more cars have been added as the police department could provide with guards. It soon became a question of running cars without guards or calling out the Seventh Regiment to protect cars.

VERY LITTLE DISORDER

There was little violence following the resumption of service. One demonstration on Dec. 13 was led by conductorettes. In another cars were attacked in a quarter in Kansas City, Kan., largely inhabited by foreigners. The women conductors who joined the strikers have exhibited more animosity and energy than the men in the demonstrations.

When service was resumed, the company had men to run more than 100 cars. The list grew rapidly, with the return to work of strikers, and with new employees. The company employed 100 former soldiers, men recently discharged from the army training school, for motor mechanics at Kansas City. These men, with their experience of military discipline, and their training, proved exceptionally efficient. They were able to take out cars, and handle them efficiently, with brief coaching.

There has been an absence of pressure from any side except the strikers and their immediate sympathizers, to cause the company to yield. City officials take the position that the strikers are trying to force the city, the public, the State commissions and the United States Supreme Court to allow the railway to charge higher fares so that the strikers may receive higher wages.

THE ISSUE VERY CLEAR

The issue between the company and the strikers is clear-cut, to a degree unusual in such incidents. It is a matter of curiosity in Kansas City as to what excuse the union officials can reasonably make for calling the strike. It will be remembered that on Aug. 17 the union and the railway signed the renewal of their contract, making an agreement that the subject of wages should be submitted to the War Labor Board. This board decided that the wages should be raised, after the company had secured the authority to increase its revenue. There was doubt as to whether the company could proceed with raising fares and wages, under the authority of the decision of the War Labor Board. The company therefore asked the Federal Court for an injunction to restrain cities, public service commissions and others from interfering with its increasing of fares. The Federal Court decided that it could not issue such an injunction because the property of the railway was not jeopardized—the court declaring that the company was not required, under the War Labor Board's order, to pay higher wages until it had been allowed to increase fares. The company appealed from this decision to the United States Supreme Court, at the same time asking the State Utility Commissions to allow it to charge higher fares, so that it could pay higher wages.

Union officials and representatives are understood to have intimated, at the time of the Federal Court hearing in Kansas City, that they would not be bound by any decision of that court; and shortly before the strike union officials are said to have stated that the men should consider the award of the War Labor Board as unconditional. Frank O'Shea, first vice-president of the Amalgaamted Association, was present when the local union decided to strike. A few hours previously he had been in conference with President Kealy of the company, and had then given no intimation that he would suggest a strike.

UNION ASKS HELP

Mr. O'Shea has been asking—through newspapers—that somebody help the union men to persuade the company to submit to Mr. Taft for an interpretation of the War Labor Board's finding. Publicity sources sympathetic with the strikers are publishing material tending to indicate that Mr. O'Shea and the strikers have never understood the decision properly, and that if they get a clear understanding of it they will gladly return to work, pending decisions and granting of authority in due course by the authorities in whose hands the matters of wages and fares properly should and do rest.

The company is announcing to its employees that it sees clearly the manner in which they have been misled. It said that the officers would be glad to receive the men back into their former places by Dec. 17, without prejudice or discrimination. After that date the strikers were to be required to apply to the employment department, losing their privileges of priority with the company.

Service was suspended for several days on the Missouri Short Line, which gets its power from the Kansas City Railways, and on other interurbans that use this power within the city limits. The Bonner Springs line brought city patrons into the business district with motor trucks.

A telegram on Dec. 19 to the ELECTRIC RAILWAY JOURNAL from its correspondent in Kansas City said that the company was then operating 200 cars in the day time. No settlement of the strike was then in sight. Up to that time only a few strikers had returned to work.

Contempt of Court Charged

Union Acts "in the Dark of Night, When Honest Men Are Supposed to Be in Bed"

An attempt to bring about a strike on the lines of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., on Dec. 12 in the face of a pending suit for injunction in the United States District Court may implicate international officers of the Amalgamated Association.

INJUNCTION OBTAINED

As reported in this paper on Nov. 9. page 852, action was brought in the Federal Court at Indianapolis on Nov. 2 to enjoin the officers of Local No. 645 and organizers of the Amalgamated Association from inducing or persuading employees of the Indianapolis Traction & Terminal Company to take a strike vote in violation of their open shop working agreement with the company.

Upon hearing the petition for a temporary injunction, the Federal Court assumed jurisdiction in the case, and after further hearing on Dec. 4 an agreement was made in open court that none of the defendants would attempt to bring about a strike or cessation of work until the counsel could prepare further briefs in the case.

A meeting of about seventy-five members of the union was called on Dec. 11, and an attempt made by local officials and others to evade the agreement made in court by having members other than the defendant officers preside at the meeting. Orders were issued to call a strike at 2 a.m. on Dec. 12.

Information of the strike vote reached Robert I. Todd, president of the company, and he appealed to the Federal Court for an order citing leaders of the union to appear in court and show cause why they should not be punished for contempt of court. A ruling of the court was issued shortly after 2 a.m. on Dec. 12, and notices were served by the United States Marshall on all the defendants. The attorneys who had represented the Amalgamated officials in court disclaimed any knowledge of the breach of the court agreement.

PLEA OF IGNORANCE MADE

When the case came up for hearing at 10 a.m. that morning, they pleaded their ignorance of the action taken by their clients, and stated that they did not wish to represent them in this action and begged the court to extend the hearing until the defendants could employ other counsel. The court decided to take up the petition for injunction immediately and after hearing evidence on the matter issued a temporary injunction against the union officials seeking to induce the car service men from breaking their contract with the company, and against the city of Indianapolis as regards enforcing an ordinance procured by union labor men and providing for the operation of cars by men who had had thirty days training by an employee who had been in the service of the company for one year. This measure if enforced would have tied the hands of the company in case of a strike.

The court set Saturday morning at 9 o'clock for the fifteen defendants who were cited to answer contempt of court charges. The court expressed its disapproval of the union in taking so many important actions "in the dark of night, when honest men are supposed to be in bed," and stated that the officials of the union could not escape responsibility by saying that the meeting at which the strike was called was unauthorized and presided over by a man unknown to themselves.

At the hearing on Dec. 14, the district attorney was instructed by the court to subject the officials of Local Division 645 of the Amalgamated Association, and all other persons responsible for the attempted strike, to criminal prosecution in the Federal Court, charging contempt of court against the responsible parties. It is expected that about two weeks will be required for the district attorney to file the necessary information.

I. T. S. Strike Settled

Service was resumed on the interurban lines of the Illinois Traction System on the morning of Dec. 16 after ten days' suspension following a walkout of motormen and conductors at midnight on Dec. 5. An eighteen-hour conference between the joint board of the Brotherhood of Interurban trainmen and officials of the company and a day of referendum voting by the local lodges brought about an agreement on the wage scale to be paid for the year beginning Dec. 1, 1918.

Under the agreement the interurban trainmen will receive an increased wage of 25 per cent. This means 50 cents an hour for a nine-hour day on the main divisions. A proportionate increase is also allowed trainmen on the bridge cars of the company at St. Louis and on the Chicago, Ottawa & Peoria Railway. It is understood that the company has also dated the increase back to Oct. 15.

The trainmen originally demanded a wage of 65 cents an hour, or 63 per cent over the scale prevailing in the contract expiring on Dec. 1. The case was taken by the trainmen to the War Labor Board and referred back to conference between the men and the company for settlement. Upon failure to reach an agreement on Dec. 5 a portion of the trainmen went on strike and all other divisions were tied up in sympathetic walkout.

Orders to the men to return to work issued by Brotherhood officials were unheeded and numerous conferences attended by the trainmen, the company and business interests followed in an effort to settle the controversy.

The wages fixed by the contracts are in accord with the scale recommended by the committee of business men from the cities along the line of road and accepted by the company on Dec. 12.

Indianapolis Directors Out

Experiment in Co-operation Founders When Public Directors and Officers Disagree Over Fare Needs

The three public directors of the Indianapolis Traction & Terminal Company, Indianapolis, Ind., have resigned. The three directors were appointed in compliance with an order issued by the Public Service Commission on Oct. 12. This order increased the car fare from six tickets for 25 cents and twenty-five for $1 to 5 cents straight and 1 cent for a transfer, which was to be rebated when the transfer was used. The directors provided for in the order were to be named, one by the Governor, one by the Mayor and one by the Chamber of Commerce and the board of trade. The Governor named Alfred F. Potts, Mayor Jewett named Edward A. Kahn and the commercial organizations named B. A. Worthington. The commission's order in regard to fares was to be effective until Dec. 13.

The resignations were precipitated by plans formulated by the company for asking the Public Service Commission for permission to raise more revenue. With these plans, reviewed elsewhere in this issue, the public directors were not in sympathy. A statement made by the resigning directors follows in part:

"Budgets and financial statements were offered showing the company's financial conditions which were confusing and conclusions drawn to which we could not agree.

"Finally the break came when we were asked to vote in favor of petitioning the Public Service Commission to allow the company to keep the 1 cent paid for transfers, which is now rebated.

"We at once announced that we would resist such a proposition. We pointed out that it was the laboring people who were asking for transfers and to require them to pay 6-cent fares while others rode for 5 cents, would be an injustice.

"Our opposition to the scheme so angered Mr. Todd, the president, that he turned on us and in a loud voice and threatening manner declared:

" 'If you three public directors won't stand by us in this matter you will be responsible for wrecking the company.'

"Others tried to pacify the situation, but we had enough, and left the meeting, with the remark that they could 'consider our resignations as tendered.'

"It has been plain to us for some time that we could do nothing to better conditions unless we were willing to co-operate in efforts which we could not approve. Our chief regret is that we have not been able to aid the Public Service Commission by co-operating in some effort to secure better service, but our continuance on the board was made impossible. Of course the withdrawal of the public directors will not prevent the company from presenting its petition for more money. It will be up to the commission to decide on the merits of the case."

Iowa Utilities Commission Proposed

That there will be a determined effort to create a State utilities commission as one of the most important programs of the coming session of the Iowa Legislature now seems certain.

Relief from many of the problems which have baffled the utilities of the State during the past two years is absolutely necessary and the utilities commission is looked upon as a most logical means of such relief.

Senator W. G. Haskell, Cedar Rapids, has already announced that he will father a bill to create such a body. Mr. Haskell points to action in his own city in settling increased fares by arbitration as proof of the fair methods of adjusting disputes between the utility companies and the people.

Preparing Officers for Technical Positions

The United States Employment Service, Department of Labor, Washington, D. C., has announced that it will make a special effort in assisting to obtain re-employment for technical and other highly trained men who are retiring from the commissioned and enlisted ranks of the army and navy. Among these men are many engineers, executives, chemists, statisticians, purchasing agents, employment managers, cost accountants, etc. All employers wishing to get in touch with these men should communicate with the Professional Section, United States Employment Service, Department of Labor, Washington, D. C.

City Operation Suggested

Chicago may turn to municipal operation as the solution of its traction problem. At the meeting of the local transportation sub-committee on Dec. 12, Walter L. Fisher, the city's special counsel, submitted a plan which contemplates that the city lease the surface and elevated lines and operate them as a municipal enterprise. This he offered as a substitute for the proposal to turn the properties over to a corporation not for pecuniary profit, which was rejected by the people at a recent referendum.

The obstacle in the way of municipal ownership is that the city has practically reached the limit of its borrowing power under the constitution. Attorney Fisher believes that a lease could be so drawn that the city will not incur any indebtedness under this restriction. He would have the city agree in the lease that the rentals to the present owners shall be payable only out of the revenues of the properties to be leased and these revenues would be made to fit the circumstances through adjustable fares or service at cost. Two new statutes would have to be secured from the Legislature, one permitting the consolidation of the surface and elevated lines and the other paving the way for a leasing plan.

Another feature of the latest Fisher plan is intended to remove popular objection to corporate management by allowing the city a two-thirds control on the board of trustees and shortening the term of office of these officials. In other respects the ordinance recently voted on would not have to be seriously changed. The companies have not expressed an opinion on the new proposal, but the matter will be discussed at future meetings. It is possible that some plan will be submitted at the April election.

News Notes

Would Municipalize Line.—Resort business men and Philadelphians owning property in Ocean City, N. J., at a meeting on Dec. 11 called by Mayor Champion appointed a committee to use its best efforts to secure subscriptions for the purchase of the Ocean City Electric Railroad.

M. O. Vote on Jan. 6.—The City Council of Niagara Falls, Ont., has passed a by-law to be submitted to the electors on Jan. 6, to take over the line of the Niagara, St. Catharines & Toronto Railway, which runs between the north and south end of the city, and operate it as a municipally owned railway. A year's notice has to be given to the company, whose franchise expires in March, 1920.

First Clash in M. O. Fight.—A committee report instructing the City Attorney of Minneapolis, Minn., to ask the Legislature to provide a law under which the Minneapolis Street Railway, included in the system of the Twin City Rapid Transit Company, could be taken over by condemnation proceedings was voted down in committee on Dec. 5. It was expected the matter would come before Council as a whole on Dec. 13.

Brooklyn Officers Indicted.—Messrs. Williams, Dempsey, Menden, Hollock and Blewitt, all officers of the Brooklyn (N. Y.) Rapid Transit Company or its subsidiaries or affiliated companies, and the motorman of the wrecked train were indicted on Dec. 20 on two counts each, one for manslaughter in the first degree and the other for manslaughter in the second degree, in connection with the accident on Nov. 1 in which more than ninety-five passengers were killed and more than 150 others injured. Trial has been set for Jan. 6.

General Harries First in Berlin.—According to Associated Press dispatches of Dec. 11, Brigadier-General George H. Harries, in civilian life a vice-president of H. M. Byllesby & Company and a former president of the American Electric Railway Association, was the ranking member of three American officers first to reach Berlin since the signing of the armistice. General Harries and his aides arrived in Berlin on Dec. 10 as members of the American commission for the repatriation of war prisoners.

Bankers to Write Utility Report.—Otto H. Kahn, a member of the firm of Kuhn, Loeb & Company, New York, N. Y., and Francis H. Sisson, vice-president of the Guaranty Trust Company, New York, N. Y., it was learned on Dec. 15, have been selected to write the report on the vital questions confronting public utility corporations which is to be made by the special committee appointed by the Merchants' Association of New York, the appointment of which was noted in this paper for Dec. 14, page 1068.

Another Louisville Wage Demand.—The wage matter has again come up in Louisville, Ky., where H. C. Mitchell, secretary of the union of employees, has taken up with the Louisville Railway an increase of 7 cents an hour, making the scale 45 cents. In September the company advanced wages from 31 cents to 38 cents. The case may be appealed to the War Labor Board by the union men before Jan. 10, in the event that the decision of the company is unfavorable. The previous wage adjustment was reviewed in the ELECTRIC RAILWAY JOURNAL for Nov. 16, page 896.

Illinois Central Chicago Electrification.—Electrification of the Chicago terminal system of the Illinois Central Railroad has been brought up again by an ordinance prepared by the railway terminals commission and submitted to a committee of the City Council. The same ordinance provides for track elevation, a new passenger terminal station and the development of the lake front for harbor and park purposes. Electric operation is to be put into effect in four stages, but the number of years for each stage is not specified in the ordinance. The first stage covers the entire suburban service within the city limits; the others cover different sections of the freight and main passenger lines.

Program of Meeting

Air Brake Association

The twenty-sixth annual convention of the Air Brake Association will be held in Chicago May 6-8, 1919. There will be reports by six committees and two topical subjects. One of the latter is to be on the M.C.B. air-brake defect cards and the other on how engineers and trainmen can assist in air-brake maintenance. There will also be an informal meeting on one of the afternoons conducted by a junior officer, at which no stenographic report will be made, for a free informal discussion of any subjects brought up. It is believed that this move will bring out information not obtainable on the floor of the reported convention and will also encourage the younger members to speak their minds freely.

Financial and Corporate

Reorganization Suggested

President of Schuylkill Railway Advances Plan for Financial Rehabilitation of Company

Announcement has been made in detail of the plan suggested by Powell Evans, president of the Schuylkill Railway, Girardville, Pa., to the holders of the $640,000 of first consolidated 5 per cent thirty-year gold bonds of 1905 for the reorganization of the company. It is the intent of the offer that the plan suggested shall be initiated within one year from Sept. 30, 1918, or that the proceedings for the reorganization by foreclosure shall be started before that time.

INTEREST PAYMENTS IN DEFAULT

The Schuylkill Railway was incorporated in Pennsylvania in 1903 as the successor to the properties of the Schuylkill Traction Company and the Lakeside Railway. It owns and operates 28 miles of road. The company has an authorized and issued capital of $400,000. The underlying securities of the Schuylkill Traction Company and the Lakeside Railway amount to $760,000. There are also outstanding $640,000 of first consolidated 5 per cent bonds and $150,000 of 5 per cent income bonds of the Schuylkill Railway. No interest has ever been paid on the income bonds. Of the first consolidated 5's of the Schuylkill Railway $180,000 are held by the public, and the remainder by Mr. Evans as manager. Interest has heretofore been paid on the $180,000 of consolidated bonds in the hands of the public, but practically no interest has been paid upon the portion of the issue held by Mr. Evans personally. On April 1, 1918, it was even necessary to pass the interest on the part of this issue held by the public.

While the gross revenue of the company has increased from $181,873 in 1910 to $340,701 in 1917, and while fixed charges have remained almost a constant, operating costs have risen so rapidly that the accumulated deficit is $236,650. As the largest individual holder of the securities of the companies included in the system President Evans advances the plan of reorganization, feeling convinced that consideration for the future of the company make it highly desirable that all of the lines be unified under one ownership.

READJUSTMENT WITHOUT FORECLOSURE

Eleven different conditions are set forth in the plan advanced by Mr. Evans for the reorganization, the net result of which would leave the company with only nominal current obligations, with fixed charges reduced to a minimum and with provision made for the distribution of the net income. Upon consummation of all the provisions of the readjustment, Mr. Evans and all the others subscribing to the plan, are to release to the company all other interests which they hold.

It is stated that the plan of reorganization has been assented to by a large majority of the holders of the outstanding bonds of the consolidated issue, but it has not yet been declared operative. It is expected that the reorganization will be brought about without the need for foreclosure sale.

St. Louis Valuation Plan Stated

Chairman Busby of the State Public Service Commission of Missouri said on Dec. 8 that the report was erroneous that had been published in St. Louis that the commission intended to make a valuation of the United Railways of that city regardless of the finding of the Supreme Court as to the authority of the commission to increase fares. He said:

"What I did say was that if the ruling of the court sustains the power of the commission to increase electric railway fares, the commission will then proceed within thirty days to value the property of the United Railways."

Chairman Busby said the State would have to bear the expense of such a valuation.

Service Abandonment Approved

The Public Service Commission for the Second District of New York on Dec. 10 approved the declaration of abandonment of service by the Dunkirk Street Railway, leased to the Buffalo & Lake Erie Traction Company, of parts of the Dunkirk company's road, provided the railway shall give the city security for the payment of all taxes and assessments. The tracks or other apparatus belonging to the road are not to be removed until further order of the commission. The order will not become effective until proof is filed with the commission that security has been given the city of Dunkirk and that the Supreme Court has authorized the receiver of the Buffalo & Lake Erie Traction Company to abandon.

The receiver of the Buffalo & Lake Erie Traction Company has control of the Dunkirk Street Railway. Commissioner Barhite says there is some question whether the receiver can or should be permitted to abandon any property which comes into his hands. That point will be left to the determination of the Supreme Court, of which court the receiver is an officer, upon an application made to it upon notice. The receiver has promised to take action to protect the city.

Slight Valuation Change

Oregon Commission Explains Reasons for Modifying Its Portland Figures of April, 1917

The Public Service Commission of Oregon has issued an order modifying the findings of the valuation of the Portland Railway, Light & Power Company in its order of April 30, 1917. The valuation is slightly decreased as to interurban lines, but is slightly increased as to city lines in its railway divisions and as to the electric utility division in Oregon and in other States.

The valuation under the order of April 17 was as follows:

Railway division:		
Interurban lines..	$ 8,925,650	
City lines	18,233,371	
Total railway...	$27,159,201	$27,159,021
Electric utility division:		
In Oregon	$18,866,984	
In other States...	625,168	
Total electric utility	$19,492,153	$19,492,153
Total railway and electric utility		$46,651,174
In the new order the valuations are:		
Railway division:		
Interurban lines..	$ 7,686,700	
City lines	18,568,073	
Total railway..	$26,254,773	$26,254,773
Electric utility division:		
In Oregon	$19,742,279	
In other States...	654,121	
Total electric utility	$20,396,401	$20,396,401
Total railway and electric utility		$46,651,174

It was said at the commission offices that the changes made in the valuations of the respective divisions are so slight as not to reflect any material differences in rates. The new valuations will not reflect changes in rates as they now stand, but will apply only to rates made under future orders.

In giving the reasons for making the changes the commission says in part:

> The record now shows certain of the lines to have been built, at the time they were, with a primary object of facilitating the construction of generating stations upon the Bull Run and Clackamas Rivers, and that the existence of the lines did materially lessen the expenditures on those plants. It also is shown, by the amount of revenue derivable therefrom, that business now available and in prospect upon those portions of the lines beyond certain limits could scarcely be considered as sufficient justification for their construction and operation with such revenue as the primary motive.
>
> This feature has not heretofore been presented to the commission and was, therefore, not considered in preceding findings. Under the showing now made it seems that at least a part of the value of the Springwater and Bull Run lines might be properly charged into the pool power property with the generating stations which were in part responsible for their being undertaken. By such an assignment the total value for rate purposes of the entire property will remain unchanged.
>
> The portion charged to interurban lines will be decreased with a consequent increase in the assignment of value to every other division of the electric property. As a measure for the amount so to be transferred the company has submitted an estimate of what would probably have been added to the cost of the generating stations had transportation of materials and labor not been available over the lines in question. This estimate amounts to $1,286,820, and covers the problematical cost of building, repairing and maintaining roads and bridges necessary to the construction had rail lines not been in existence. It also covers the direct costs of hauling and other expenses incident to changes which might have been necessary in the construction program as followed with the lines in place.

Receiver for Des Moines

Recently Enacted Model Franchise Did Not Contemplate War-Time Conditions

The Des Moines (Iowa) City Railway, which for the last three months has been in a controversy with the city over a request for increased fare, has been thrown into the hands of a receiver by the Federal Court. The receivership was precipitated by action of the North American Construction Company, Chicago, which has done the reconstruction work in Des Moines for the Des Moines City Railway during the past two years.

Two Receivers Named

The construction company bringing the suit has unpaid claims of $19,000 against the railway. Confession of judgment was made by the company and Federal Judge Martin J. Wade appointed Homar A. Miller, Des Moines banker, and Emil G. Schmidt, president of the Des Moines City Railway, receivers. The placing of the company in the hands of the Federal Court would appear to negative suits brought by the city and by a citizen to prevent the increased fare sought by the railway. As noted in the ELECTRIC RAILWAY JOURNAL for Dec. 14, page 1068, the Iowa Board of Conciliation had found that the company was entitled to a 7-cent fare.

The Des Moines City Railway is operating under one of the more recently enacted franchise ordinances. After ten years of franchise controversy and negotiations, the company toward the end of 1915 secured what was considered at that time to be a workable renewal franchise grant. The negotiations leading up to the settlement were followed in the ELECTRIC RAILWAY JOURNAL and a résumé of the main provisions of the franchise was published in the issue of this paper for Jan. 29, 1916, page 205.

The franchise was to extend for twenty-five years from the date of final acceptance by the company after the approval of the electors, and within three years after the passage of the ordinance the company was obliged to follow a program of reconstruction, rehabilitation and new construction calling for an expenditure of $1,500,000.

Some of the Franchise Provisions

The maximum rate of fare for an additional single ride within the limits of the city in one direction was fixed at 5 cents, but the company in at least twenty-five convenient places was required to sell to any person applying therefor six tickets for a quarter, each as good as a 5-cent fare. The fare for children under twelve years of age was two tickets for 5 cents. Payment of a 5-cent fare entitled a child to a ticket which would be accepted as fare for another ride.

The grant also provided that the company should give the city the right during the term of the franchise upon at least six months' notice in writing to purchase the entire system. For this purpose it was agreed that the value of the property as of Aug. 1, 1915, was $5,000,000. The acceptance of the ordinance by the company followed immediately after the decision of the State Supreme Court on Jan. 22, 1916, that the election at which the franchise was passed upon by the voters was valid.

In June of the present year the Council as a special concession permitted the company to withdraw the sale of tickets.

Receiver for Buffalo Suburban Line

Harry Evers of Teller & Evers, brokers of Buffalo, N. Y., has been appointed receiver for the Buffalo & Lackawanna Traction Company on application of the City Trust Company.

The action is the result of the petition of George Bullock, receiver for the Buffalo & Lake Erie Traction Company, for authority to abandon its lease of the Buffalo & Lackawanna Traction Company's line between Washington and Clinton Streets, Buffalo, to the Lackawanna city line.

The Buffalo & Lake Erie Company defaulted on Dec. 1 in the payment of interest on the $1,600,000 of Buffalo & Lackawanna Traction Company 5 per cent bonds.

Melbourne Traffic Gains

The revenue of the Melbourne (Australia) Tramways for the year ended June 30, 1918, amounted to £901,474, a gain of 7.09 per cent as compared to that of the preceding year. The number of passengers carried was 113,034,157, an increase of 9.61 per cent. The train mileage totaled 12,833,029, an increase of 409,100.

The average fare per passenger in 1918 was 1.914d., as compared to 1.959d. in 1917, the reduction being due to a revision of the method of recording children's fares. The revenue per train-mile increased from 16.261d. in 1917 to 16.859d. in 1918.

The total receipts for 1918 were £903,020. The operating expenses totaled £511,365, and transfers of £30,000 and £100,000 were made to the renewals reserve and the reconstruction reserve respectively. The net surplus for the year amounted to £260,207.

While the total revenues in 1918 exceeded those of the previous year by £59,690, the higher operating costs almost absorbed all the gain. The operating ratio was 56.6 per cent in 1918 as compared to 54.8 per cent in 1917.

At the request of the Australian Tramway Employees' Association, the agreement between the municipal tramway board and the association, which will expire on Dec. 2, 1918, was last June amended in several ways. The most important change was the abolition of a bonus which varied with the cost of living. This bonus has now been incorporated in the rate of wages.

Fort Dodge Dividends

How One Electric Railway Has Fared Under Railroad Administration Authority

Homer Loring, president of the Fort Dodge, Des Moines & Southern Railroad, Fort Dodge, Iowa, in a circular dated Dec. 3, reviews the progress of the control of the road under the United States government since Jan. 1, 1918, and refers to the dividend payments made recently. The road showed a net income of $404,371 for the year ended 1917. After the declaration of preferred dividends of $91,000 and common stock dividends of $168,750, there was a balance of $144,621. The compensation to be paid for the use of the road was fixed by law as to the average operating income for the three years ended June 30, 1917, with such additions as are justified by special circumstances. This compensation, however, has not yet been determined.

Company Averaged $351,986 a Year

The average operating income of the company for the three years after deducting interest charges was $351,986. Seven per cent dividends on both the preferred stock and the common stock amount to $266,000. According to Mr. Loring, special additional compensation will be claimed for the new Webster addition, which was not in complete operation until 1918, and for equipment purchased in 1915 and 1916. He says that as the law under which the railroads are controlled provides that dividends in excess of the average paid during the three years ended June 30, 1917, cannot be paid without express authority from the Railroad Administration, it has been necessary for the company to secure authority for each dividend. He explained that dividend payments have been delayed because of the enormous amount of work thrown upon the Railroad Administration.

The preferred dividend due on Aug. 1 was paid on Sept. 30. The preferred dividend due on Nov. 1, he explained, was being paid on Dec. 3. He says that pending definite fixing of the annual compensation of the road the Railroad Administration refused to consent to quarterly common stock dividends of more than 1¼ per cent. The dividend payable ordinarily on Aug. 1 on the common stock was reduced to 1¼ per cent by the administration and payment was delayed until Oct. 17. The Nov. 1 dividend on the common stock was paid on Dec. 3 at the reduced rate.

Property Well Maintained

Mr. Loring says that it is hoped that after the compensation is fixed the administration will permit the company to return to the former 7 per cent common stock basis and to make up the amount of the reductions on that issue as imposed previously by the government. He says that the property is being well maintained by the administration, and if eventually returned to the owners will be in as good physical condition as formerly.

Financial News Notes

New Union Traction Directors.—Arthur V. Morton, vice-president of the Pennsylvania Company for Insurance, has been elected to the board of the Union Traction Company, included in the system of the Philadelphia Rapid Transit Company, to fill the vacancy caused by the death of James Gay.

Kansas Road Sold at Foreclosure.—The property of the Southwestern Interurban Railway was sold under foreclosure recently for $75,000 to H. M. Preston, Tulsa, Okla., vice-president and treasurer of the company, acting for the holders of the first mortgage 6 per cent bonds. A public grant of $40,000 made to the company at the time of the construction of the road requires that the road shall continue in operation.

Another Hearing on Abandonment.—Public Service Commissioner Cheney, in Oneonta, N. Y., on Dec. 11, gave another hearing on the petition of the Southern New York Power & Railway Corporation for permission to abandon part of its line in Oneonta. The city and its Chamber of Commerce are opposing the plan of the railway to stop operating the line from Church and Chestnut Streets, through Church, Center and Maple Streets, to the end of the line near the Normal School.

A Bright Spot Amid Desolation.—The Charlottesville & Albemarle Railway, Charlottesville, Va., reports that it has paid its regular 3½ per cent semi-annual dividend on its preferred stock, also 1 per cent dividend on the common stock for the last six months, in addition to putting a considerable amount aside for surplus. All this has been accomplished in spite of the fact that the company had no war activities on which to draw while its expenses have increased considerably on account of labor, etc.

Wants Receiver for Montgomery Company.—Judge Henry D. Clayton set the case of the Commercial Trust & Savings Bank, New Orleans, La., against the Montgomery Light & Traction Company, Montgomery, Ala., for hearing on Dec. 13, in the United States court for the middle district of Alabama at Montgomery. The Commercial Trust & Savings Bank of New Orleans is asking that a receiver be appointed for the Montgomery corporation.

Receiver for Maine Road.—A receivership for the Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., was decreed by Judge Morrill of the Supreme Court on Dec. 16. William H. Newell, attorney for the company, and Alfred Sweeney, general manager, were appointed receivers. The court action was taken on petition of A. H. Ford, vice-president and general manager of the Cumberland Light & Power Company, which controls the railway at Lewiston. The Lewiston, Augusta & Waterville Street Railway operates 165 miles of standard gage electric railway.

Boston Elevated Would Issue Notes.—The Boston (Mass.) Elevated Railway has petitioned the Public Service Commission of Massachusetts for approval of the issuance of $3,000,000 of notes or negotiable coupon bonds, payable in not exceeding seven years and bearing interest at not exceeding 7 per cent per annum to provide for construction and equipment and for funding its floating debt and purchase of such real and personal estate as may be necessary for operation of its railways.

Memphis Note Goes to Protest.—Suit has been brought to recover on a promissory note of the Memphis (Tenn.) Street Railway to the Bank of Commerce & Trust Company in the sum of $150,000. The bill states that the railway is entitled to a credit on the note in the sum of $57,530, this representing the amount on deposit in favor of the bank on Dec. 2, the day on which the note went to protest. T. H. Tutwiler, president of the railway, is reported to have said that while the note was payable on demand the bank had agreed not to call the note for payment without giving the corporation sufficient time to meet it.

Discontinuance Hearing Postponed.—The federal court hearing on the petition of Wallace B. Donham, receiver for the Bay State Street Railway, Boston, Mass., for permission to discontinue the operation of many lines because of failure to pay operating expenses or for other reasons, was postponed on Dec. 17 until Dec. 31, after a brief session before Judge James M. Morton, Jr. In the course of the proceedings S. H. Pillsbury, attorney for Mr. Donham, announced that the receiver wished to amend his petition and to continue operation of forty of the routes previously listed for discontinuance.

Mr. Shonts Answers Mr. Venner.—J. P. Morgan & Company, New York, N. Y., have issued a statement embodying a reply from T. P. Shonts, president of the Interborough Rapid Transit Company, to allegations recently made by C. H. Venner regarding the three-year 7 per cent notes of the railway company. Mr. Shonts declares the income statement issued in connection with the offer of the notes was made in accordance "with the regulations laid down, not only by the Public Service Commission, which has jurisdiction over the operations of the Interborough, but also prescribed by the Interstate Commerce Commission in dealing with interstate railroad accounts." He adds: "I have no intention of analyzing all the misleading statements in his circular and shall limit my comments on it to stating that there is nothing therein which requires any modification of the statements contained in my letter to you of Aug. 31, 1918."

Electric Railway Monthly Earnings

BANGOR RAILWAY & ELECTRIC COMPANY, BANGOR, ME.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$73,541	*$55,664	$17,877	$20,219	†$2,342
1m., Oct., '17	79,191	*44,793	34,398	19,499	14,899
12m., Oct., '18	919,128	*570,157	348,971	237,923	111,048
12m., Oct., '17	873,287	*501,008	372,279	226,181	146,098

CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$151,946	*$138,433	$13,513	$32,121	†$18,608
1m., Oct., '17	89,429	*116,560	†27,131	30,310	†57,441
12m., Oct., '18	1,740,407	*1,421,367	319,040	375,996	†56,956
12m., Oct., '17	1,327,492	*1,057,549	269,943	357,432	†87,489

COLUMBUS RAILWAY, POWER & LIGHT COMPANY, COLUMBUS, OHIO

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$353,675	*$283,395	$69,740	$63,085	$6,655
1m., Oct., '17	354,895	*274,019	80,876	49,220	31,656
12m., Oct., '18	4,221,027	*3,122,890	1,098,137	663,570	434,567
12m., Oct., '17	3,932,348	*2,751,229	1,181,119	549,561	631,558

COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, GRAND RAPIDS, MICH.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$1,799,629	*$1,349,937	$449,692	$497,774	†$48,082
1m., Oct., '17	1,763,894	*1,111,252	652,642	455,892	196,750
12m., Oct., '18	21,534,194	*14,725,606	6,808,588	5,891,593	916,995
12m., Oct., '17	19,149,110	*11,593,883	7,555,227	5,215,012	2,340,215

GRAND RAPIDS (MICH.) RAILWAY

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$97,455	*$95,581	$1,874	$19,443	†$17,569
1m., Oct., '17	103,246	*72,767	30,479	18,378	12,101
12m., Oct., '18	1,273,010	*1,001,633	271,377	233,084	38,293
12m., Oct., '17	1,308,025	*875,092	432,933	214,712	218,221

NASHVILLE RAILWAY & LIGHT COMPANY, NASHVILLE, TENN.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$235,249	*$176,719	$58,530	$39,769	$18,761
1m., Oct., '17	211,324	*137,377	73,947	40,919	33,028
12m., Oct., '18	2,752,428	*1,784,352	968,076	485,408	482,668
12m., Oct., '17	2,439,835	*1,563,605	876,230	493,747	257,483

PORTLAND RAILWAY, LIGHT & POWER COMPANY, PORTLAND, ORE.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$627,971	*††$484,472	$143,499	$185,669	$42,170
1m., Oct., '17	522,294	*323,328	198,966	176,864	22,102
12m., Oct., '18	7,408,679	*††4,805,337	2,603,342	2,200,186	403,156
12m., Oct., '17	5,895,640	*3,272,373	2,623,267	2,160,703	462,564

INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.

Period	Operating Revenue	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$3,299,624	*$2,400,703	$898,921	$1,495,080	a‡$76,460
1m., Oct., '17	3,563,592	*1,916,581	1,647,011	1,079,033	a‡724,570
4m., Oct., '18	12,735,248	*9,095,371	3,639,877	5,693,638	a‡200,141
4m., Oct., '17	12,473,400	*7,118,611	5,354,891	4,282,788	a‡2,080,762

* Includes taxes. † Deficit. ‡ Includes non-operating income. †† For the month, $18,839 and for twelve months, $349,448 included for depreciation. a Includes accruals under rapid transit contracts with city payable from future earnings.

Traffic and Transportation

Mr. Witt Favors Zones

Each Passenger Should Pay for the Service Rendered and Nothing More

Peter Witt, Cleveland, who has been in Boston conferring with the management of the Boston Elevated Railway, was interviewed by W. C. Spargo in the Boston *Traveler* recently. Mr. Witt has strong convictions as a result of his various studies. He sees things from the viewpoint of the disinterested third party. When he consents to speak there is no mistaking what he means. Mr. Witt is quoted in part as follows:

ZONES THE ONLY HOPE

"There is only one thing that can save the property of the Boston Elevated and make it a paying proposition, with both the company and the public satisfied and happy, and that is the establishment of a zone system.

"I don't say that the zone system will be installed. That is up to the trustees. But you asked me my opinion of what Boston needs and what will benefit everyone concerned and I have given it to you. I have been over almost every line in Greater Boston and have come to the firm belief that the only thing that will save this property and bring it to its fullest use and therefore its greatest service is the installation of a zone system.

"There is one thing that should always be carried in the very front of the mind when anyone starts to straighten out railway tangles. He should remember always that he is selling something to the consumer. The only way a salesman is successful in the long run is to have his buyers happy and glad to buy.

"Apply that to railroading. If you can have your riders glad to purchase their tickets or pay their fares, you have won a mighty big portion of the battle. To do this you have to give them service at the lowest possible rate —a rate they feel is justified—clean cars, capable crews and fast time. The zone system is the easiest and, in some cases, the only way to achieve those ends.

NO PUBLIC-BE-DAMNED POLICY IN BOSTON

"Many times in studying the railway conditions in various cities I find that the feeling may prevail that, as street cars are the main means of transportation, the riders will have to make the best of prevailing conditions. I don't say this is the case in Boston. In fact, the extreme opposite is the case with the men in charge here, but the point I make is that in establishing a successful system the thought must prevail that the service shall be made so good and so cheap that walking is discouraged and therefore car riding encouraged.

"If the fare is right there isn't anyone who wants to walk. Any time you find citizens willing to walk six or eight blocks because they think the car fare is too much for that distance, you know that there is a big fault in arrangements somewhere.

"In my opinion, the proper arrangement is that each rider shall pay for what he gets, nothing more and nothing less. A man is never satisfied to pay out of his purse for what another man is getting, and my contention is that each individual rider must be satisfied—yes, even more than that, pleased—so that he will step into a car every time he can.

"Such an arrangement can be put into effect anywhere where there is difficulty with the prevailing system, but I do not care to go deeply into that phase of the matter now, as I have not yet made my report to the trustees.

"The combination of lines in Boston, which to many minds makes it a complicated system, makes it, in my estimation, a simple system and will make it easy and not difficult to establish justice between the short-distance and the long-distance rider."

Wants Three Cents a Mile

The Schenectady (N. Y.) Railway's application for a 3-cents-a-mile rate on all its divisions was submitted to the Public Service Commission for the Second District, on Dec. 11 for determination. H. T. Newcomb of New York, representing the railway, argued in favor of the company's application, while argument in opposition was made by Corporation Counsel Arthur L. Andrews, representing Albany, and others. About half dozen briefs were filed.

Corporation Counsel Andrews asked for a dismissal of the application as far as the Albany-Schenectady division is concerned, contending that the revenues were sufficient on that division. The actual return on that division, he said, was 15 per cent in 1917 and 12 per cent in 1918. Chairman Hill formally overruled the objection, stating that the commission would consider the facts when the order was made.

Mr. Newcomb said the company was carrying passengers for less than 40 cents a car-mile when the cost was 42 cents. The company is now facing a deficit of $116,000. Interest, he said, was due on March 1, 1919, and no money had been accumulated to meet the payment. He said that the company was running at a loss of $200,000 and facing insolvency. There was a deficit from operations in Schenectady. The situation was desperate and the company must have relief.

Rochester Service Cut

City Agrees to Trial of 25 Per Cent Cut in Non-Rush-Hour Service for a Month

Proposed curtailed electric railway service in Rochester will be given a test after the holiday season. This was decided upon at a hearing before the Public Service Commission for the Second District of New York on Dec. 11 on the order which the commission, on its own action, served on the New York State Railways directing it to show cause why adequate facilities and service should not be given.

Corporation Counsel Cunningham appeared for the city at the hearing before Chairman Hill and Commissioner Barhite. Vice-President James F. Hamilton and Attorney Beach represented the railway.

TRIAL PERIOD ESSENTIAL

Charles R. Barnes, chief of the electric railway division of the commission, was the only witness called. He said the reduction of service proposed by the company was on all lines generally, but the reduction did not affect the service during the rush hours.

Corporation Counsel Cunningham said it would be impossible to determine the adequacy of the proposed reduced service until it is in operation, and then Chairman Hill suggested that the city consent to a trial of the new schedule for a month or so after the holidays, with the hearing to be resumed after the experiment or test. Mr. Cunningham said he did not like to consent to such a course, but if the commission felt that that was the proper course he would not make objection.

Mr. Barnes said from figures produced the company by the reduced schedule would save in operation 258 car-miles, or about 8 or 10 per cent. He said the New York State Railways was giving better service in Rochester than in any other city in the district. If there is reason to reduce the service it might be reduced experimentally without serious detriment. The reduction is during the non-rush hours and at a time when there are unoccupied seats. Mr. Hamilton said the 25 per cent reduction was in the schedules.

The railway officials and Mr. Cunningham agreed with the suggestion by Chairman Hill and Commissioner Barhite as to a test period of the proposed reduced schedules. The chairman said this should not be binding upon the commissions.

FURTHER PROCEDURE AFTER TRIAL

It was decided to begin the testing of the new schedules on Jan. 2 to continue for a period of about a month, the proceeding before the commission being held open until after the time has elapsed. Then further procedure will be determined by the commission.

The plea of the Rochester lines for an increase in fares was denied recently by the City Council following the presentation of a report of its law committee. This matter was referred to in this paper for Dec. 7, page 1026.

Indianapolis Wants More

Company Contends Sixty-Day Trial of Five-Cent Fare Proves Need for Six-Cent Fare

The hearing of the case of the Indianapolis Traction & Terminal Company before the Public Service Commission of Indiana, in the matter of increased fares, following the expiration of the sixty-day trial period of operating under a 5-cent fare, began Dec. 13.

About a week previous to the hearing, at a meeting of the directors called to adopt a form of report to the commission, the three public directors, appointed by the commission in its award of Oct. 5, resigned, they having declined to join in a petition asking for a further increase, although the revenues of the company had failed to show the necessary increase under the 5-cent fare.

This failure was attributed to the cutting down of travel during the period, due to schools and amusement places being closed on account of the "flu" ban, and the increase in wages which the commission had made a condition of the increase. The company therefore filed its report, and the three former public directors each filed a separate report.

How the Public Directors Felt

Mr. Kahn, one of the public directors, in his report sought to show excessive capitalization of the company, and underlying properties, and that cash was not received and invested in the property from the issue of other securities. In his examination before the commission it was shown that he had taken no steps to confirm his statements, and as a matter of fact the report of the commission's own accountants showed that the securities in question were authorized by the State Legislature at the time of passing the act which granted the franchise to the Indianapolis Street Railway. In one instance where Mr. Kahn said that no funds had been secured from an issue of $5,000,000 of securities it was shown that $4,680,000 in actual cash had been received and put into the property.

Mr. Worthington, another of the public directors, in his report attempted to repudiate the securities of the company, and criticised the salaries received by officials. In his testimony, however, he admitted that the management was efficient, and that it was necessary to pay reasonably large salaries to secure competent officials.

Company Presents Figures in Detail

Mr. Potts, the third public director, in his statement expressed the view that a 5-cent fare was the "breaking point," and that increased revenue could not be secured from a higher rate of fare, as an increased number of people would be deterred from riding.

The company presented detailed figures of receipts and expenses during the sixty-day trial period as compared with similar periods of 1917 and 1916. It showed that the emergency had not passed with the ending of the war, and that further relief would be required by the company properly to meet its obligations and provide additional equipment and improvements to the service. It was conceded that some increased revenue might be derived by remodeling all the present cars to the pay-as-you-enter type, but that this would require an expenditure of approximately $210,000, and that the company at this time did not have the funds to make this change, unless it could be assured of increased revenues by the establishment of an adequate rate of fare.

The report showed that as a result of the large increase in wages it had been possible for the company to secure the necessary men to operate its cars, and that thirty-five additional cars had been placed in service. The table included in the report giving the earnings for the sixty-day trial period, shows that from Oct. 14 to 31 during 1918, as compared with 1917, the decrease in revenue was $16,240. For the November period an increase in revenue of $15,411 is shown in the statement. As against the increased revenue anticipated by the commission in ordering the 5-cent fare, a total decrease of $70,024 is shown for the sixty days, or a loss of $1,186 a day.

While the report of the company does not request any definite increased rate of fare, during the second day of the hearing, on Dec. 14, Robert I. Todd, president of the company, suggested a 6-cent fare to tide the company over its present difficulties. The chairman of the commission suggested that in the company's original petition it had asked for a 5-cent fare and 1-cent charge for transfer. Mr. Todd stated that such a large increase in wages as ordered by the commission was not contemplated at that time. He estimated that the 1-cent transfer charge would result in a revenue of a little more than $100,000; that the 5-cent fare would produce about $250,000 additional revenue; the additional increase to a 6-cent fare (without charge for transfer) would probably produce $375,000 additional revenue, or a total increase annually of $615,000 over the original 4-cent ticket fares which were in effect until Oct. 11.

Must Keep Up Equipment

The Public Service Commission for the First District of New York has issued an order directing the Brooklyn Rapid Transit Company to keep the rolling stock and other equipment of its elevated and subway lines in good repair, and not to use any of it that is not in safe and proper condition. It is stated in the order that the practices of the company in repairing, replacing and maintaining the equipment of both the surface and rapid transit lines are "improper, insufficient and inadequate," and that the transportation of passengers is not "properly cared for and safeguarded."

In an opinion written by Chairman Hubbell after several hearings, it is said that "numerous instances were reported which seemed to indicate an administrative policy falling substantially short of due regard for the safety of passengers."

In June, the report says, 182 trains were turned back at the Brooklyn Bridge because of defective apparatus, 265 in July, 339 in August, 285 in September, and 228 during the first twenty-five days in October.

The order prohibits the operation of elevated cars more than 1550 miles and of subway cars more than 2700 miles without inspection.

Seven Cents for Denver

The Public Utilities Commission of Colorado on Dec. 18 announced its order establishing basic values for the Denver Tramway as of Dec. 31, 1917, as follows: city lines, $20,867,750; interurban lines, $2,806,350; total for system, $23,674,100. The commission made no finding as to the value of nonutility property, stating, however, that it is substantial. The order further establishes a 7-cent fare, plus a 1-cent charge for transfers. The company must secure corresponding action by the City Council regarding the fare because the question of the jurisdiction of the State commission is before the State Supreme Court. A 6-cent fare went into effect in Denver in September, both municipality and the State having joined in giving relief.

Six Cents for Dayton

A communication from J. Sprigg McMahon, attorney for the electric railways operating in Dayton, Ohio, to the City Commission on Dec. 11, announced the willingness of the companies to accept the proposal of Ross M. Harris, engineer employed by the city to investigate operation and valuation and the volume of business of the roads, although they consider the rate of fare suggested by Mr. Harris insufficient to meet the increased expense brought about by extremely high prices of materials and the additional wages granted by the War Labor Board.

The men are now receiving about $25,000 more a month than formerly and the companies must make up about $100,000 of back pay. The rates proposed by Mr. Harris are 6 cents cash for adults or nine tickets for 50 cents, 3 cents for children under twelve years of age or six tickets for 15 cents. This schedule is to continue for eighteen months after the peace conference shall have finished its work.

Railway men have contended that the rate of fare should be straight 6 cents for adults and 4 cents for children. They also feel that the terms of the ordinance embodying these rates are too drastic. The City Commission is inclined to put the matter to a vote of the electors.

Atlanta Fares Tabled

Retiring City Council Puts Up to the Incoming Body the Matter of Fare Increase

In a special session called for the purpose of considering increased fares for the Georgia Railway & Power Company, the City Council of Atlanta, Ga., on Dec. 14 tabled, without debate, a communication from the War Labor Board, which recommended an increase in fares for the company. The Council then referred to the 1919 Council a communication addressed to the Council by Harry M. Atkinson, chairman of the board of directors of the power company, and refused to allow Mr. Atkinson or President P. S. Arkwright to address the members of the Council.

COUNCILMAN MAKES STATEMENT

At the close of the reading of Mr. Atkinson's letter to the Council, asking for action at once on account of the threatening situation before the company, Councilman Orme exclaimed:

"It is not right for this Council to invoke gag rule! I want to ask that, out of courtesy, these officials of the railway be heard. They have a right to be heard on this important question, as have others, for they are among the best citizens of Atlanta, and among the biggest taxpayers. There are questions involved that we should fully understand, and I think it nothing but fair that they should have the right."

A motion to table the Atkinson communication, which was introduced by Alderman McClelland, was killed by a vote of eleven to twelve, and then Councilman W. F. Buchanan moved that the paper be referred to the ordinance committee. Before a vote was taken on the Buchanan motion, Mr. McClelland moved, as a substitute, that it be referred to the 1919 Council. He stated that he had received a message from Mayor-Elect J. L. Key, asking that the rate-increase matter be held up, and that Mr. Key had valuable information on the subject. Mr. McClelland declared he could see no reason why the new administration should not handle the matter.

IGNORANCE ADMITTED

Alderman Johnston moved that President S. Arkwright be extended the privilege of the floor.

Councilman Orme seconded the Johnston motion, and Councilman Ed. Mincey arose to a point of order, appealing to the chair for a ruling upon the question as to whether or not motions to refer, of which two were before the house, did not take precedence over other motions. The city attorney, however, ruled that the privilege of the floor of the Council could be extended to President Arkwright, provided there was no objection. Alderman McClelland then made it known that he would object. As the unanimous consent of the Council is necessary in order to allow anyone to speak on the Council floor, this killed the effort to allow Mr. Arkwright to be heard.

The wage increase to the Atlanta men by the War Labor Board was reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 14, page 1062. The board addressed the Mayor and Council in regard to the need of more revenue by the company.

Interurban Case Postponed

Following a three-day session of the State Railway Commission of Kentucky investigating charges of unlawful increases on the seven interurban lines operated by the Louisville Railway and Louisville & Interurban Railroad jointly, the hearing was adjourned until Jan. 9, on account of a request for an itemized statement of the material which made up the $4,000,000 that the company claimed went into the construction of the original lines.

Des Moines Unremitting

The controversy over fares between the Des Moines (Iowa) City Railway and the City Council stands in the situation that the city has refused the company's request for the increase and the company advises that there is nothing left to do but await receivership, referred to elsewhere in this issue.

The last appeal of the company to the Council for relief was made on the grounds of the section of the franchise which provides that the Council has authority to fix rates high enough to cover interest, depreciation and operating costs.

This request was referred by the Council to the Corporation Counsel, who advised that the Council was powerless to act in the matter. Corporation Counsel H. W. Byer's reply to the Council was as follows:

"The question involved was fully considered by this department in the early part of this year and on June 18 a communication was sent to your honorable body in which among other things it was said:

"'In the absence of a statute making it the duty of the City Council to fix and determine reasonable rates of fare for street railways, or some provision in the franchise authorizing it to modify or change the terms of the contract with respect to fares, the Council would be without the power to suspend or change any of the rates of fare.'

"There is no such statute nor is there any such provision in the franchise contract, hence it follows that the Council is without legal authority to grant the application now before your honorable body.

"Since the communication above referred to we have made further examination of the decisions of the courts of last resort of the country, and all of them, so far as the question is dealt with at all, confirm us in the opinion we gave in June.

"We, therefore, without further comment, recommend that the application of the company be denied and return the same herewith."

Dallas Changes Carried Out

City Commission Proceeds to Put Beeler Recommendations Into Effect With Modifications

The recommendations of John A. Beeler for improving electric railway traffic in Dallas, Tex., are being adopted by the City Commission with certain changes and modifications. The main feature of the report, crosstown service on all the principal lines of the Dallas Railway, has been adopted by the city and is being carried out wherever possible. The company is now at work placing new curves and other track work that will make possible the inauguration of other crosstown service.

ABANDONMENT OPPOSED

The abandonment of the Henry-Nettie end of the Hickory Street line, as recommended by Mr. Beeler, in connection with the crossing of the Hickory lines, has brought many complaints, and the commission has asked that a shuttle car be operated on that part of the line on which abandonment was recommended, the shuttle service extending from Hickory and Nettie to Henry and Commerce. The Supervisor of Public Utilities has been instructed to see that this service is instituted and maintained, with transfer at both ends of line.

NEW FEED LINES PLANNED

Mr. Meriwether, general manager, said that new feed lines were now being strung in Oak Cliff to furnish power needed to operate the increased number of cars on the Tyler line.

Mr. McCarter Promises Improvement

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., has made the following statement concerning the service of the company's lines:

"With the cancellation of war contracts and the demobilization of army and navy forces enough man-power will shortly be available to enable the Public Service Railway to restore service to the highest point of efficiency it had acquired previous to the war. It is admitted that the service is not what it ought to be. It is not what the company would like it to be, nor what the company purposes to make it as rapidly as conditions will permit.

"For nearly two years the company has been laboring under handicaps the magnitude of which the riding public has had no real conception. Every effort is being made by the operating offices to hasten the return of normal conditions. In the meantime the company's patrons are respectfully asked to bear with it, as the problem it has to deal with is a most difficult and perplexing one."

Complaints against service in New Jersey have perhaps been most insistent at Camden, where industrial activity reached stupendous bounds.

Transportation News Notes

Skip Stops in Louisville Go.—The skip stop has been abandoned by the Louisville (Ky.) Railway at the request of Mayor Smith.

New Bedford Line Wants More.—The New Bedford & Onset Street Railway, New Bedford, Mass., has filed with the Public Service Commission of Massachusetts notice of an increase in fares from 7 cents to 8 cents, to become effective on Jan. 11, 1919.

Tokens in Boston.—The trustees of the Boston (Mass.) Elevated Railway have ordered 5,000,000 metal tokens to make easier and more complete the collection of the 8-cent fare. With the introduction of the tokens the company will return the cash boxes to the cars.

Six Cents in Missoula.—An order was issued on Dec. 6 by the Montana Railroad and Public Service Commission authorizing the Missoula Street Railway to increase rates from 5 cents to 6 cents and to abolish special round-trip reduced rates to out-of-city points. The new rates were to become effective on Dec. 15.

Still Operating at Five Cents.—The Mobile Light & Railroad Company, Mobile, Ala., reports that the supplementary list of fare increases published in the ELECTRIC RAILWAY JOURNAL for Dec. 7 was in error with respect to that company, which was reported as operating at a 6-cent fare. The company in Mobile is still operating at a 5-cent fare.

Rhode Island Hearing Dec. 20.—Attorneys representing the various cities and towns which have appealed from the decision of the Utilities Commission of Rhode Island, granting the Rhode Island Company an increase in fares, and of the company, recently agreed that when the matter came up on Dec. 16 in the Supreme Court they would ask for a continuance to Dec. 20.

Rockford Interurban Fares Fixed.—Fares on the Rockford & Interurban Railway, Rockford, Ill., will be increased to 2.6 cents a mile, when tickets are bought, and to 3 cents a mile when passengers board cars without tickets. The fare of 2.6 cents will, of course, be charged passengers without tickets, who board cars at stations where there are no opportunities to purchase tickets.

Suspension Threat Put Into Effect.—The Sherbrooke Railway & Power Company, Sherbrooke, Que., carried into effect on Nov. 30 its threat to abandon service, the City Council not having agreed to an increase in fare. Three days later, however, service was resumed, a compromise having been arranged under which the company will operate for five months at a 6-cent fare with five tickets for 25 cents.

St. Albans Agrees to Seven Cents.—At a special meeting of the City Council of St. Albans, Vt., on Dec. 9 it was voted to release the St. Albans & Swanton Traction Company from its obligation to limit the fare within the city to 5 cents and to give permission to the company to charge a fare not to exceed 7 cents. A City Council resolution adopted before the road was constructed has limited the fare to not to exceed 5 cents.

Mayor Wants Skip Stops Abolished.—Mayor Charles T. Baumann in a letter to A. D. Mackie, general manager of the Springfield (Ill.) Consolidated Railway, has threatened to use the police force of the city, if necessary, to compel the company to abandon skip-stop operation. Mr. Mackie is reported to have said that skip stops, installed after government instructions, will not be abolished except on order of the government.

Sioux City Opposed to Skip Stop.—Citizens of Sioux City, Iowa, are demanding the elimination of the skip stop plans by the Sioux City Service Company. Only a few weeks ago the City Council adopted an ordinance providing for stopping cars outside of the business districts only at alternate blocks but with the coming of winter opposition to the plan has arisen. Councilman Mann has introduced an ordinance repealing the skip stop measure.

Cedar Rapids Referendum on Dec. 17.—In Cedar Rapids, Iowa, the Iowa Railway & Light Company felt the absolute need of an increased fare. A commission was appointed made up of members of the Chamber of Commerce, representatives of labor and leading citizens. They went into the question of earnings and expenses and reported to the City Council in favor of a 6-cent fare. The Council then named Dec. 17 as the date for an election where the decision might be ratified or rejected by the people.

Step Toward Richmond Increase.—With President R. Lee Peters casting the deciding vote, the Common Council of Richmond, Va., recently adopted the measure authorizing an increase in fares for the Virginia Railway & Power Company in Richmond, Va. The measure now goes to the Aldermen for concurrence or rejection. The resolution adopted merely provides for the advertising of the proposed change in the franchise permitting the increase. The advertisement is designed simply to notify the public that the Council is preparing to act.

St. Louis Wants Action Soon.—An early hearing on the petitions for an increase in revenues for both the city and county lines of the United Railways, St. Louis, Mo., has been requested of the Public Service Commission by the president of the company, Richard McCulloch. Accompanying a letter to the commission, containing this request, Mr. McCulloch sent a table which estimates that for the year ending Dec. 1, 1918, the company will face a deficit for city and county lines combined of $1,664,280. This estimate is the amount by which, it is said, present revenues would fail to meet the costs of operation and a 6 per cent return on investment.

Six Cents for Rockford.—As a result of its inquiring into the matter of increased fares for the Rockford (Ill.) City Traction Company the Public Service Commission of Illinois found that a fair value for the property was $1,312,500 and the reasonable rate of return should be 7 per cent and that the sum of $30,000 should reasonably care for the annual depreciation, with the operating expenses in 1919 estimated at $495,675. The commission authorized the following fares: Cash fares, 6 cents; ticket fares, to be sold by conductors and at company's office, nine tickets for 50 cents; school tickets, good on school days between 8 a.m. and 5 p.m., forty for $1. The company is required to file ten days after the close of each month a statement showing, not only its operating revenues, but its non-operating and all other revenues and expenses.

Scranton Case to Go to Commission.—Efforts on the part of the Scranton (Pa.) Railway on Dec. 6 to have the city compromise and withdraw its fare complaint against the company fell flat and both sides admit that they have gone as far as they can in the matter and are now willing to leave the whole thing with the Public Service Commission. The company will continue to charge the 8-cent fare and issue rebate slips until the commission makes its ruling. A representative of the city said: "Our lowest offer is not low enough for the company and the company's highest offer not high enough to reach our lowest." The matter was characterized by both sides as just a case in which there was an honest difference of opinion as to the issues involved.

Withdraws Application for Election.—The Memphis (Tenn.) Street Railway has withdrawn its application made to the City Council for an election to secure permission to raise fares to 6 cents. Prior to this action by the company the election had been tacitly agreed to and the date almost fixed. About this time there arose a popular demand for guarantees as to service and commutation tickets in books of 25 or 50-cent values. The company contends that it is giving the best service possible at present fares. It has recently increased the pay of employees to a new schedule, and has thus added still further to its burden of increased operating cost. Meanwhile the city is considering the matter of annexing the town of Binghampton and other outlying districts. The population of Memphis would thus be increased by about 35,000. Some of the places that it is contemplated taking over and making part of Greater Memphis are not now reached by the lines of the Memphis Street Railway.

Personal Mention

New P. R. T. Vice-President

Mr. Tulley to Have Charge of Welfare and Public Relations—Messrs. Ellis and Davis Advanced

Herbert G. Tulley has been elected vice-president of the Philadelphia (Pa.) Rapid Transit Company in charge of welfare and public relations. This is a new position created by the board of directors on Dec. 16. Mr. Tulley will supervise the administration of the co-operative plan of 1918. He was one of the principal aides of President T. E. Mitten in perfecting this plan, which has the indorsement of the National War Labor Board and so far of 92 per cent of those working in the service of the company.

HERBERT G. TULLEY

Mr. Tulley is forty-six years of age. He received his early training in the British Army, and was honorably discharged after seeing years of service in India. He received his first training in street railway matters under T. E. Mitten on the Chicago City Railway and was brought to Philadelphia when the Stotesbury-Mitten management took hold. His task in Philadelphia since 1911 has been to instill into the minds of the conductors and motormen an abiding faith in the good intentions of the management which he represents. At the hearing of complaints made to the Public Service Commission, relative to the insufficient service of a year ago, when both men and materials were unobtainable, Mr. Tulley so impressed both the complainants and the Public Service Commission by his frank and outspoken manner as to have been one of the greatest of all factors in securing a decision most fair and generous to the company.

As part of his new duties Mr. Tulley will endeavor to make clear to the several inquiring business and improvement associations the true purpose and intent of the management which he represents.

F. B. Ellis was elected secretary of the Philadelphia (Pa.) Rapid Transit Company, and G. W. Davis was elected treasurer of the company by the board of directors at the meeting on Dec. 16 to fill the positions of secretary and treasurer made vacant by the sudden death of R. B. Selfridge. Mr. Ellis was formerly assistant secretary and Mr. Davis was formerly assistant treasurer. Both of these gentlemen have been in the employ of the company since its organization, their term of service with the street railway system of Philadelphia extending back to the underlying companies.

Alfred Raworth, electrical engineer for the South-Eastern & Chatham Railway of England, has arrived in this country to study American practice as applied to steam road electrification. The South-Eastern & Chatham Railway officials contemplate electrifying about 450 miles of track on their lines running to London.

F. L. Hinman has been appointed mechanical engineer of The Sheffield Company, Sheffield, Ala. This company, which is under the management of The J. G. White Management Corporation, New York City, furnishes railway transportation, electric light and power, and water service in Sheffield, Tuscumbia and Florence, Ala. For a number of years Mr. Hinman was master mechanic of the New York State Railways, Syracuse lines. He left the employ of that company in the early part of this year, to become associated with the United States Ordnance Department, with headquarters at Watervliet arsenal, Watervliet, N. Y., in which service he was engaged up to the time of his present appointment. Mr. Hinman entered electric-railway work as a shop apprentice in Syracuse.

J. W. Welsh, recently on the staff of A. Merritt Taylor, manager of passenger transportation of the Emergency Fleet Corporation of the United States Shipping Board, has become connected with the American Electric Railway Association as special engineer to conduct studies and investigations of special subjects. He will have charge of the information service of the association and will be located in New York. Mr. Welsh entered upon his duties on Dec. 16. Before he was called to Washington by Mr. Taylor to assist the government, Mr. Welsh was electrical engineer and traffic agent of the Pittsburgh (Pa.) Railways, with which he became associated in 1906 as assistant electrician. In 1910 he was made electrical engineer and in 1913 took charge of the traffic department of the company. Prior to this time he was employed as an electrical engineer by the National Tube Company, Wheeling, W. Va., and also by the Westinghouse Electric & Manufacturing Company at East Pittsburgh. He was graduated from Wittenberg College in 1900, Harvard University in 1901 and Massachusetts Institute of Technology in 1903. Mr. Welsh assisted on Mr. Taylor's staff in providing transportation facilities and abating deficiencies, where such existed, to the various shipyards on the Atlantic and Pacific Coasts. Since 1914 he has been chairman of the power generation committee of the American Electric Railway Association.

Obituary

Henry Mueller, division superintendent of the surface lines of the Brooklyn (N. Y.) Rapid Transit Company operated from the Ninth Avenue depot, is dead. Mr. Mueller entered the service of the company as a conductor about nineteen years ago. He was promoted to inspector and then dispatcher, when he was transferred from Ninth Avenue to the Canarsie depot. A short time later he was appointed depot master at East New York. His next promotion placed him in the position of assistant superintendent at Flatbush depot. Then after a lapse of almost nineteen years Mr. Mueller was made division superintendent at Ninth Avenue.

Robert Brown Selfridge, secretary and treasurer of the Philadelphia (Pa.) Rapid Transit Company since the formation of that company, president of four of the underlying companies of the Philadelphia Rapid Transit System, secretary and treasurer of thirty-eight companies and secretary of one company, died on Dec. 11. Mr. Selfridge was born in Philadelphia on June 17, 1852. He was educated in the public schools of that city and entered business in 1869 with Wilson, Anderson & Sinnett, wholesale drygoods merchants. He went to the Pennsylvania Railroad in Philadelphia in 1872 as clerk in the auditor's department, division of freight and receipts, and continued in that department in various capacities until Jan. 1, 1889. While still in the employ of the Pennsylvania Railroad he audited the books of the Lombard & South Streets Passenger Railway and on Jan. 1, 1889, was elected secretary and treasurer of the railway. In addition to his duties with the railway he was also auditor of the People's Passenger Railway and of the Omnibus Company General. He continued in an official capacity upon the consolidation of the various street railways in Philadelphia until July 1, 1900, when he was elected secretary and treasurer of the Union Traction Company which had taken over all of the lines in the city.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES   BUSINESS ANNOUNCEMENTS

Second-Hand Car Market Quiet

Cars Which Were Needed for Cantonment Service Are Finding Their Way Back Again

When the country went on a war footing, camps and cantonments sprang up overnight and cars were needed quickly for the transportation of troops. As they could not all be built in time the second-hand car came in great demand and every available car was pressed into service. Prices began to climb as demand increased and from the usual or normal price of $1,500 it soon reached $3,000 and in some cases $4,500. Some of these cars after extremely hard service are now being returned to the market.

As a result stocks of cars on hand are much better although they are still only fair. Prices are about double the normal basis. The market is so delicate, however, dealers state, that if any sudden influx of cars should appear prices would immediately sag. This is considered most unlikely, however. The large railway systems, the natural feeders of the second-hand supply, as well as the smaller roads, are husbanding their rolling stock by repairing and remodeling old cars if at all possible.

So far as could be learned, there are but few inquiries for used rolling stock at the present time, but the situation is being viewed optimistically.

Ban on Rattan Imports Lifted

Car Seat Manufacturers Have Plentiful Stocks on Hand but Importers' Stocks Depleted

Rattan, which was placed on the restricted import list on July 26 by the War Trade Board is once again, by a recent ruling of the same board, admitted to importation as reported in last week's issue of the ELECTRIC RAILWAY JOURNAL. Early in the war car-seat manufacturers stocked up heavily on rattan and at the time the restrictions went into effect had heavy shipments en route to the United States. It is estimated that they still have on hand at least six months' supply. Demand therefore at the present time by car-seat manufacturers is very quiet.

The general market, however, is bare of supplies. Importers are practically sold out and incoming supplies being dependent wholly upon shipping facilities are most uncertain. Prices remain at about the same high level they reached in October, namely around 40 cents per pound, which is an increase of almost 200 per cent over normal. Increased imports, which must begin coming in soon, will undoubtedly cause the price of the raw products to go to a lower level.

One of the largest dealers in sweeper rattan reported this week that there was no inquiry at all from the electric railway companies and that stocks on hand are exceedingly low. The first snowstorm will probably quicken the demand. It is a well-known fact that street railway companies as a rule do not purchase equipment and material to combat winter storms until the storm actually arrives, when they are insistent upon immediate delivery.

Active Demand for Jacks

European and South American Railways are Buying in Large Quantities—Supplies Plentiful

Jacks for railway repair work are in excellent demand. Business along these lines usually shows up strongest in March and September when the companies get in their supplies to carry them through the summer and winter.

This year, however, the demand has been steady and insistent for domestic use and for export; to quote one of the largest producers, "all they could possibly handle."

Owing to the impossibility of obtaining any new rolling stock either in Europe or South America during the past two years, repair work has been carried to an extent probably never before reached, and all styles of jacks have been and still are a necessity.

Stocks on hand are good and shipments from factories prompt. Prices in the past year, it is reported, have advanced about 10 per cent.

New General Manager for Portland Cement Association

The Portland Cement Association announces the appointment of William M. Kinney as general manager to succeed H. E. Hilts, resigned. Mr. Kinney has been connected with the cement industry in cement and concrete promotion work for more than eleven years, having occupied for the past four years the positions of engineer of the promotion bureau and inspecting engineer of the Universal Portland Cement Company. He has been particularly active in the work of the American Society for Testing Materials, being vice-chairman of Committee C-1 on cement and a member of the executive committee

Leasing Arrangement for Economy Meters

Recently Adopted as an Optional Plan for Users of These Energy Checking Devices

The Economy Electric Devices Company, Chicago, has put out in several cases recently a rental plan for those who prefer to lease Economy railway meters rather than to buy them. The plan is based on the use of at least fifty meters. The company supplies its regular engineering service in inaugurating the energy-saving campaign and establishes the record-keeping follow-up system as where the meters are purchased; it also supplies extra parts for maintenance. The railway company installs and maintains the meters.

The contract is for a definite period of three years with privilege of continuation at a reduced rate, with rentals payable monthly, with a 5 per cent discount for prompt payment each month. The contract includes a cancellation clause which is effective after twelve months' rental has been paid. The rate of rental is determined by the average selling price of the meters, for any given installation, and varies with the size of the meters, whether they are alternating current or direct current, whether for cars or locomotives, etc. A sample rental would be:

First year.....	6½ cents per day per meter
Second year...	6 cents per day per meter
Third year....	5½ cents per day per meter
Thereafter	5 cents per day per meter

In this particular case, provision was made for the outright purchase of the meters and automatic termination of the rental contract on any anniversary as follows:

Purchase price first anniversary....	$46.75
Purchase price second anniversary..	38.50
Purchase price third anniversary....	30.25

In comparison with an outright purchase, the manufacturer of course must plan on receiving back the meters at the end of the contract, and the depreciation on them after three years of use would probably be greater for the manufacturer than for the railway, because the manufacturer would have to turn them back into the shop and rearrange them for the requirements of some other road, while the railway could keep on using them. More bookkeeping is also required and working capital is tied up with a lease. On the other hand, the manufacturer claims a number of advantages for some companies in a plan of this kind, notably it permits a road at once to begin realizing on car energy savings without making additions to capital account.

Reduction in Stocks Urged

Purchasing Agent Advises Adjustment so Advantage Can Be Taken of Drop When it Comes

If there ever was a time when utilities should economize and reduce stocks on hand it is now, according to W. H. Smaw, head of the purchasing department of the Georgia Railway & Power Company, Atlanta. Mr. Smaw takes the position that railways should be so placed as to be able to take advantage of lower prices when they come.

"Sooner or later," said Mr. Smaw in a recent statement, "there is bound to be a reduction in prices. Just when, nobody can say. It may be six months, a year, or two years, but it is coming. And we must not be caught with an accumulation of high-priced stock on hand.

"If the materials and supplies we require become lower in price we must be in a position to take advantage of the drop.

"The government is gradually lifting the priorities restrictions and war contracts, except in shipbuilding, and this will release materials that we need or shall need. Shipping conditions are bound to improve, and we can then expect reasonable deliveries. So there will be no reason to order a year's supply for protection, and we can buy for two or three months instead.

"For these reasons, all purchases should be passed on by the purchasing department with relation to quantity before the order is placed."

Receiver for Jewett Car Company

The Jewett Car Company, Newark, Ohio, builders of street railway cars, has gone into the hands of a receiver. No statement of assets and liabilities has been given out. The company has been in operation in Newark for about twenty years and employed several hundred men. W. S. Wright, president of the company, in a statement to the creditors dated Dec. 12 said:

"This company after having gone through the strenuous war-time period and having experienced all of the labor and material difficulties necessarily entailed by war conditions, which prevented efficient or profitable manufacturing, is now in the position of having a very large volume of profitable contracts, approximately $400,000.

"Due, however, to the lack of running capital, necessary to execute these contracts and to the difficulty of financing at the present time, some of the largest creditors, after an investigation, have thought it advisable to have a receivership to preserve the goodwill, property and assets of the company and to complete the contracts on hand and continue the business."

William C. Miller, Newark, Ohio, has been appointed receiver.

Market for Armature Coils Good

Manufacturers Have Fair Stocks and Shipments Can Be Made in Two Weeks

Nearly a year ago the larger railway systems began placing their orders ahead for motor repair parts and particularly for extra coils. The disastrous experiences of last winter showed the wisdom of this.

The demand for armature coils is steady and good and the railways are now in a position to make their repairs promptly from supplies on hand.

A representative of one of the largest manufacturers stated that his company had foreseen the large demand for armature coils and had installed additional machinery accordingly which would handle coils for several of the best-known motors. Supplies on hand are good and shipments can be made in lots of 100 coils in two weeks.

Prices of armature coils have advanced in the past two years approximately 70 per cent due principally to the advance in copper.

The Owensboro (Ky.) City Railroad is remodeling a number of its cars and is installing new motors of a more modern and higher-powered type. A contract has been placed in the East for most of the necessary equipment.

Track and Roadway

New York, New Haven & Hartford Railroad, New Haven, Conn.—The entire classification yards of the New York, New Haven & Hartford Railroad are to be electrified and while the work is under way the temporary supports for the electric system from the west cut northward are to be replaced by permanent supports of steel. The contract for the job has been let and the contractors are preparing to start at once on a job that is expected to take at least two years. The change from steam to electricity will be made in the Cedar Hill district. A considerable amount of steel work will be required to carry the wires of the electric system to New Haven, and in the region of the new station the steel work will be of an elaborate nature, spanning many tracks. In the Cedar Hill district the electric system probably will be extended as far as the East Haven tunnel and to North Haven station on the Hartford district. A northward extension will enable the road to electrify the new branch from Montowese across to North Haven. A new power house will probably be constructed in connection with the extension of electricity.

Rockford City Traction Company, Rockford, Ill.—The Public Utilities Commission of Illinois has ordered the Rockford City Traction Company to extend its double track in Seventh Avenue from its southern terminus just north of Third Avenue, a distance of 1350 ft., making turnouts and connections with the present tracks on Fourth Avenue and Fifth Avenue and to extend its double tracks on Seventh Street from the terminus of its passing tracks just north of Ninth Avenue, a distance of approximately 750 ft., to Eleventh Avenue, the construction of same to comply with the ordinance of the City of Rockford and be installed and ready for use not later than Jan. 1, 1920, provided, that all necessary consents, if any, to be granted by the City of Rockford, have been granted by May 1, 1919.

Brantford (Ont.) Municipal Railway.—The electors of Brantford will shortly vote on a by-law for $125,000 for the construction of an extension of the Brantford Municipal Railway to Terrace Hills.

Texas Electric Railway, Dallas, Tex.—A period of substantial development for north Texas was forecast by J. F. Strickland, president of the Texas Electric Railway and the Dallas Railway. Mr. Strickland had just returned from a trip to New York, where he had gone in connection with financing projects soon to be undertaken by his companies in Texas. Although Mr. Strickland declined to announce plans for immediate construction of new interurban lines out of Dallas, it is known that his company is contemplating such new projects. Mr. Strickland said new lines undoubtedly would be built from Dallas to Denton, Gainesville, Terrell, and Greenville.

Power Houses, Shops and Buildings

Arkansas Valley Interurban Railway, Wichita, Kan.—A new station and shops will be built by the Arkansas Valley Interurban Railway at 120 First Street, Wichita.

Ardmore (Okla.) Electric Railway.—It is reported that the Ardmore Electric Railway proposes to construct a new power plant in connection with the construction of a new electric line.

Philadelphia, Pa.—Bids will be received by the Department of City Transit of Philadelphia about Jan. 1 for the construction of two 20 ft. x 60 ft., brick and steel passenger stations on the new Frankford Elevated Railway at Alleghany Street and two at Somerset Street, to cost about $15,000 each. The Department of City Transit plans to build 20 ft. x 60 ft. brick and steel passenger stations on the Frankford Elevated Railway as follows: Two on Torresdale and Kensington Avenues, two on Tioga Street and Kensington Avenue, one on Front and York Streets, one on Front and Dauphin Streets, two on Front and Berks Streets, two on Front Street and Girard Avenue, one on Front Street and Fairmont Avenue and one on Front and Green Streets, to cost about $15,000 each. H. Binswanger, Bourse Building, architect.

Montreal (Que.) Tramways.—The contract for alterations and additions to the carhouse of the Montreal Tramways has been awarded to the Metal Shingle & Siding Company, Ltd., Montreal, at $29,000.

Trade Notes

American Transformer Company, Newark, N. J., has moved into its new and larger factory at 178-182 Emmet Street, just two blocks northeast of its former location.

O. E. Quinton has resigned his position of vice-president and general manager of the Peter Smith Heater Coompany, and after Jan. 1 will become associated with Walter E. Hinmon, who has recently resigned as sales manager of the Cooper Heater Company. They will form a new company to manufacture car heaters. An announcement of the plans and personnel of the new corporation will be made shortly.

Arthur Power Saving Recorder Company, New Haven, Conn., announces that within the past week an order has been received for the complete equipment of one large property involving several hundred cars. It has also received several smaller orders. The demand for power-saving recorders in the opinion of the company, is reflecting the need which street railways have of economizing in order to meet the present high cost of operation.

New Advertising Literature

Dearborn Chemical Company, Chicago, Ill.: A twenty-four-page booklet, telling of the success that has followed the use of the company's No-Ox-Id as a preventive of rust and corrosion of iron and steel, as well as describing other Dearborn specialties used in manufacturing processes.

Greenfield Tap & Die Corporation, Greenfield, Mass.: Catalog No. 40, a new 288-page publication of the small tool division. Superseding Catalog No. 37, the new catalog, which is well illustrated, gives descriptions and prices on taps and dies, screw plates and reamers, as well as continuing a number of pages of useful information and tables. While this catalog is about 4¾ in. x 7¼ in. in size, a pocket edition is being supplied to jobbers and dealers for general trade distribution.

Electric Railway Journal

Consolidation of STREET RAILWAY JOURNAL and ELECTRIC RAILWAY REVIEW

Volume 52 New York, Saturday, December 28, 1918 *Number 26*

The Index An Important Feature of This Paper

THE ELECTRIC RAILWAY JOURNAL has always followed the practice of binding the index in with the last issue of each volume, so that it is included with the present number. We do this rather than to print the index separately and send it to those only who ask for it, the practice of some magazines, because we want every subscriber to be sure to have a copy. We consider the index an important part of each volume whether the copies are bound permanently or not. Great care is taken in its compilation to classify the articles by subjects treated, irrespective of the captions which they may happen to bear in the paper, as these captions may be selected at the time the article is printed because of some local or temporary condition or, if a contributed article, because of the whim of the author. For the same reason, we add a list of common key words and instructions for the use of the index. By their aid the indexes for successive volumes are compiled according to a continuous plan, making cross references from one year to another easy. By condensation we have been able this year to make the index somewhat smaller than for the last few volumes, but no other change has been made. We commend the use of the index to those of our readers who want to get the most benefit which they can out of the paper.

Common Sense in Laying Out a Storage Yard

ON EVERY electric railway system there is a considerable mileage of track which is contained in car yards and in maintenance and construction stock yards. Some of the track is under cover, much of it is not. A great deal of this track was apparently put in without any very definite plan, or at any rate without a vision of future growth. Of late the yard trackage has been the subject of careful study and the yard areas are now laid out more nearly with a view to space economy, to convenience in handling cars into, in and out of the yard, to fire protection if needed, to general accessibility and even to appearance. In some localities the yard space is scattered and its use is ineffective, whereas a little co-operation on the part of transportation, shop and way departments particularly would conduce to economy in all directions.

Believing that even more progress in systematizing the design of storage yards is desirable the ELECTRIC RAILWAY JOURNAL has recently printed a number of articles to show what is being done in this direction. The mention of Detroit, Los Angeles, Cleveland and Denver will suggest some of those articles. This week another, by A. E. Harvey, giving the details of an interesting yard layout in Kansas City, is printed. Its value consists partly in the details of construction and rearrangement which are given, but more important is the suggestion of general principles and the emphasis laid upon the savings in money and materials which resulted from careful planning. Every yard is a problem unto itself because it must occupy its own peculiar site, it must (in general) be adapted to existing structures, it must meet local transportation requirements and it must be laid out to fit the local pocketbook. All of these variable elements unite to make a most interesting proposition for the way department engineers, and we look forward to some fine work in yard rehabilitation during the next few years. A good question for the manager to put to his confrères these days is: "Are our storage and maintenance yards what they might be and ought to be?"

Could This Have Happened in Your Plant?

TRAFFIC on a very important and an extensive electric railway system was seriously hampered for several hours recently by a cable blowout of unusual proportions. It is worth while to inquire whether a similar accident would be likely to occur elsewhere and if so what should be done to prevent its occurrence. The circumstances in the case cited were these: An old direct-current power plant located near a center of dense traffic serves as a relay power source and also as a substation for low-voltage distribution. Thirty-five paper-insulated, lead-covered cables, most of 1,000,000-circ. mil size, after leaving the switchboard pass through a pulling-in chamber about 10 ft. x 20 ft. in dimensions. From these the cables pass through duct lines to a 6-ft. x 16-ft. x 9-ft. manhole in the street, thence to their destination at various points in the system. Some of these cables had been in place for eighteen years. The first sign of trouble was the opening of a circuit breaker on the switchboard, which when replaced refused to stay in. The station almost immediately filled with smoke and it was only by cutting it off from all other sources of direct-current power that the trouble was stopped. On entering the first-named cable chamber the company's engineers found hardly a vestige of cable remaining. The burnout was, of course, due to one cable "letting loose" and, under the terrific heat developed by a low-voltage arc, transmitting short-circuits to the remaining cables, each of which augmented the disturbance in turn. By strenuous effort the engineers of the company got power back onto some lines almost at once, and considering the magnitude of the task all of the lines were put back into operation with remarkable promptness. The cables were spliced in as before but arrangements are now being made to subdivide them between two manholes and further to subdivide them in the station among three runs.

This accident suggests the importance of safeguarding all points at which great concentration of cable capacity exists, and the desirability of avoiding such concentration as far as possible. This is especially true of low-voltage circuits which, on account of the enormous currents that can develop on short-circuit, are very destructive to themselves and their surroundings when they "let loose." Another lesson is that protective devices should be used to limit currents to reasonable values and, as far as possible, more than one source of supply for each trolley circuit should be available for instant use. There are practical limitations to immunity from accident in all cases, and especially is it difficult to keep the distribution system absolutely up to date with the recent and present shortage of men, money and materials. However, much can be done and there are danger points in almost any railway system that ought to be safeguarded. This accident should stimulate a general survey of distribution-cable conditions throughout the country. In this instance it should be noted there was no fire caused by the violent short-circuit and no one was injured in its vicinity. On the other hand the traffic tie-up was very serious and unfortunate from every point of view.

Does It Pay to Keep the Track Curves True?

TRACK curves are usually staked out with painstaking care by the construction engineer who also spends no little time and vocal energy in an endeavor to impress upon the construction gang the fact that his handiwork should be treated with due respect. It is safe to say that when a well constructed track is new its track curves are fairly true. As Father Time lays his heavy hand upon the work, however, the grade settles and traffic and other agencies act to skew the track out of alignment. Now a first-class section foreman is a good judge of surface alignment but only an engineer with proper instrument equipment can check up with accuracy the alignment of a long-radius curve. The questions, "How is operation affected by defective curve alignment?" and "What is it worth to keep the curves true?" are, therefore, pertinent ones.

An experiment by J. G. Sullivan in Bulletin 207 of the American Railway Engineering Association throws some interesting light on the subject. In an investigation of the causes of curve resistance a car was equipped with trucks on one side of which the wheels were larger than those of the other side in the ratio of the radius of curvature on the outer rail to that of the inner one. When this car ran at high speed it was found that at certain places the outer wheel flanges always came into contact with the rail head, giving a nosing movement to the truck and increasing the curve resistance and rail wear. Investigation showed that at these places the curve was a few inches out of true. Correction of the alignment eliminated the trouble. With ordinary trucks there is, of course, considerable wheel flange and rail-head wear on all high-speed curves except those of extremely long radius. Everyone is familiar with the damage caused by poor surface alignment on the rolling stock, the way structure, and the feelings of the passengers. The ill effects of defective curve alignment are possibly not as serious; certainly they are not as well known. Curve alignment involves more technical difficulties in its maintenance than does surface alignment, and maintenance of any kind costs real money in these days of imaginary net earnings. Just what the golden mean should be is a difficult economic problem which like many other way maintenance problems involves a lot of elusive variables. The problem is one which seems to merit serious thought, however.

Cheerfulness and Courage Needed—No Time for Despair

"COMPANY does not own any street railways." When this fact is cited in a recent newspaper advertisement by a brokerage concern as one of the reasons why a new issue of bonds of a lighting and power corporation should be attractive for investors, a person may well stop to consider whether the electric railways in our country have reached a stage of disrepute. As a tonic for such pessimists we would suggest the reading of a statement from President P. J. Kealy of the Kansis City Railway company printed in the Dec. 7 issue of this paper.

We must frankly concede, of course, that our industry is in sore need of a restoration of confidence. This is reflected in the attitude of some of our leading operators, as may be judged from the discussion of the municipal ownership resolution presented at the recent annual meeting of the American Electric Railway Association. We believe with Colonel Kealy, however, that, having weathered the storms of the past few years and having overcome the public thought of connecting an electric railway ride with a nickel, the present is no time for raising the white flag of surrender.

The electric railway is now recognized as a national institution. It has not yet won all the support that will be necessary to pull it from the Slough of Despond, but it is being recognized more and more as an essential industry. Its representatives are to be criticised perhaps for having left the public ignorant so long of the value, cost and fair price of what it has to sell.

It has been said that a certain mental attitude will place a person in a condition susceptible to disease. We believe also that the lack of courage, the giving way to depression, on the part of electric railway representatives will do much harm to the industry. As President Kealy says: "The question to-day is not so much one of attracting the capital for future investment as of stabilizing and saving the investment now made." This represents from six to seven billions of the people's money. It is a considerable sum, and the commissions that have been set up in the several states can do much to protect this investment.

We believe the electric railways can be set on a foundation so stable that it will be no recommendation for a corporation to advertise that its securities are strong because it does not own any utilities of this class. These railways have passed through a critical period. They are just beginning to get clear from the shackles of a 5-cent fare, and while many companies have reported resulting traffic losses the net returns are encouraging. At least one company reports that it has not only suffered no loss of traffic through a higher rate of fare, but is collecting more than the theoretical increase in revenue, due to a friendly public attitude and to the additional safeguards that have been thrown around the collection of fares.

What the industry needs is cheerfulness and courage. We know perhaps better than ever wherein we have suffered in the past. It behooves our representatives to profit by experience and to keep up the fight for our rights. *Nil desperandum!*

More Electric Railway Service Is the Need of These Times

IN outlining the probable trend of economic development in the coming days of peace, the Guaranty Trust Company of New York in a current pamphlet remarks that the need for new transportation lines will be more urgent now than before the war. It justifies this belief by the statement that the demand for foodstuffs and raw materials of manufacture will give extraordinary stimulus to the settlement and development of the frontier regions, and the speedy prosecution of a transportation program will be possible because of the war increases in the steel-producing and shipbuilding capacity of the world.

While the comment mentioned referred particularly to steam railroads, we believe that electric railways must also share in this general development of transportation. Just as the outstanding progress of municipalities in the last four decades has been closely associated with the installation and the development of local transportation lines, so the continuance of urban growth will be intimately connected with the better utilization of electric railways.

But these words "better utilization" imply readjustment. We do not refer to the physical changes that must be made in property and equipment to enable full advantage to be taken of the growth of urban population, of the necessity for better intra-urban and intercommunity freight service, and of the opportunities in the way of heavy electric traction. The technical genius of the industry will adequately care for these matters. We have in mind rather the necessary improvement of the economic and social relations between electric railways and the public served.

More electric railway service is needed, and it will be furnished if capital can be attracted to the industry. But to accomplish this the public must be willing to pay for the service rendered and to co-operate with the railways in civic development. Individual electric railway operators have been accused of various wrongdoings; they have been guilty of many, but the intelligent public is beginning to realize that the whole industry should not be damned because of the faults of a few. Similarly the public has been blamed for many injustices, but farsighted operators agree that public supervision of utility operation cannot be destroyed.

The electric railway autocrat who has no regard for public welfare and no conception of his opportunities for social service is going; the representation of the public on boards of directors or on boards of control points to his ultimate elimination. Likewise the citizen who wants electric railway service for nothing is disappearing; the enforced abandonment of scores of lines has let a ray of light into his cerebral darkness. We have faith both in the full public recognition of the electric railway as the most efficient and generally desirable means of local transportation and in the complete exercise by railway officials of their public responsibilities. We therefore face the readjustment period with confidence.

Politics and Business Do not Mix Well

TWO striking examples are being furnished of the confusion caused when important business enterprises are linked up with politics. One is the condition of the steam railroads. The other is the Hog Island shipbuilding enterprise of the American International Corporation. The trouble lies in the fact that the ideals of the business man and the politician differ. The former aims constantly toward efficiency of production, whereas the training of the latter tends to make him sacrifice efficiency every time for his own political advancement. If, therefore, the politician thinks he can make political capital out of exploiting for its disadvantage any business enterprise he is pretty apt to do so, irrespective of the ultimate effect on the public. The steam railroad systems seem fated for some time to be a political football, and the experience of the shipbuilding company mentioned will act as a constant deterrent to capital to engage with government in business. These instances show what may be expected with municipal operation of electric railways, or even with municipal partnership unless the terms of the contract are drawn very carefully and the responsibilities and rights of company and municipality are very clearly defined.

Our Statistical Number

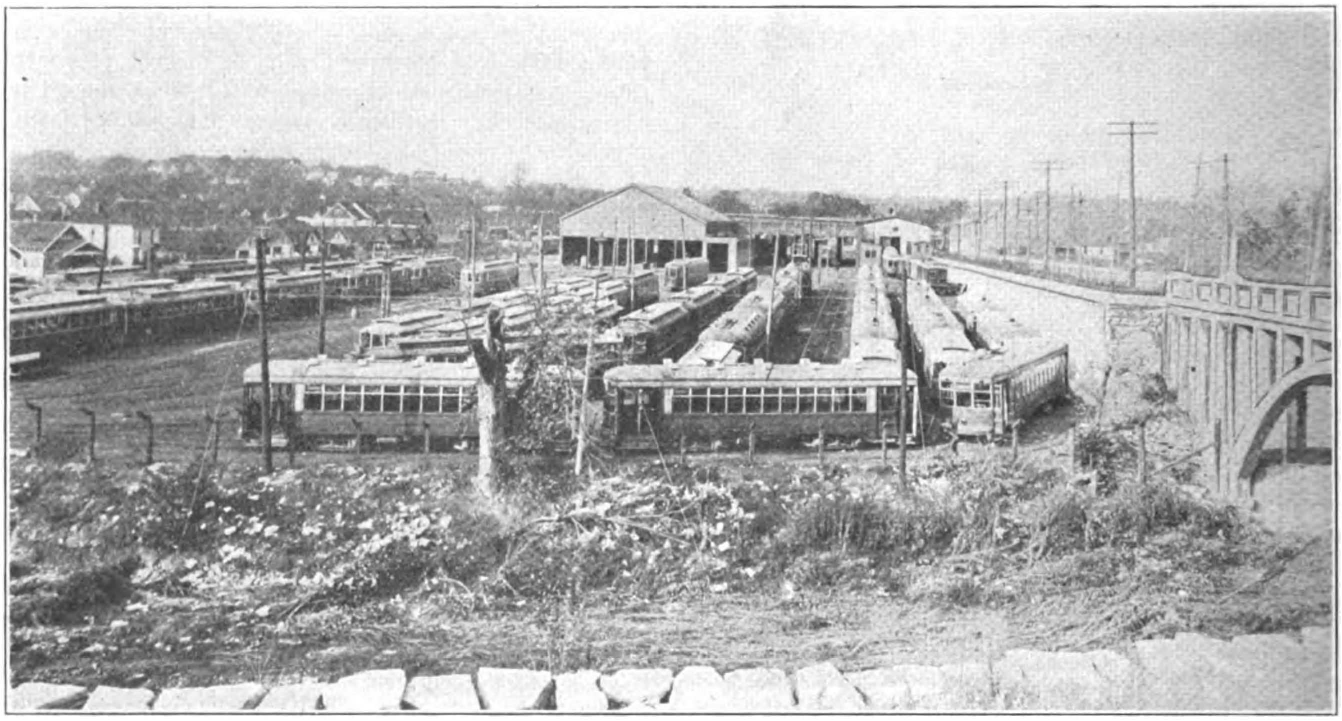
will be issued next week

It will contain statistics of the cars ordered and miles of track built during 1918 as well as the receiverships, foreclosures and abandonments which have occurred during the year. In addition, there will be a number of important feature articles by prominent authorities in the electric railway field. They will describe recent developments in service-at-cost franchises, freight haulage, skip stops and the electric railway work of the Division of Housing and Transportation of the Emergency Fleet Corporation and that of the Transportation Division of the United States Housing Corporation. Mr. Gadsden will also discuss the future of the electric railway industry.

Storage Yard Rearrangement at Kansas City*

Indoor and Outdoor Car-Storage Capacity, Car-Handling Facilities and Fire Protection Have All Been Increased, Almost Entirely by the Use of Salvaged Material

By A. E. HARVEY
Superintendent of Way and Structures, Kansas City, (Mo.) Railways



REAR VIEW OF RECONSTRUCTED KANSAS CITY YARD SHOWING NEW REPAIR SHED

THE exigencies of war have taxed the ingenuity of all to secure material and to reduce costs of improvement work that, in many cases, is essential to economical operation. It has forced the shifting and salvaging of material, and the overhauling of junk piles that would not have received consideration in other days. After all, many of these things that have been done should have been the practice in days of ease rather than forced by war conditions, and the lessons learned should be lasting and of value to all after normal conditions return.

These thoughts are suggested by a review of the work of increasing the capacity, improving the conditions and simplifying the operation of the yard of the Kansas City Railways located at Forty-eighth Street and Troost Avenue. This work has been done during the past year with a minimum amount of labor and new material by utilizing salvaged special work and buildings, and rearranging the existing material.

SALVAGE FOR NEW TRACK ARRANGEMENT REPRESENTS A SAVING OF $16,000

The former layout at this place was designed for the use of double-end cars, and the old track layout was not adapted to the handling of single-end cars to advantage. In other ways also the plant was not adapted to present requirements. The buildings were substantial, fireproof structures and represented a considerable investment which would have been practically without value if the plant had been abandoned and a new yard established elsewhere.

Referring to the old track layout shown in one of the accompanying figures, it will be noted that the arrangement was such that cars were dispatched from the carhouse both east and west on Forty-eighth Street, that a wye was provided for each line and that all single-end cars had to be backed into the yard. This resulted in endless confusion and delays when the cars were coming in, not only to those cars that were going into storage, but to those that were to be turned for the outbound trip. Extensive studies were made of arrangements to better conditions, but all of them called for a considerable expenditure of money for new special work and for the elimination of the pit house and trainmen's building, so that they were impracticable at present.

The first step in the rearrangement actually made was to connect up the tracks at the rear of the yard so they could be used from both ends. The special work and the crossovers used at the rear of the yard were all salvaged from other locations and from the scrap pile. The turnouts were taken from the entrance to the old carhouse recently abandoned on Southwest Boulevard. They had been in use some twenty-five years, and certainly did look rough. With some repairs and the application of an arc welder they were put into such condition that they are now giving as good service as new work and will probably last for five to ten years in the new location. The same results, so far as car movement is concerned, are being obtained with this work as would have been obtained by the use of new work costing approximately $5,500 for the steel alone.

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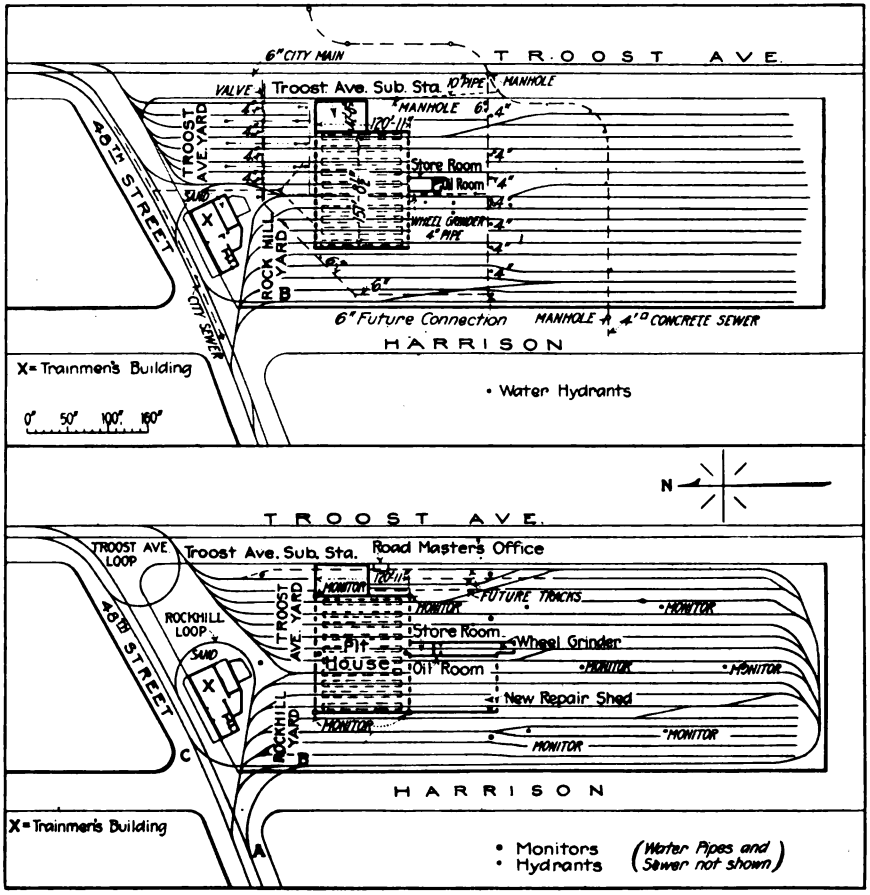
*For another article on the subject of remodeling car-yard layouts see ELECTRIC RAILWAY JOURNAL, March 24, 1917, page 535.


6" CITY MAIN
TROOST AVE.
VALVE
Troost Ave. Sub. Sta.
10" PIPE
MANHOLE
TROOST AVE. YARD
48TH STREET
Store Room
Oil Room
WHEEL GRINDER
4" PIPE
SAND
ROCK HILL YARD
B
CITY SEWER
6" Future Connection
MANHOLE
4'0" CONCRETE SEWER
HARRISON
X = Trainmen's Building
Water Hydrants
0' 50' 100' 150'
N
TROOST AVE.
TROOST AVE LOOP
Troost Ave. Sub. Sta.
Road Master's Office
MONITOR
FUTURE TRACKS
ROCKHILL LOOP
Store Room
Wheel Grinder
Pit House
Oil Room
New Repair Shed
C
A
HARRISON
X = Trainmen's Building
• Monitors
• Hydrants
(Water Pipes and Sewer not shown)

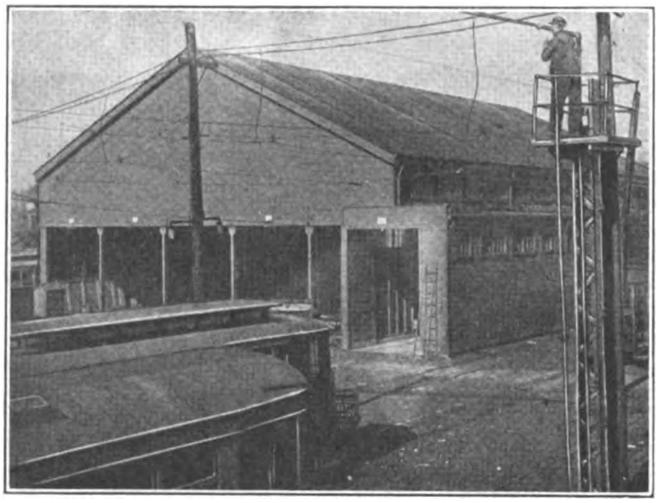
OLD AND NEW ARRANGEMENTS OF TROOST AVENUE YARD
Tracks Numbered from 1 to 18 from West to East at North End of Yard

In the rearrangement of the front of the yard the Troost Avenue ladder was moved back and a loop was installed. This required two additional switches and a diamond, practically new but salvaged from work changed in other parts of the system, and new turnouts into tracks Nos. 9 and 10. This change caused some reduction in car-storage space in front of the pit house, but this is more than compensated for by some additional tracks installed at the rear of the yard. The old plan provides storage for a total of 203 cars, the new one for 205 cars on tangent track plus the space on curves and special work. On the Rockhill division side of the yard the ladder has been left intact and becomes part of the loop. This loop is arranged to operate to the right in order that the cars may trail the switches. The wye (points *A*, *B* and *C*) at the intersection of Forty-eighth and Harrison Streets, which might be required occasionally, was reversed by changing the east turnout of the wye to the north track and adding a new curve at the southwest corner of Forty-eighth and Harrison Streets. The purpose of this is that in addition to forming a wye the track arrangement is such that the cars can be placed in the yard without reverse motion. Cars arriving at the yard for storage from the Rockhill side, instead of taking the loop head in on track No. 1 are stored from the rear without interference with cars using the loop. Exception to this applies to tracks Nos. 2, 3 and 4, which have to be filled from the front when the movements on the loop are at a minimum. Cars for storage from the Troost Avenue side move west on Forty-eighth Street past the loop and head in on track No. 1 for the storage from the rear, which will very materially facilitate the use of single-end cars and clean up the congestion that otherwise is bound to occur should they be backed in around the loop and over the ladders at the front of the carhouse. Only two additional switches and one diamond crossing were used in the rearrangement of the Rockhill wye, and these also were salvaged. The total cost of the track changes was $25,274. If all new special work had been used it would have been $16,000 additional.

The buildings at this yard are substantial, fireproof structures, but are not of sufficient size to meet modern requirements. They are so placed as not to lend themselves readily to enlargement or development, and so have influenced the rearrangement of tracks, etc.

The pit house, with pit room for twenty cars, is all that could be desired, but in the past the full benefit of this has not been available, largely on account of lack of connection to the tracks from the rear. This feature is, of course, corrected by the new track arrangement. The wheel grinder was located on track No. 10, the only track connected to both the Rockhill and the Troost sides of the yard, consequently the use of this track was practically nil. A new grinder pit was therefore constructed on the dead-end track in the rear of the storeroom, and a shed that separated this work entirely from other work in the shop was constructed. Track repairs and the rewheeling of cars formerly had to be carried on in the open, the pit house being the only shelter in the original layout and this, of course, was not adapted to much of such work on account of the pits. As a result there was added to the pit house a shed, 115 ft. x 75 ft., for shop purposes. The steel frame for this shed was all salvaged, as it originally formed the shed covering the wye on the elevated road at the old Union Depot. As the trusses had a span of 75 ft. the only alteration required in the steel was to splice out the columns so that eventually a second floor could be added to the building. The building is floored with a granitoid concrete and is well lighted.

The substation east of the pit house was erected many years ago, before the present-day requirements were foreseen. In its present location it is an obstruction to the full development of the space and will soon be removed, thus clearing the way for three more through tracks in the yard. In making this change, however, the destruction of the building is not contemplated. The ends will be removed to permit the extension of the tracks through the building, thus increasing the amount of covered trackage. The upper part of the building may, by the construction of a floor, be made available for office or storage purposes.

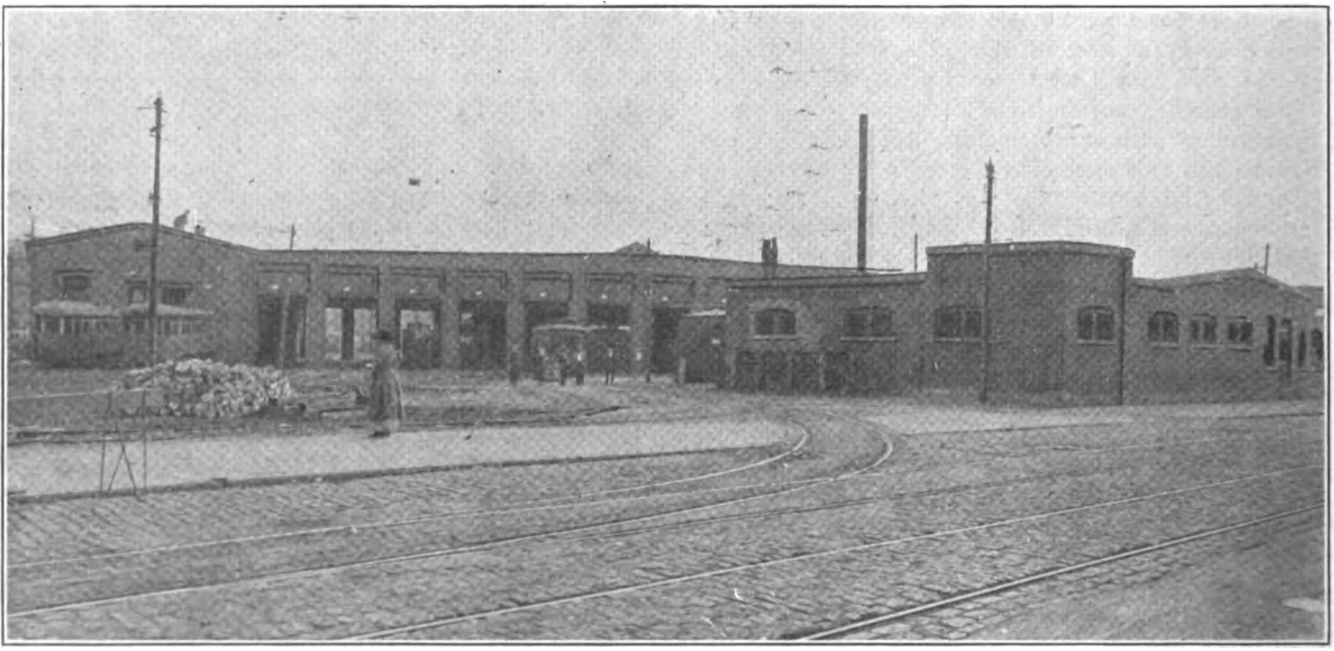

NEW REPAIR SHED AND GRINDER HOUSE WITH WATER TOWER IN THE FOREGROUND

The office building is entirely inadequate for the present requirements, but under the old track arrangement it was not possible to make any extension. It is, however, so constructed that a second story can be added, and, with the rearrangement of the tracks, this second floor can be extended east along the Forty-eighth Street front over the loop. The way is now clear for extensions to the present building which will make it modern and adequate for the future as well as present demands.

FIRE PROTECTION INCREASED BY INSTALLATION OF TOWERS

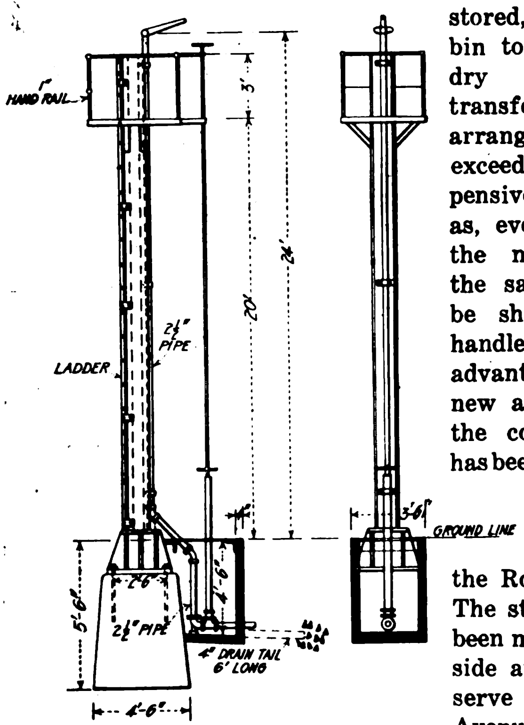
Not the least important matter in a car yard of this capacity is that of fire protection. In the original plan such protection was provided by a line of hydrants in alternate spaces between the tracks across the middle of the yard, each hydrant being equipped with a hose house and a reel of hose. Protection of this kind is to a great extent uncertain. There is always the danger that hose long unused will have deteriorated and will break in an emergency. Then there is the further difficulty and danger of attempting to string hose through a yard from which the cars are being moved away from a fire, thus making it practicable to string the hose only between tracks or else assume the liability of its being cut by the movement of cars. Such protection is not to be compared with that afforded by towers. In the new plan six towers topped with monitor nozzles have been erected in the rear of the yard and a nozzle has been mounted on each corner of the pithouse. Every part of the yard can be reached by at least one, and generally more than one, of these streams. The towers are at such height that a car window can be broken and inside fires thus easily reached. Hose reels are also provided at the bases of some of the towers, and there are other hydrants and hose reels for use in fighting inside fires.

The same structure which furnished the frame for the carhouse addition furnished the steel towers upon which the nozzles are located. These were posts supporting the elevated tracks at the old Union Depot. They are very heavy and provided with heavy cast-iron bases. As scrap they are worth only $56, but could be replaced in their present locations and use only for hundreds of dollars, and then only by lighter construction. They are, of course, heavier than necessary, but this is advantageous without extra cost. Towers of this kind take up less ground space than hose and reduce the number of poles required in the yard for use of overhead. The only work required to make these columns available for towers was to add a ladder and a platform.


FRONT VIEW OF PIT HOUSE, SUBSTATION AND OFFICE BUILDING WITH OLD TRACK LAYOUT

The towers are 25 ft. high, and the monitor nozzles discharge 250 gal. per minute with an effective radius of 120 ft. at a water pressure of 110 lb. per square inch. Fires are, of course, attacked with chemicals and hose if inside of cars, the great value of the tower system being in its effectiveness in stopping the spread of fire and confining it to the point of origin.

Arrangements for handling sand at this yard have also been materially altered. In making the yard rearrangement the sand house interfered with the extension of the Rockhill loop and made some change necessary. The old facilities consisted of a pit in which were located a sand dryer, a screen and an elevator, a concrete bin above the ground in which wet sand was stored, and a steel bin to which the dry sand was transferred. This arrangement was exceedingly expensive to operate as, even with all the machinery, the sand had to be shoveled and handled at a disadvantage. In the new arrangement the concrete bin has been converted into a dry-sand bin and serves the Rockhill loop. The steel bin has been moved to one side and made to serve the Troost Avenue loop. All the sand is now dried at a central sand-drying plant at another location and delivered to this place in dump cars. The pit below the track level has been changed so that sand can be dumped directly from the cars into this bin, whence it runs by gravity to the foot of the elevator and is transferred to the dry-sand bins, making as a whole a very handy and economical arrangement.



TYPE OF MONITOR NOZZLE TOWER USED FOR FIRE PROTECTION

The rearrangement of the yard has not been expensive as compared with the results obtained. The looping of the cars has very materially facilitated their movement and avoided congestion in the street, and cannot but have a tendency to reduce the time and labor required in sending out and storing cars. The yard capacity has not only been maintained, but increased.

The working conditions, on account of these arrangements, have been improved, and not the least advantage is that the layout adjusts itself to the present location of the trainmen's building which, under any other arrangement, was an obstruction to the development of the yard. This building can now be utilized in its present location and, as noted elsewhere, the space has been cleared of tracks so that it may be extended to meet both the requirements of the present and any future needs.

Eastern New York Power Companies Made Coal-Saving Record

COAL saving at the rate of 5000 tons a month has been effected by six power companies of eastern New York by a plan of joint operation and the use of water power heretofore wasted, undertaken at the suggestion of the Fuel Administration. This record in coal conservation was effected without a change in existing equipment or additional cost to the power companies, and the success which attended the operation of the plan has been so marked that the companies interested are anxious to continue it.

The companies which combined and carried out the plan through a joint committee made up of their regular organizations, serve what is known as the "Capital District," including the cities and towns of Albany, Troy, Schenectady, Amsterdam, Mechanicsville, Cohoes, Saratoga, Glens Falls and adjacent territory. In the hands of the joint operating committee and using the available resources of the six power companies a two weeks' test was begun on Oct. 23. In that period electric energy equal to that generated by the burning of 2450 tons of coal was developed from existing equipment and the natural river flow which otherwise would have gone to waste. The generating companies were thus able to market heretofore unused power, and the coal-burning companies were able to get power at a saving over their own costs.

Following are the companies co-operating in the joint operation plan: Adirondack Electric Power Corporation, Glens Falls; General Electric Company, Schenectady; Municipal Gas Company, Albany; Cohoes Power Company, Cohoes; Hudson Valley Railroad, Mechanicsville, and Schenectady Power Company, Schaghticoke.

Some time ago the Fuel Administration, with the co-operation of the power companies, made a thorough investigation of power conditions in eastern New York. As a result of this investigation the power companies were asked to combine in a program of joint operation, a plan made possible by connecting transmission lines already in existence, and the substitution of water for steam power. This was promptly agreed to, the available resources of the companies were placed in the hands of the joint committee and an operating department appointed to carry out the distribution of water power.

Using the existing equipment and organizations, and without additional labor cost, the two weeks' trial was commenced. At the end of that period "there was such unanimity of thought," says the report to the Fuel Administration, "that the question of continuing did not enter the discussion of the joint committee, but simply the endeavor to secure the success of the scheme by agreeing to the costs of power sold by the hydro-electric companies to the coal-burning companies in place of burning coal."

A fuel which is said to be finding favor consists of a mixture of 95 per cent of anthracite screenings with 5 per cent of water-gas tar. The calorific value is from 12,000 to 14,000 B.t.u. In a reported boiler test one-third more capacity was developed with the composite fuel than with ordinary coal.

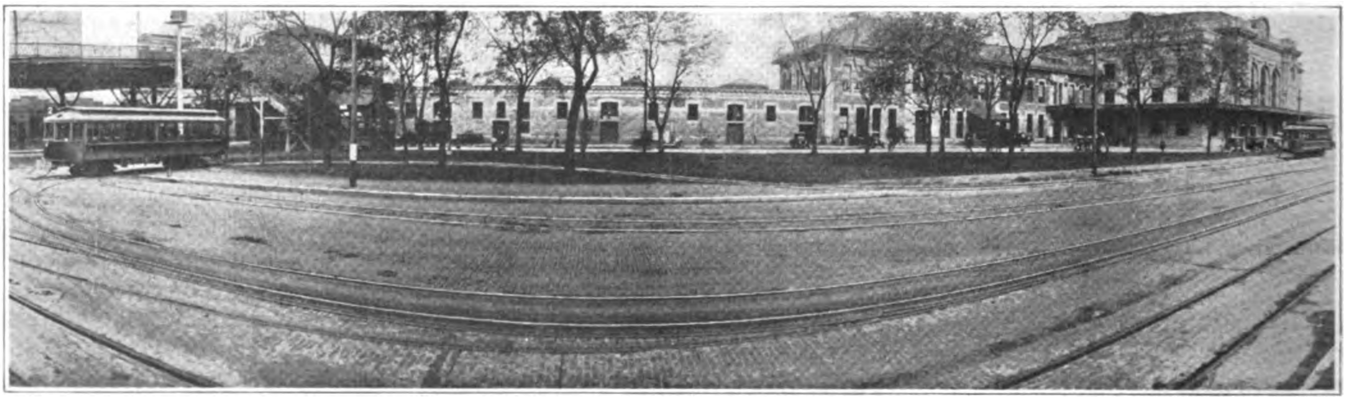
Union Station Loop Operation in Denver

After Years of Controversy in Denver Tracks Are Laid on Depot Grounds and Company Now Gives Quick Service

FOR many years the Denver (Col.) Tramway has not been permitted to give through car service within a block of the Union Station. Small double-end cars have operated up and down Seventeenth Street as far as the east side of Wynkoop Street, but through cars from the residence district have at the nearest looped a block away on Wazee Street, and in most cases have turned many blocks away at the central loop. The Tramway and the citizens of Denver have wished better facilities to the depot, but the city and the railroads would not back any proposed plan. They considered a loop impossible because of the location of several steam railroad tracks on Wynkoop Street, which runs in front of the depot. These tracks served various industrial plants, and were also, to the annoyance of visitors, used for switching purposes and for the storage of freight cars.

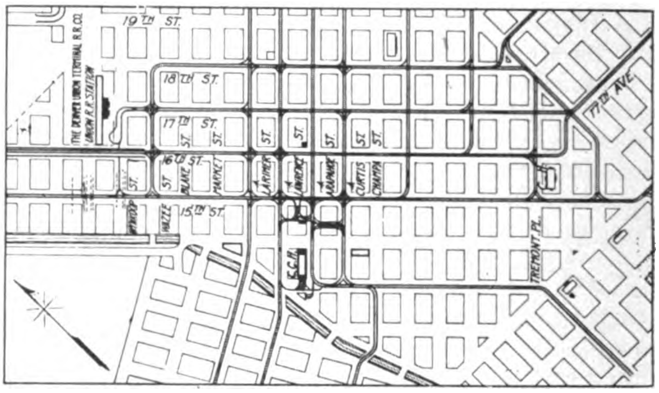
In August, 1917, the State Public Utilities Commission issued an order calling for more satisfactory service to Union Station. The necessary surveys were completed about a year ago, and after long negotiations with the railroads permission was granted to install a loop on the station grounds.

Construction work began immediately and produced no serious problems. Part of the railroad tracks were removed from Wynkoop Street. One stub track, which does not cross Seventeenth Street, was left along the east curb to serve the industrial plants in that block, and a short section was made over for street car use. The Tramway's tracks in the paved section were laid on International steel ties with concrete foundation and with paving of various types, including plain concrete, concrete mixed to imitate brick, plain brick and stone block. The track entering the loop from the street is placed at the elevation of the sidewalk for the convenience of passengers boarding and alighting at the station entrance, while the exit track is at street level. The loop is made by a 45-ft. curve among the trees of the station lawn and is built on wood ties ballasted with crushed stone. The new layout is shown in the accompanying panoramic view.



PANORAMA OF DENVER'S NEW UNION STATION LOOP

Upon the completion of the construction work, full-page advertisements with a map of the downtown district and an explanation of the rerouting were run in the local papers preceding the opening of the loop. *Tram-o-Grams*, a small pamphlet published bi-weekly by the company, also did its part in explaining the change, and the final dedication of the improvement included a trip around the loop by the public utility commissioners and engineers, with General Manager Hild acting as motorman.



MAP OF MAIN BUSINESS DISTRICT OF DENVER SHOWING PRESENT ROUTING OF UNION STATION CARS

REROUTING GREATLY INCREASES SERVICE

As a result of the opening of the loop there are now eight through routes from the residence districts giving service to within 50 ft. of Union Station entrance. These are indicated on the map, which shows the main business section of the city of Denver. Route 20 (Seventeenth Avenue), route 30 (Madison) and route 40 (Park Hill) operate from Seventeenth Avenue straight down Seventeenth Street around the loop and back the same way. These lines all run out to City Park, and the Capitol Hill and Park Hill residence sections, and on these service has been increased 25 per cent. As a result of this operation, route 47 (Seventeenth Street) has been discontinued and the double-end "dinkies" retired from service. Route 11 (Eleventh Avenue) and route 33 (Thirteenth Avenue) run from Broadway down Fifteenth Street to Tremont, cross Tremont to Sixteenth Street, operate down Sixteenth Street to Larimer, cross Larimer to Seventeenth Street, and run down Seventeenth to the loop, returning the same way. Route 2 (Broadway) and route 9 (Louisiana) operate from Broadway down Fifteenth Street to Larimer, cross Larimer to Seventeenth Street and operate down Seventeenth to the loop, returning the same way. Service on route 2 has been increased considerably, and on route 9 it has been doubled. The small double-end cars have also been taken off route 58 (Eighteenth Street) and standard center-entrance cars now operate from Broadway down Eighteenth Street to to Wazee, cross Wazee to Seventeenth and operate down Seventeenth to the loop, returning the same way.

Cars from these eight lines now make the loop with schedules of from five and one-half minutes to twenty minutes, which during the peak period, puts a car around the loop every forty-five seconds.

Preparing For and Managing Strikes

Ways and Means that Have Saved Money and Trouble When Men Were Imported During Labor Troubles

ELECTRIC railway systems in the past have had a generous share of labor troubles, and in the solution of these problems, ways and means have been developed that would have been almost invaluable had they been arranged beforehand. Experience of this sort does not appear in the records and files, except in an indirect way. Usually one or two men in each company which has had strikes are entrusted with matters of this sort because of experience gained during previous labor troubles. A representative of the ELECTRIC RAILWAY JOURNAL recently collected such constructive ideas as could be secured from several roads and prepared the following outline. Reference is made only to methods which have been approved after trial.

When there is advance warning of a strike, plans for bringing in outside men should be perfected as early as possible. An effective means of getting the men quickly is to arrange with a detective agency which maintains offices in several cities. Newspaper advertisements will bring the men to the offices, and an operative assigned to the work employs those found qualified. By drawing upon several cities it is believed that a better class of men is secured, and there is avoided the danger of inter-organization that might occur if all the men were taken from one town. Moreover, there is less cohesion among a group of men from several towns, and they are less inclined to organize after coming on the job than would be the case were all brought in together from a single source. Drawing from several cities, of course, costs more, but the expense is believed to be justified.

After the strike has actually been called and there is no longer any need for avoiding publicity, help-wanted "ads" can be run to advantage in the newspapers of small towns within 150 to 200 miles of the city. These advertisements should state the nature of the work and give the physical requirements, age and training necessary. This is a particularly productive source of recruits, and the class of men secured is highly desirable.

An all-important feature of the plan of employment is the contract with the prospective substitutes, which must be made at the time they are accepted by the employment agent in the distant city. The purpose of the contract is primarily to insure an understanding about rates of pay, thereby avoiding arbitration or disagreement over this question while men are on the job. Five different rates of pay can be stipulated if desirable. The first rate is a nominal fee, say $1 or more, which the prospective employee receives daily for reporting at the detective agency after he has been accepted by the employing agent and before it has been finally decided to ship the men. This is a guarantee of good faith on the part of the company and keeps the men available for call within twenty-four hours whenever the crisis comes. The second rate of pay is that which the men are to receive while traveling from the place of employment to the scene of action and vice versa. A third rate covers the rate of payment after the men have arrived at their destination but before they are actually at work on the cars. This rate may be the same as that agreed upon for the period of transportation. A fourth rate should be stipulated for the time that the men may be at work on the cars but before a strike is actually declared. Naturally this rate would be less than the fifth rate, which would apply when the men are actually working the cars under conditions of strike.

Traction companies without experience who have suddenly faced the emergent need for bringing in large numbers of new men have sometimes entirely overlooked the fact that such a contract can be made just as well as not. The oversight has increased costs enormously because full wage rates had to be paid while the men were being transported or waiting for the impending strike to reach the breaking point. Desirable men are not frightened away by the terms of a contract such as that outlined above, because it makes fair allowance for the degree of service which the employee renders. On the other hand, by the adoption of the contract plan at the outset, $60,000 was saved on one strike in the West, in the course of which large numbers of men were brought in from Eastern points. Another feature of the contract which should not be omitted is the clause nullifying the contract and forfeiting the employee's claim to return fare in case of dishonesty or drunkenness. The company can be made the sole arbiter on these questions.

HOW THE MEN MAY BE HOUSED

Once the strike breakers arrive on the job it is highly important that they be isolated from outside communication. In one instance, the president of a carmen's union was employed, unsuspectingly, as a strike breaker and was quartered with others in the "stockade" provided by the company. The men were not of a class among whom this organizer could work to advantage and therefore, due to the company's policy of isolation, he was prevented from doing harm in the only remaining way, that is, by spreading false reports and arousing the public against the company. This latter means is usually effected by giving "stories" to newspaper reporters after the strike breaker has received permission to leave the stockade on some such pretext as the necessity of sending a telegram.

Careful planning will be required to keep the men contented or, in fact, even manageable after they have arrived at their isolated quarters, particularly if they are held there, inactive, for some time. It is highly essential that the immediate supervision of the quarters be intrusted to one official and that he have absolute authority. He will find it wise, for example, to make his own inspections, give unfailing attention to the food served, and let it be known that complaints of individuals may be brought to him personally. Only in this way can the likelihood of dissatisfaction and riots be entirely prevented. Careful checking of conditions in the dining room should have to do not only with the quality of food, but they should be made in such a way as to prevent the commissary force from surreptitiously putting a tipping system into effect.

HOW TO ORGANIZE THE MEN

As soon as the quarters are established where the men are to be held awaiting service, a systematic plan of organization, work and recreation should be at once instituted. It is more than possible that there will be a sympathetic boycott which will prevent union plumbers, carpenters, etc., from doing any work in the premises. With this in mind, it is worth while to classify the new men at the earliest opportunity so that plumbers, carpenters and other craftsman among them can be readily found by name or number. These men, for slight increase in pay, may be able to save the company from difficulty with the city building inspector's department or other embarrassing situations arising from inability to get local craftsmen. All work for which special pay is given should be carefully recorded by a timekeeper. This is very important if the men are managed by a leader through whom they were employed. The timekeeper's record prevents the leaders from "knocking down" on the men when they are paid through him as an intermediary between company and individual.

Where small jobs are involved, such as cleaning out the quarters, or regular janitor service of some minor character, it is better to call for volunteers, offering to pay in tobacco rations. There will always be men in such a collection who will cheerfully perform minor tasks for a little additional tobacco, whereas there would be much grumbling over the rate of pay for this as extra work. Tobacco rations should be issued daily, each man being given the choice of a package of cigarettes, a plug of chewing tobacco or a corncob pipe and smoking tobacco.

The most economical method of providing medical attention, in case the company does not have its own doctor, is to arrange with a local physician to be in attendance for a short time once a day, making it known among the men that those who require medical attention should line up for sick call promptly at the specified hour. It is an economy to have the men who line up for sick call inspected first by one of the company officials who has some slight knowledge of medicine. About 50 per cent of the men who report for sick call will have some minor complaint which can as well be attended to by an assistant, thus effecting a considerable saving of the doctor's time. The doctor should be required to make a daily report of the names of men examined and prescriptions given so that a check may be made of the men who repeatedly appear for sick call.

One of the most essential problems is to provide athletic amusement for the men. Effort should be made to find some one among them who has some ability as a ball player, for example, and who can be appointed sport captain—for which he may be compensated, perhaps, by an extra tobacco ration. If the weather is favorable it will be found advisable to provide sufficient baseball paraphernalia and to make the sport captain responsible for its return to the company. A good rule is to issue the separate pieces of equipment to anyone who applies, only requiring that the items be noted on the reverse of the applicant's identification card.

Where the men are listed and paid by the identification card system, it is a good plan to use the card for recording privileges which the strike breakers may desire. The men respect the use of the card absolutely when no other system would avail because they cannot get their pay without the card. For some of the more important concessions it may be advisable to take up the card in exchange, but where equipment is loaned to the men, such as shaving outfits, blankets, etc., a memorandum of these on the back of the identification card is sufficient insurance for their return. It is wise to check in supplies as they come and to check out the men as they go to prevent the disappearance of company property.

To prevent trouble over the loss or theft of personal property brought in by the men, a checking room should be maintained. It is also desirable to provide, if possible, barber shop, laundry facilities and shower baths. A good way to avoid confusion and dissension over sleeping quarters is to have the cots numbered to tally with the identification cards. In addition to the close watch and inspections maintained by the man personally in charge of the quarters, it is a good plan to have trusted company employees regularly quartered among the strike breakers for the purpose of reporting any internal dissension or moves toward inter-organization.

SERVICE ON THE CARS

As soon as feasible after the new men have begun work on the cars they should be provided with a new and distinctive badge. This prevents striking employees from coming on the platforms and being mistaken by strike breakers for some of their own number. Moreover, the psychological effect of the "emergency" badge is good and is particularly desirable in the days when prospective settlement of the strike is in sight. During the strike the traction company should not overlook the necessity of advance arrangement for guards. At least some of these must have local, county or state authority. They can be sworn in as special police or deputy sheriffs, thereby acquiring full police power. These men should be kept at central points and automobiles should be available for their speedy transportation to any scene of impending trouble. Orders should be issued to make sure that a record will be made of the exact time and nature of each report of disorder or disturbance which comes in. This is important because the question of whether the city has afforded proper police protection in strike and riot matters is frequently brought up in final adjustment of damage suits.

The National Council of Women of Great Britain is furthering a movement to facilitate the entry of women into engineering occupations, and to secure for them equal rights with men in colleges and commercial establishments. This is being done in the interests of the reconstruction work now being launched.

New Philadelphia Co-operative Plan

Announced by President Mitten to Take Place of 1911 Plan—Organization of Committees Described—Plan Has Been Indorsed by Employees and National War Labor Board

PRESIDENT T. E. MITTEN, of the Philadelphia Rapid Transit Company, has just announced the details of a comprehensive plan for collective bargaining and co-operative welfare. The terms of this plan have been indorsed by the National War Labor Board, and it will constitute the future basis for co-operative effort between the management and all employees of the company.

The plan is, in effect, the original co-operative plan adopted by this company in August, 1911, amended to cover collective bargaining as a distinctive function and with the co-operative welfare features greatly enlarged and improved. Full details of the 1911 plan have been published in the ELECTRIC RAILWAY JOURNAL, notably in the issues of Sept. 14, 1918, page 459, and Nov. 4, 1916, page 968. The following description of the main features of the new plan are from a statement just issued in pamphlet form by the company for distribution to the men.

CO-OPERATIVE EFFORT THE KEYSTONE

The principle of the co-operative plan of 1911, i.e., that employees may belong to any union or other organization without "let or hindrance" is ratified and confirmed; it being understood, however, that in the interest of service to the public, the rules of the company must be obeyed. Satisfactory service insures continuous employment with the company. In the event of there being such a decrease in the business of the company as makes it necessary to reduce the force, those giving the least satisfactory service shall be the first to be dropped from the payroll of the company. There shall be no discrimination against employees who, for any reason, do not become members of the Co-operative Welfare Association.

Co-operative effort is recognized as the keystone of all accomplishment in rendering proper service to the public and good service will be recognized by such advancement as opportunity offers.

The basis of wages is to be the average of the wage scales fixed by the National War Labor Board for the four cities of the first class under its jurisdiction, namely, Chicago, Cleveland, Detroit and Buffalo. By averaging the wage scales of these cities there is obtained a permanent basis upon which to adjust the wages of the employees in all departments from time to time as occasion may warrant and this new basis makes unnecessary the longer continuance of the 22 per cent fund.

COLLECTIVE BARGAINING

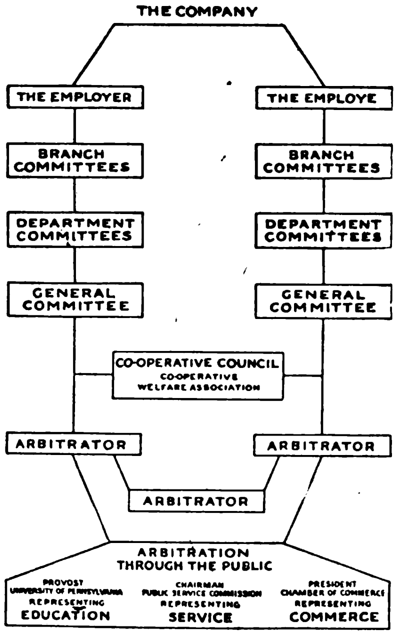
The principles of the collective bargaining feature of the new plan are stated as follows:

(1) The workers shall have a free and independent vote for representatives for proper collective bargaining and (2) proper committee organization of such representatives so that class and group contact may be assured and the integrity of workers' committees be established and maintained as such.

The following procedure is outlined in the plan:

Differences are settled through the medium of (1) branch committees, (2) department committees, (3) general committees, and (4) board of arbitration. Any local point of difference must be taken up first by the branch committee at the local branch of origin, but there is the privilege of appeal to the other committees in the order named. All appeals must be in writing and filed with the secretary of the committee.

In the deliberations of these committees, the committee of employees has one vote and the committee of the company has one vote. Either committee may retire to cast his own vote by secret ballot; then these ballots are returned unopened to the secretary of the committee who counts them under the observation of both committees and announces the result in an open meeting. Each branch committee is made up of two representatives of the workers at each depot, station or division and two representatives appointed by the company, and each committee member serves for one year. Elections for members are conducted by secret Australian ballot under the direction of an election committee of three members chosen by the department committee for employees. To qualify as a voter, an employee must have had six months in the company's service, be regularly assigned to duty and not occupy an official position with the company. Committee men must have been continuously in the employ of the company for not less than two years. Candidates elected from the transportation department must also be assigned to a regular run.


THE COMPANY
THE EMPLOYER
THE EMPLOYE
BRANCH COMMITTEES
BRANCH COMMITTEES
DEPARTMENT COMMITTEES
DEPARTMENT COMMITTEES
GENERAL COMMITTEE
GENERAL COMMITTEE
CO-OPERATIVE COUNCIL
CO-OPERATIVE WELFARE ASSOCIATION
ARBITRATOR
ARBITRATOR
ARBITRATOR
ARBITRATION THROUGH THE PUBLIC
PROVOST UNIVERSITY OF PENNSYLVANIA REPRESENTING EDUCATION
CHAIRMAN PUBLIC SERVICE COMMISSION REPRESENTING SERVICE
PRESIDENT CHAMBER OF COMMERCE REPRESENTING COMMERCE

ORGANIZATION CHART FOR P. R. T. CO-OPERATION PLAN

The department committees are five in number and represent respectively the transportation department, the rolling stock and buildings department, the electrical department, the way department and general office department. These committeemen are elected annually by the employees of each department mentioned and are equalled in number by the company appointment of its representatives. Each committeeman has one vote. The department committee for the employees consists of all of the branch committee men elected by the workers of the several depots, stations or divisions in that department. The department committee for the employees and the department committee for the company each elects its own chairman. The secretary of the general committee or an authorized representative acts as secretary, but without vote.

ORGANIZATION OF GENERAL COMMITTEE

The members of each department committee for employees elect two of their number to constitute the general committee for employees on which there is an equal number of representatives of the company. The secretary for the general committees is appointed by the president of the company but has no vote.

It is the duty of the general committees to devise ways and means for furthering the efforts of the various department committees for the greatest possible good, to promote harmony and good fellowship among all employees of the company, to formulate plans for submission to the several department committees, and to render every assistance within their power toward advancement of the interests of the employees and the betterment of the service. The general committees also have the power to review, modify or reverse any findings or decision of the department committees, and may even change the general plan if in their judgment such a change is desirable. The general committee for employees and the general committee for employer each elects its respective chairman, and the secretary for the general committees is appointed by the president of the company, but has no vote.

Meetings of the general committee are held on the third Tuesday of each month.

BOARD OF ARBITRATION

If resort to arbitration becomes necessary, one arbitrator is chosen by the general committee for employees and one by the general committee for employers, these two arbitrators to select the third. If they are unable to agree upon a third arbitrator, then the provost of the University of Pennsylvania, the chairman of the Public Service Commission and the president of the Chamber of Commerce of Philadelphia are to be requested to serve as additional arbitrators or to appoint their own personal representatives to act as such additional arbitrators. Failing unanimous decision, the decision of any three of these five arbitrators shall be binding.

COMPENSATION

The pay of all members of the general committee and of the department committees for employees is paid from the funds of the Co-operative Welfare Association and while so employed they receive no pay from the company. The representatives of the company receive no compensation from the association for their services but receive their regular pay as company employees. Expenses incident to carrying on the work of the co-operative plan are paid out of the funds of the Co-operative Welfare Association made up from the dues paid in from time to time by the members of the association and the sum of $10,000 a month paid in by the company. Membership is open to employees of one year or more service with fees of $1 a month, which entitle the members to life insurance, sick benefits and pensions.

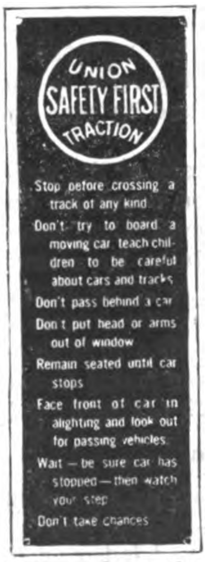
The affairs of the Co-operative Welfare Association are administered by the Co-operative Council, consisting of the combined membership of the two general committees for collective bargaining. The president of the Welfare Association is elected by the majority vote of all the members of the several department committees for employees. The company appoints the secretary-treasurer and assistant secretary-treasurer of the Co-operative Council and the chairman of the Board of Directors of the company and the president of the company are made honorary chairmen of the Co-operative Council.

CO-OPERATIVE PLAN INDORSED

Advance proofs of the proposed plan were submitted to the National War Labor Board, and under date of Nov. 9, 1918, the secretary of the board advised the company of its approval. The plan has also been indorsed by 8399, or more than 92 per cent of the employees, who have joined the association.

In announcing the amended plan, which will be known as the Co-operative Plan of 1918, President Mitten takes occasion to acknowledge the help he has received in developing these new principles in co-operative effort from many advanced thinkers upon the subject. He states that commencing in 1896, at Milwaukee, Wis., this particular expression of the great thought embodying co-operative effort, was advanced by C. B. Fairchild, Sr., and C. D. Wyman (both now deceased) and its development was greatly assisted by John I. Beggs, whose constructive criticism at that time served afterward to stabilize the effort in its formative period. Mr. Mitten, in conclusion, referring to the latest development of the co-operative plan, as worked out in Philadelphia, gives credit to the assistance of his co-workers and to the earnest, long continued and painstaking effort of the superintendents and their men in combatting misstatements and overcoming prejudice by fair treatment and frank discussion.

An Attractive Miniature Safety Sign


UNION
SAFETY FIRST
TRACTION
Stop before crossing a track of any kind
Don't try to board a moving car teach children to be careful about cars and tracks
Don't pass behind a car
Don't put head or arms out of window
Remain seated until car stops
Face front of car in alighting and look out for passing vehicles
Wait — be sure car has stopped — then watch your step
Don't take chances

On its interurban cars the Union Traction Company of Indiana, Anderson, Ind., uses tiny brass plates to direct attention to the need for care in order to reduce accidents. One of these is mounted on each side post, and the design is such that the plate harmonizes perfectly with the rich trim of the cars. The company had these plates made about two years ago and they cost at the rate of 10½ cents each when ordered in lots of 500. The accompanying reproduction is on a reduced scale, the actual size of the plate being 2 in. x 6 inches. The borders and the lettering show the bright brass color, the background within the circle is red and that elsewhere on the plate is black.

Zone Fare Collection As Seen by a British Tramway Manager

The Methods Used on a Typical Road Are Described, Together With the Arrangement of the Stages and the Type of Tickets Issued to Passengers

THE parliamentary charge for transportation in England is a penny (2 cents) a mile, but most large tramways give on an average from 1¼ to 1½ miles per penny. The different zones are divided into sections with overlaps. Three definite stages to the penny-zone is considered as the best practice, as passengers are thus enabled to board a car at any convenient point and still get the full parliamentary mile per penny. A route of 6 miles divided into four zones with three stages per zone is shown in Fig. 1. By referring to the diagram it will be seen that a passenger can travel the entire 6 miles for 4d. and between the corresponding points of the two outer zones for 3d.

Tickets are issued to the passengers as they pay their fares. These tickets can be provided with numerals to denote the different stage points or the names of these points can be given instead. Each ticket should be of a different color and have the value of the tickets printed in large letters as an overprint.

On the system taken as an illustration each ticket is numbered and lettered. The numbers are given in four figures from 0000 to 9999 and the letters run from AA to AZ. Each series thus has 260,000 tickets and by using all combinations of letters to ZZ nearly 7,000,000 tickets are available.

The tickets are issued to conductors in boxes. These boxes are made of tinned or japanned iron and are divided into sections for receiving the various classes of tickets. Each box contains the ordinary full ticket requirements for the day, say 1500 1d., 100 2d., 500 3d. and 1500 4d. tickets, together with workmen's special rate tickets where such are used. A waybill of the form shown in Fig. 2 is attached to each box. This gives the opening and closing numbers in the series of tickets and the series letter of each bundle.

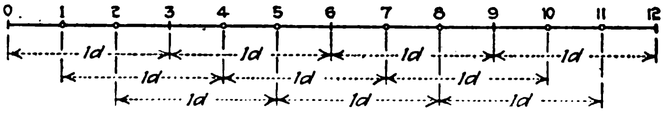
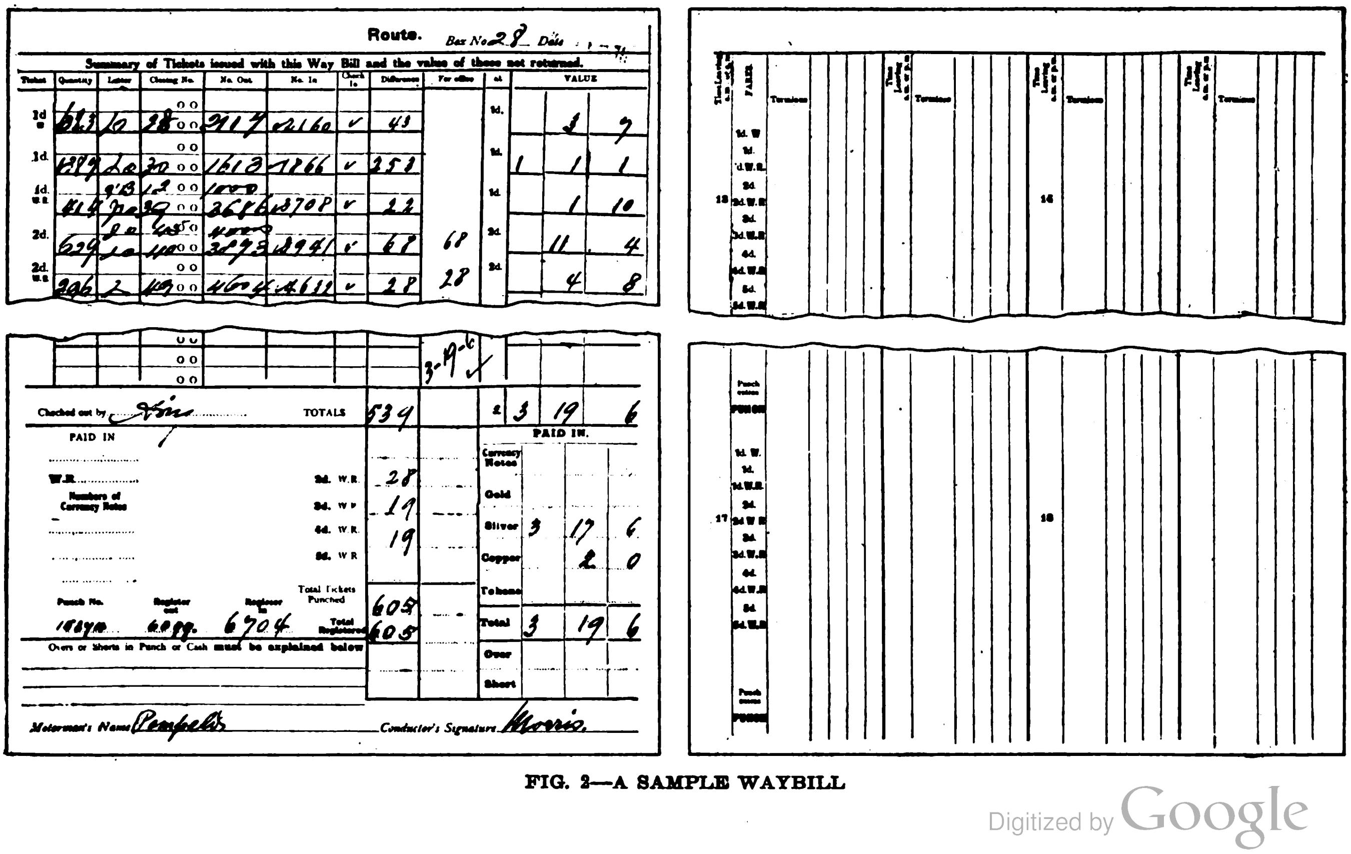


FIG. 1—A SIX-MILE LINE ARRANGED WITH FOUR STAGES

The conductor obtains his outfit of tickets and a punch from the depot inspector or regulator, and signs a check stating that the total number of tickets agrees with the waybill and that the punch is in proper working order. When starting a run the conductor enters the opening number of the series and the bell-punch dial numeral on the waybill. This entry is repeated throughout the day's work at the end of each run and on some lines at the beginning of each zone.

The bell punch has grown into its present form. In the minds of some managers it does everything to check



Route. Box No. 28 Date

Summary of Tickets issued with this Way Bill and the value of those not returned.

Ticket	Quantity	Letter	Closing No.	No. Out	No. In	Check In	Difference	For office	at	VALUE		
1d W.R.	613	[illegible]	38 00	917	2160	✓	43		1d.		3	7
1d.	1889	[illegible]	30 00	1613	1866	✓	253		1d.	1	1	1
1d. W.R.	414	[illegible]	12 00 36 00	1000 3676	3708	✓	22		1d.		1	10
2d.	629	[illegible]	40 00	4000 3073	3941	✓	68	68	2d.		11	4
2d. W.R.	296	2	40 00	4604	4632	✓	28	28	2d.		4	8
			00									
			00					3-19-6 ✓				
			00									

Checked out by TOTALS 534 £ 3 19 6

PAID IN

W.R.

Numbers of Currency Notes

2d. W.R.	28	PAID IN.			
3d. W.R.	19	Currency Notes			
4d. W.R.	19	Gold			
5d. W.R.		Silver	3	17	6
		Copper		2	0
Total Tickets Punched	605	Tokens			
Total Registered	605	Total	3	19	6
		Over			
		Short			

Punch No. 16870 Register out 6099 Register in 6704

Overs or Shorts in Punch or Cash must be explained below

Motorman's Name Penfold

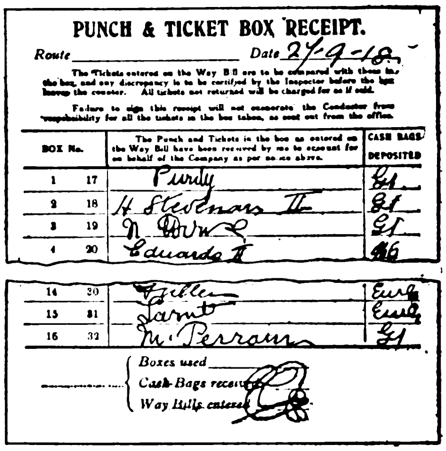
Conductor's Signature Morris.

Time Leaving a.m. or p.m.
FARES
Terminus
1d. W
1d.
1d. W.R.
2d.
2d. W.R.
3d.
3d. W.R.
4d.
4d. W.R.
5d.
5d. W.R.
13
14
17
18
Punch

FIG. 2—A SAMPLE WAYBILL

fares except bark at the fraudulent conductor. It will clip tickets only having the proper thickness of paper As it clips it registers the number of the operations and rings a bell. The clippings fall into a receptacle in the punch so that their numbers and their various colors can be audited with the waybill. The punch cannot be opened, for it is sealed with a paper gadget that has to be broken to open the receptacle. The real value of the punch lies in the fact that it defaces the ticket at the time of issuing, and the ringing of the bell informs the passenger that a new ticket is being issued. For checking purposes along the road the dial numbers if visible are of use to the inspector.

Inspectors or spotters board cars at intervals and examine the waybill, the rack of tickets and the dial number of the punch. They also examine all passengers' tickets. Naturally only "pot-shots" are taken since the inspectors on an average can board but one car in every ten or twenty. It is good practice to require the conductors to fill out the waybill every mile because then the inspector can see at once if any passengers are overriding their alighting zone. At the end of a day's work the ticket box and waybill are returned to the office and the money collected for fares is turned in. When tickets are issued in proper numerical order it is a simple matter to make out the waybill, but where breaks occur in the numbers it is more difficult to make up the bill properly and more work is caused for the bill clerk in checking.



PUNCH & TICKET BOX RECEIPT.

Route __________ Date 27-9-18.

The Tickets entered on the Way Bill are to be compared with those in the box, and any discrepancy is to be certified by the Inspector before the box leaves the counter. All tickets not returned will be charged for as if sold.

Failure to sign this receipt will not exonerate the Conductor from responsibility for all the tickets in the box taken, as sent out from the office.

BOX No.		The Punch and Tickets in the box as entered on the Way Bill have been received by me to account for on behalf of the Company as per notice above.	CASH BAGS DEPOSITED
1	17	Purdy	G1
2	18	H Stevens II	G1
3	19	[illegible]	G1
4	20	Edwards II	46
14	30	[illegible]	[illegible]
15	31	[illegible]	[illegible]
16	32	M Perram	G1

Boxes used ______
Cash Bags received ______
Way Bills entered ______

FIG. 3—TYPE OF PUNCH AND TICKET BOX RECEIPTS

The box is next sent to the traffic office and the depot cash clerk checks the cash paid in with the paying-in slip. Next the boxes are checked by the ticket clerks and the total number of each class of tickets is entered into a ledger. The totals for each value of tickets are transferred to the analysis book so that the aggregate of the various values can be retained for statistical purposes for each route.

A list containing the names of the different conductors together with the total ticket value issued is sent to the chief clerk. A similar list is also sent in by the cash clerk showing the amount of cash paid in by each conductor. When these amounts do not correspond it is the general practice to deduct any shortage from the wages of that conductor, but any excess is retained by the company as it is assumed that the conductor in question has taken fares without giving out tickets. Each conductor is supplied with 5s. in change at the beginning of a day's run. When the boxes have been checked it is the duty of the ticket clerk to fill up the boxes with tickets. This is done from the proper rack so that breaks in numbering are infrequent and occur only when a new series is opened. The bell punch is reset and the dial is checked with the number of tickets sold. A fresh waybill is made out with the number of tickets sold, and the opening numbers are taken from the closing number of the old waybill. The box is then checked and goes out to its respective depot.

If any particular ticket has to be traced on account of accident, dispute or any other purpose, the ticket clerk can trace the number of the box from the rack and locate the waybill. If the ticket box is lost the opening and closing numbers can be traced from the racks and the waybill of the day previous when the box was in use. The actual numbers and letters on the tickets need never be transferred to any ledger.

The system may seem cumbersome to one unfamiliar with the details but in practice it is simple and the cost is small. Average conductors can grasp the system in a few days.

FRAUDS IN COLLECTION ARE INFREQUENT

The chief frauds that are perpetrated are comprehended under the term "hanging of fares." For example, a passenger boards a car for a 2d. ride. The conductor delays taking the fare until the car has traveled over most of the distance and then gives the passenger a 1d. ticket and takes the full fare. Again, the conductor waits until the passenger is about to alight, then collects the fare and pretends to throw a ticket on the floor when the passenger has alighted. Another method is to give the passenger a ticket properly punched but to enter up the previous number on the waybill at the stage point. The passengers invariably drop their tickets on the seats and the conductor can collect these and reissue a ticket not already entered on the waybill, fumbling with the bell punch at the same time, so as to give the impression that it has just been punched. Conductors seldom tamper with the bell punch or issue a used or dead ticket punched a second time for, in case the car is boarded by a spotter, the ticket with two holes in it is concrete evidence against them.

Workmen travel at cheap rates before 8 a. m., 2 miles for 1d. or ½d. per mile, by statute, and home again after 5 p. m. at the same rates. The usual practice is to issue a return ticket at a single or ordinary value made available for the return journey at any time of the same day.

Transfer tickets are common and they are handled like return tickets. Weekly tickets have been used by many tramways but discarded on account of fraudulent usages, as they become a season ticket for the whole family. Discount tokens are in use on some tramways at a rate of fifteen rides for 1s., but their use is discouraged because conductors purchase these tokens and fraudulently turn them in instead of fares collected, pocketing the discount.

There is no doubt that the ticket and punch system has the highest all-around cash efficiency of any fare-collection system and that this system is sufficiently quick for an average conductor to collect the fare from a full car loaded with sixty or more passengers during their rides.

The inspector's duties are too many to enumerate in detail, but the chief object is to see that each passenger has a ticket of the proper value, that he is not overriding his stage and that the dishonesty of passengers and carelessness of conductors are detected. Point numbers or intermediate stage numbers on tickets are most useful to the inspectors in their work as they are thus enabled to tell at a glance where a passenger boarded the car.

It is very difficult to bring any fraudulent conductors to court. Witnesses are difficult to obtain and the management is usually satisfied with getting rid of the rogue through charges of inefficiency rather than roguery.

Scientific Regulation Needed by Railroads

Theodore P. Shonts Comments Upon the Steam Railroad Situation, Expressing Doubt that City Partnership Idea Would Be Applicable

IN COMMENTING upon the steam railroad situation in a recent public memorandum, Theodore P. Shonts, president Interborough Rapid Transit Company, New York, N. Y., says that the present system of government operation has merits which must never be sacrificed, but that all the gains made can be obtained with the greatest economy under private operation of the railroads.

It has been suggested, Mr. Shonts states, that the nation might adopt some such course with reference to railroads as is employed by New York City in its partnership contracts with the subway and elevated lines. The cardinal point in those relations is that the city provides a large portion of the capital, but agrees that a fair return upon the private capital employed shall be earned and paid before the city's investment gets its return. After both sides have earned a fair return the remaining profits are divided equally between the city and the railroads. Such a plan is advantageous, Mr. Shonts believes, where there is an assured traffic. But there is grave question whether that plan would have resulted in such daring statesmanship as was embodied in the building of the Great Northern Railroad by Mr. Hill, and the like. If the principle of permitting capital to earn sufficient reward to attract the means for normal future development is recognized it will be made concrete in some such form as follows:

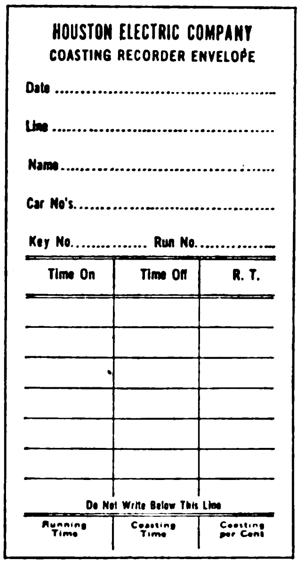
1. A plan of government regulation which will be scientific and not political; which will apply the same point of view to approving rates as to approving the chemical composition of a steel rail;
2. Concentration in the regulating authority which adds to the expenses of the roads responsibility for the rates with which those expenses must be met;
3. Provision that initiation of rates shall be in the hands of the carriers; that rates may not be suspended, except upon complaint and after a hearing, and that final decision must be made within sixty days;
4. Establishment by Congress itself of the fundamental principles to govern the reasonableness of rates, such principles to include fair reward for excellence of service, efficiency of management, and prudent foresight in providing new facilities against future needs.

Simplifying Coasting Records

Printed Form for Use in Adding Machine Increases Accuracy and Decreases Cost in Houston

ALTHOUGH all users of Rico coasting recorders get exactly the same style of printed tape trip-by-trip record, different operators use different methods in integrating these records on daily, weekly, monthly, divisional and other bases. The style of adding machine, where one is used, also affects record-keeping.

Since February, 1917, the Houston (Tex.) Electric Company has increased the accuracy and decreased the cost of the integrated records by using a Burroughs adding machine which will type figures on an 11-in. x 11-in. loose-leaf sheet. This is reproduced herewith. The sheet is exactly the same as the individual record supplied by the Railway Improvement Company, but the lines had to be respaced to take printed figures. This permits the new form to take daily summaries for only four months instead of a year, but the advantages of a printed instead of a written record far outweigh the expense of a trifling extra amount of stationery. The original printed-tape readings covering a motorman's daily work are delivered in an individual pink envelope, the face of which is shown in the accompanying illustration. The back of the envelope has simply spaces for statements of "Minutes Delayed"—"Place"—"Cause of Delay." The tapes are removed and transcribed the following morning. The averages are immediately posted at the carhouses so that the men can see the figures while the conditions of operation are fresh in their minds.



HOUSTON ELECTRIC COMPANY
COASTING RECORDER ENVELOPE

Date ....

Line ....

Name ....

Car No's. ....

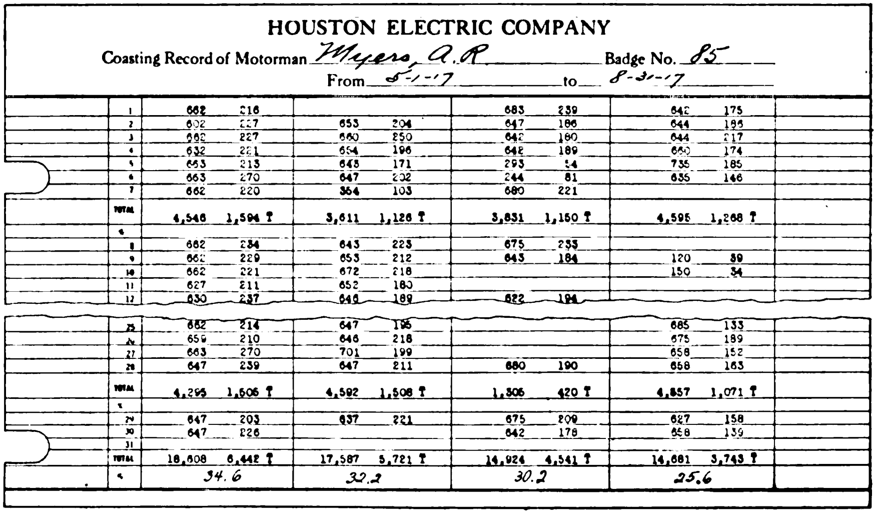
Key No. .... Run No. ....

Time On	Time Off	R. T.

Do Not Write Below This Line

Running Time	Coasting Time	Coasting per Cent

COASTING RECORD AT HOUSTON MADE DIRECTLY ON ADDING MACHINE



HOUSTON ELECTRIC COMPANY
Coasting Record of Motorman Myers, A.R Badge No. 85
From 5-1-17 to 8-31-17

1	662	216			683	239	642	175	
2	602	227	653	204	647	186	644	186	
3	662	227	660	250	642	160	644	217	
4	632	221	654	196	642	189	660	174	
5	663	213	648	171	293	54	735	185	
6	663	270	647	202	244	81	635	146	
7	662	220	364	103	680	221			
TOTAL	4,546	1,594 T	3,611	1,126 T	3,831	1,160 T	4,595	1,268 T	
%									
8	682	234	643	223	675	233			
9	662	229	653	212	643	184	120	39	
10	662	221	672	218			150	34	
11	627	211	652	180					
12	630	237	646	189	622	194			
25	662	214	647	195			685	133	
26	659	210	646	218			675	189	
27	663	270	701	199			658	152	
28	647	239	647	211	680	190	658	163	
TOTAL	4,295	1,606 T	4,592	1,508 T	1,306	420 T	4,857	1,071 T	
%									
29	647	203	637	221	675	209	627	158	
30	647	226			642	178	658	139	
31									
TOTAL	18,608	6,442 T	17,587	5,721 T	14,924	4,541 T	14,681	3,743 T	
%	34.6		32.2		30.2		25.6		

INDIVIDUAL ENVELOPE FOR DELIVERY OF ORIGINAL TRIP READINGS

Each motorman's performance for a complete week is permanently entered on the loose-leaf ledger record described. Less than two hours is required to enter the records of 150 men from 950 envelopes. When hand transcription was used, two clerks were required to work one and a half days in entering the figures and another half day in checking for errors.

The cost of maintenance of the 142 recorders is about $20 a month, or 0.46 cent a day for each recorder.

Women Operate "One-Man" Cars in Keokuk

Results Secured in This City Have Been Uniformly Satisfactory—Women Do Not Lose Their Heads in Emergencies

EVER since the government began drafting men for the army the question of securing enough men to operate the street cars in Keokuk, Iowa, has been a serious one. About Sept. 1 a number of trainmen either resigned or were discharged, and although every effort was made to obtain others not enough of a satisfactory kind could be secured. The question then arose: Why not try women? Women were being used by the Keokuk Electric Company as substation operators and for testing electric meters, and as a number of women had applied for positions as street car operators it was decided to give them a chance.

The one-man cars that the women would have to operate are of the single-truck, semi-convertible type, weighing 24,000 lb. and have recently been equipped with air brakes, air-operated doors and steps and the 100 per cent, or type A, controller handle with emergency foot valve. The rear doors of the car are kept closed and all passengers board and leave the cars from the front platform. Fares are collected in a fare box placed on the front platform in view of the operator. These cars are therefore easily and safely operated by one man, or woman.

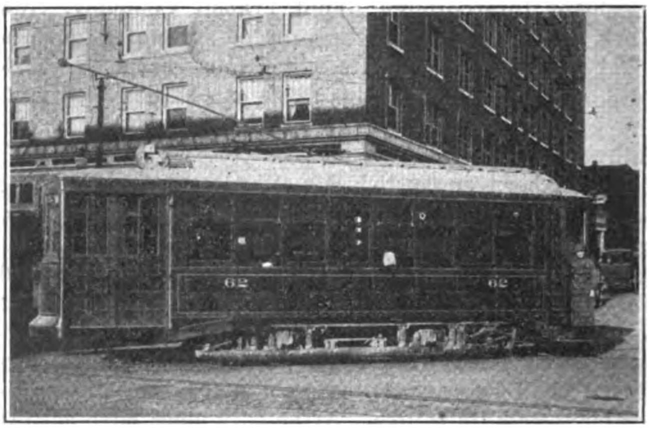
The question of using women instead of men to operate cars was first taken up with the Mayor and City Council of Keokuk, and as they realized the impossibiity of getting enough satisfactory men for this purpose they agreed to allow the company to give the women a trial. It was decided to employ only women between the ages of twenty-five and thirty-five, who were physically robust, whose reputation and character were of the best, and who had tact and judgment enough to carry them through the many difficulties that were certain to arise, especially during the first few months and until the public was accustomed to the change. The women entered as students on exactly the same conditions as men and received exactly the same instructions and training. They learned just as quickly as men, and after an average of ten days' instruction were able to take a regular run alone.

There have now been six women operating safety cars in Keokuk for several months, and during this time both the company and the public have had full opportunity to observe their work. The unanimous opinion of both the company officials and the public is that as safety-car operators the women are a great success.

The women report promptly for their work, they handle their cars more carefully than the average man, they have no trouble with passengers and, contrary to all predictions, they do not lose their heads in an emergency. They attend strictly to their job of running cars and they do not gossip and "visit" with the passengers, either male or female.

As might be expected under the circumstances, a number of amusing things have happened that are new in the electric railway world. Once a trolley rope broke and the trolley pole got off the overhead trolley wire. When the "lady operator" got off the car she realized that she must climb on top of the car to replace the trolley pole. Just then a gallant man passenger offered to replace the trolley pole and tie the broken rope, and his offer was gratefully accepted by the "motoress."

At the end of the line instead of taking a minute to smoke a cigarette or indulge in a "chew," as is more or less common practice with men, it has been reported that the "motoress" will get out the inevitable pocket mirror and powder and "powder her nose," but what woman does not, and who on earth could object if the "motoress" wants to be as attractive as any other woman?



ONE-WOMAN CAR IN KEOKUK

The women are paid the same scale of wages as the men and they take whatever run comes to them in accordance with their seniority on the list of trainmen. They have a separate rest room comfortably equipped for them at the carhouse.

The uniform the women wear consists of a khaki cap, coat and skirt cut along military lines. There are plenty of pockets in the suit to carry transfers, punch, change, trip sheets and other report forms. The accompanying illustration shows the type of car being operated by women and also gives an idea of the uniform worn by the women operators.

Under the caption "Think for Him" the Columbus Railway, Power & Light Company has issued to its employees a folder on automobile collisions. Calling attention to the increase of 46 per cent in the number of collisions between cars and automobiles on this property for the first half of 1918 as compared with the corresponding period of 1917, the text suggests that while in most cases the drivers of the machines are at fault it is necessary for the motormen to help to reduce accidents by assuming some of the drivers' responsibilities.

Zone System Proposed for Boston

Two Zones With Fare in Central Zone 5, 6 or 7 Cents Recommended by Professor Richey—Peter Witt Prefers Short Zones With Lower Fares

IN AN exhaustive report to the trustees of the Boston (Mass.) Elevated Railway, Prof. Albert S. Richey recommends the establishment of a zone system of fares and suggests three plans for furnishing revenue equivalent to that corresponding to 7, 8 and 10-cent fare units applied as flat rates over the entire system. The company is making the report public in sections in order to secure the benefit of more local discussion than would be aroused if the report were released for publication at one time. The report was completed shortly before the present 8-cent fare unit went into effect.

The three plans suggested by Prof. Richey are based upon the establishment of a central zone with boundaries radiating 3, 4 or 5 miles from Boston City Hall, all outlying lines of the company falling within a second or outer zone. The fare unit requirements of these three zonal plans may be summarized in the following table, which shows the fares necessary in the inner and outer zones in each case which must be established in order to yield a total revenue equivalent to that to be or actually derived from a flat rate as listed in the last column.

SUMMARY OF FARE ZONE SUGGESTIONS, RICHEY REPORT

Radius of Initial or Inner Zone, Miles	Fare Unit in Initial or Inner Zone, Cents	Fare Unit in Outer or Second Zone, Cents	Equivalent Flat Fare Unit in Cents
3	5	3.5	7
3	6	4	8
3	7	5	10
4	6	6	8
5	7	5	8

The present flat fare unit is 8 cents.

In his study of the Boston Elevated problem, Professor Richey based his work upon the inadequacy of the 5-cent flat fare to meet the cost of the service. He estimates from traffic studies that 51 per cent of the total annual passengers ride across the 3-mile radius; 35 per cent across the 4-mile radius and 18 per cent across the 5-mile radius. The approximate distribution of the population of the territory served by the company between concentric mile circles with the Boston City Hall as a center is shown in the following tabulation. More than one-half the total population resides within a 3-mile circle and more than 70 per cent within a 4-mile circle.

DISTRIBUTION OF RESIDENT POPULATION, BOSTON METROPOLITAN AREA, DISTANCES MEASURED FROM CITY HALL

		Per cent
Population inside 1 mile circle	115,800	10.0
Population inside 2-mile circle	333,200	28.8
Population inside 3-mile circle	607,200	52.4
Population inside 4-mile circle	832,200	71.8
Population inside 5-mile circle	1,006,000	86.8
Population inside 6-mile circle	1,101,600	95.1
Population inside 7-mile circle	1,146,200	98.9
Total population	1,158,800	100.0

COMMENTS ON TWO-ZONE PLAN

In commenting upon the above zonal plan, Professor Richey says in part: "The proposed plan is most flexible, as changes may be made in either the initial or the zone line fare, or both, either with or without a shifting of the zone boundary location, when it is necessary to increase or reduce the revenue.

"The compromise herein suggested in deference to fare collection requirements, and designated as the 'two-zone' plan, may be criticised justly as not being a zone system, but rather only a contraction of the central flat-fare area, with a second flat fare introduced outside. While this is true, except to the extent that it permits a ride through two zones at less than twice the price of a ride through one, nevertheless it is the first step toward the ideal system, and as the railway employees and the public become more familiar with the collection of varying fares, it may be followed by a three-zone or a four-zone system, each a step nearer to the ideal, which may be reached through the development of proper mechanical devices.

"From an operating standpoint, the only objections that may be raised to any zone system are those having to do with fare collection. Such objections may be based on lack of precedent, conservatism, timidity or prejudice. The collection of the old 5-cent fare had been reduced to a simplicity and safety which it will be difficult to reach with any other rate or system, except a flat 10-cent fare. The advantages largely disappear when a fractional flat fare, such as the present one of 7 cents, is adopted, your experience having shown that the expense of collection and loss of fares are very considerable as compared with the former 5-cent fare. The general method of fare collection herein proposed for the two-zone plan combines pay-enter and pay-leave collections. It is quite simple, it can be properly safeguarded, and with the proper co-operation of the company's officials and employees, it can be operated so as to cause the minimum of annoyance to the public. Some additional work and some additional intelligence may be required from conductors, but it is believed that the scale of wages now being paid will compensate for the required ability and energy.

PLAN FOR SHORT ROUTES

"It is suggested that a detailed study be made as to the feasibility of establishing several short routes of special low fare cars in the downtown section. If it be possible to route and operate such cars so as to be a real convenience to the public, they should be the means of building up a short-haul traffic which, at a low fare, would pay for the cost of the service. It is possible that street congestion would slow down such service to the point that it would be unattractive and unprofitable. However, the lines of movement of people in the central district should be carefully studied in connection with street traffic as it now exists, and as it might possibly be diverted in co-operation with the city, and such an investigation might lead to a plan for a short-route low-fare service convenient to the public and profitable to the railway.

"Other recommendations made herein in connection with the two-zone fare plan are nearly if not quite as important with a flat-fare system. It is most essential that the present crude method of collecting the 7-cent fare be changed at the earliest possible time. All cars should be equipped with registering fare boxes. Fares should be collected in the form of money (preferably a single coin) or metal tokens. Metal tokens should be sold at all prepayment stations and at other points convenient to the public, but not by conductors. Conductors should not be required to make penny change if the fare is something under 5 cents, or between 5 and 10 cents, and the passenger has not the exact change or the metal token representing it, he should be required to pay the next larger amount represented by the nickel or the dime."

EXPERIENCE IN OTHER CITIES

The report contains various interesting suggestions relative to the establishment of a zone system on a modified distance basis. Among other things it says:

"Practically, the collection of a fare consisting of a flat initial charge plus an increment for each unit of distance traveled would be surrounded by as many difficulties as that of the strictly zone system as practiced in English cities. However, when it is considered that a very great proportion of the whole number of passengers either begin or end their journey in the central portion of the city, something of the same order may be attained by the introduction of a central flat fare area, with the lines radiating therefrom on a mileage fare basis. This system has sometimes been called the Milwaukee system on account of the great publicity which was given to the 1912 fare case of the Milwaukee company before the Wisconsin Railroad Commission. However, it had been in effect on numerous city and interurban railways in the Middle states for a number of years before that time, and the long experience of these companies with it demonstrates its entire practicability where conditions are such that the proper fare collection scheme may be devised.

"It is extremely doubtful, however, if it would be possible to apply such a scheme to the territory of the Boston Elevated Railway at the present time, even though it very closely approaches the ideal in the matter of equity of charge for the service rendered. Its application to Boston would involve the establishment of a central area of, say, 2 or 3 miles in radius, centering somewhere in the vicinity of City Hall. Within this area a flat unit fare would be charged, and to passengers including a portion of their ride within this area, a charge for the portion of the ride outside of it would be at the rate of either 1 or 2 cents per unit of distance traveled, these units being perhaps one-third to one mile in length; the units of fare and distance increments being determined after a careful study of the cost of service and distribution of traffic. For passengers riding wholly outside of the central area, a minimum charge would be made, probably the same as the unit charge for the interior area.

"Such a system has been in use on the lines of the Bay State Street Railway since June 24, 1918. It has there proven inadequate as a revenue producer for several reasons. One of these is the inadequacy of the unit rates; the second is a number of economic factors practically all of which have affected every street railway company in the country during the past several months, and the third is the difficulty of fare collection, due partly to the complexities of the system and very considerably enhanced by numerous reduced rate tickets.

"A similar system was in effect on the lines of the Rhode Island Company between May 1 and Oct. 23, 1918, the conditions in Providence much more nearly approaching those in Boston than do those of the smaller Bay State cities. In Providence the unit fare was 5 cents within an area in the city of Providence of about 2½ miles air line radius, the charge outside of that area being 2 cents per mile. The revenues were inadequate, and, effective Oct. 23, a reduction was made in the area of the 5-cent central zone in the city of Providence to approximately 2 miles air line radius, and an increase was made in the length of the exterior zones from approximately 1 mile to about 1½ to 1¾ miles in length, with an increase in rates in the outside zones from 2 cents to 5 cents.

"Relative to the system put into effect on May 1, President Potter of the Rhode Island Company states as follows, in letters dated Oct. 15 and 19, 1918:

> "If it had not been for the rapid increase in operating expenses, together with a falling off in riding due to changed social conditions brought about by the war, I think our zone system would have been satisfactory. . . . had the Legislature adopted the recommendations of the Special Commission in regard to relief from franchise taxes and paving charges, we would have been much better off than we are at the present time.
>
> "So far as the present zone system has been a failure, I should say it was due—
>
> "First, to the tremendous increase in operating expenses, particularly wages, which made the zone system inadequate even if the expected benefits had been fully obtained.
>
> "The second reason why this system might have been considered inadequate in my opinion was due to the disturbed social conditions resulting from the war, which have meant a tremendous falling off in patronage on lines running to the pleasure resorts, and at the same time we have been handicapped by a shortage of labor which has rendered it impossible for us to give adequate service to some of the pleasure resorts during hot weather when people were inclined to ride to these resorts.
>
> "Third, to our inability to obtain all the money which the conductors collected, and
>
> "Fourth, a falling off of traffic due to the increased rates, although this hardly can be considered as a feature of inadequacy of the zone system, as it apparently did not exceed the estimated and anticipated falling off which would occur if a zone system was put into effect.

"It will be noted that neither in the case of the Bay State nor the Rhode Island Company, after experience with their modified zone systems, have these companies receded from their belief in the relatively small central flat-fare area (compared with the area of the flat-fare zone previously existing in these cities). The second change in Providence further reduced the central area, and while the proposed change in the Bay State cities somewhat increases it, the resulting area is still smaller in nearly every case than was covered by the flat fare which existed in those cities in 1917. The principal change in both cases has been to increase the lengths of the outer zones and also the units of fare collected in each of the outer zones. In both cases, the rate per mile, while increased somewhat, is not substantially greater than under the mileage collection system, but both of these companies have experienced great difficulty in collecting fares based on zones as short as one mile in length in thickly settled territory. Neither in Providence nor in the Bay State cities is the territory nearly so thickly settled, nor is the traffic nearly so dense as it is in the territory served by the Boston Elevated Railway outside of what reasonably might be considered the central flat-fare area. Based on the experience of these companies, it is not considered advisable to recommend such a system as this for use in Boston, at least at present.

COMMENTS BY MR. WITT

Some comments on the report were made by Peter Witt of Cleveland at a meeting of the New England Street Railway Club on Dec. 19. Mr. Witt said that electric railway transportation should be conducted as a merchandising business. If a good service is given and satisfactory fares charged, people will ride. With poor cars and poor service, only those who have to ride will do so. He considered a unit fare an injustice and a failure and the zone system the only proper one but he thought that two zones, with a 6-cent fare for the inner zone and 4 cents for the outer zone would never work acceptably. His idea was many zones at a low rate, say one cent, per zone. He referred to the 1-cent line put in operation in the center of Cleveland which was profitable. Mr. Witt also advocated the use of fare boxes and public ownership of electric railways.

Increase in Steam Turbine Efficiency

ENGINEERS of the Westinghouse Electric & Manufacturing Company have plotted in the form shown in the accompanying graphs the speeds and efficiencies of 25-cycle and 60-cycle turbines for a period of nearly twenty years. The charts show how speeds have been changed with the progress of time, each change of speed having been more productive of improved results than improvements in what are essentially turbine principles. The comparisons have been made on the basis of efficiency ratio rather than steam consumption because to make a comparison with the latter the results would have to be reduced to a common operating condition, which would not be fair to the older machines. Modern condensers, of course, contribute to favorable operating conditions and the progress of the condenser must be considered in connection with that of the turbine because the latter has furnished the stimulus for the development of the former.

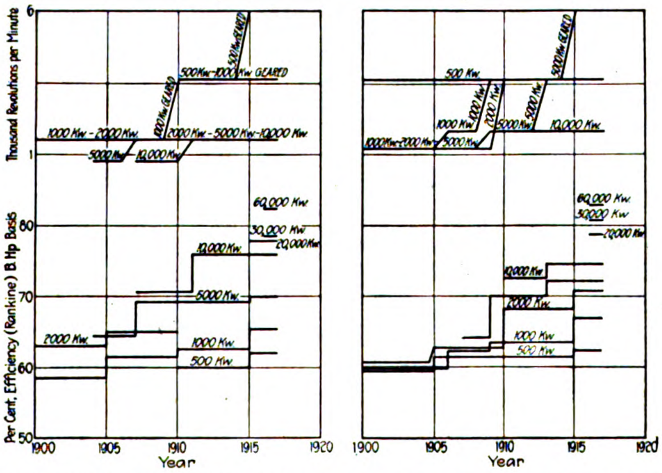
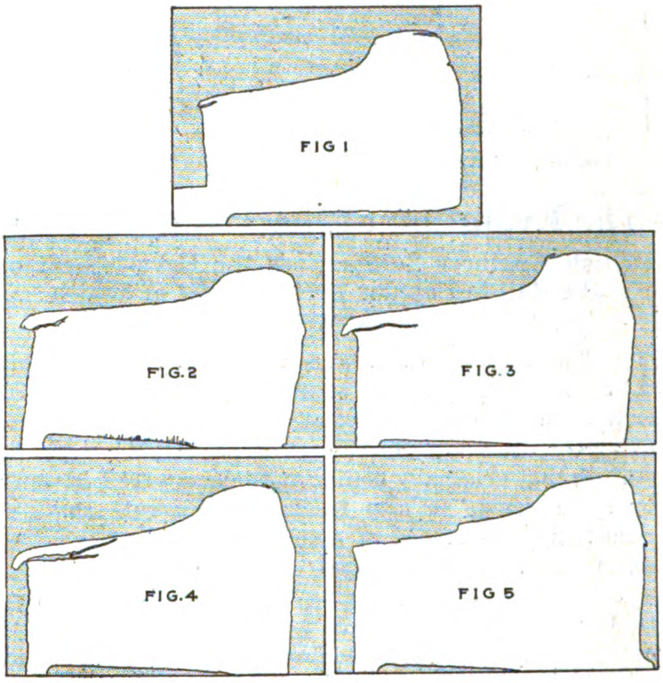


DIAGRAM SHOWING INCREASE IN TURBINE SPEED AND IN EFFICIENCY RATIO

The efficiency ratio used as a basis of comparison for turbine performance is the ratio of the energy produced to that which would have been produced in a perfect turbine during adiabatic expansion of the steam within the range of temperature used.

Wear of Electric Car Wheel Rims

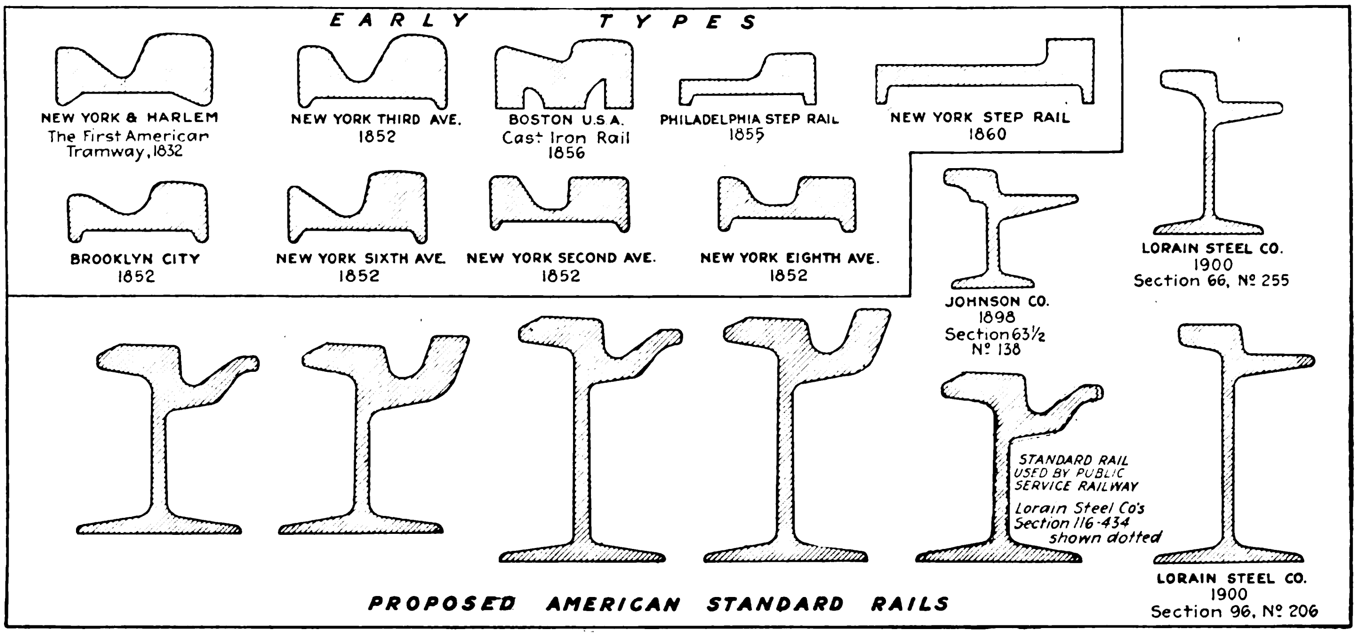
IN A RECENT issue of the *Engineer*, London, Arthur Norton discusses the defects found in car wheel rims and the conditions that lead to shelling of the tread. His investigations indicate that the formation of burrs in most cases is due to the rails becoming worn to a different angle than that of the wheel, so that with a new tire the load must be borne either on the flanges or on the outer edge of the tread instead of being distributed over the entire width as was intended.



DEVELOPMENT OF A BURR ON THE RIM OF A CAR WHEEL

In examining some tires discarded by the Sheffield Tramways it was found possible to follow the development of the burr from its early stages outward. This development is shown in the accompaning illustrations. In Fig. 1 a small burr is seen at the edge and a very obvious crack has started. In Fig. 2 the burr is greater and the crack longer. In Fig. 3 the deformation and the crack are seen to have increased still farther. In Fig. 4 the crack has progressed so far that it threatens to break through the tread of the tire. In Fig. 5 the splintered surface of the tire from which the burred surface has cracked off is seen.

Mr. Norton concludes from his investigation of the large number of such cases that while tires do shell on the tread occasionally due to the steel used being defective, in quite 90 per cent of the cases the shelling arises from burrs on the outer edge of the tire which are caused by running on rails which do not permit the load to be evenly distributed over the tread of the tire.


EARLY TYPES
NEW YORK & HARLEM
The First American Tramway, 1832
NEW YORK THIRD AVE.
1852
BOSTON U.S.A.
Cast Iron Rail
1856
PHILADELPHIA STEP RAIL
1855
NEW YORK STEP RAIL
1860
BROOKLYN CITY
1852
NEW YORK SIXTH AVE.
1852
NEW YORK SECOND AVE.
1852
NEW YORK EIGHTH AVE.
1852
JOHNSON CO.
1898
Section 63½
Nº 138
LORAIN STEEL CO.
1900
Section 66, Nº 255
STANDARD RAIL USED BY PUBLIC SERVICE RAILWAY
Lorain Steel Co's Section 116-434 shown dotted
LORAIN STEEL CO.
1900
Section 96, Nº 206
PROPOSED AMERICAN STANDARD RAILS

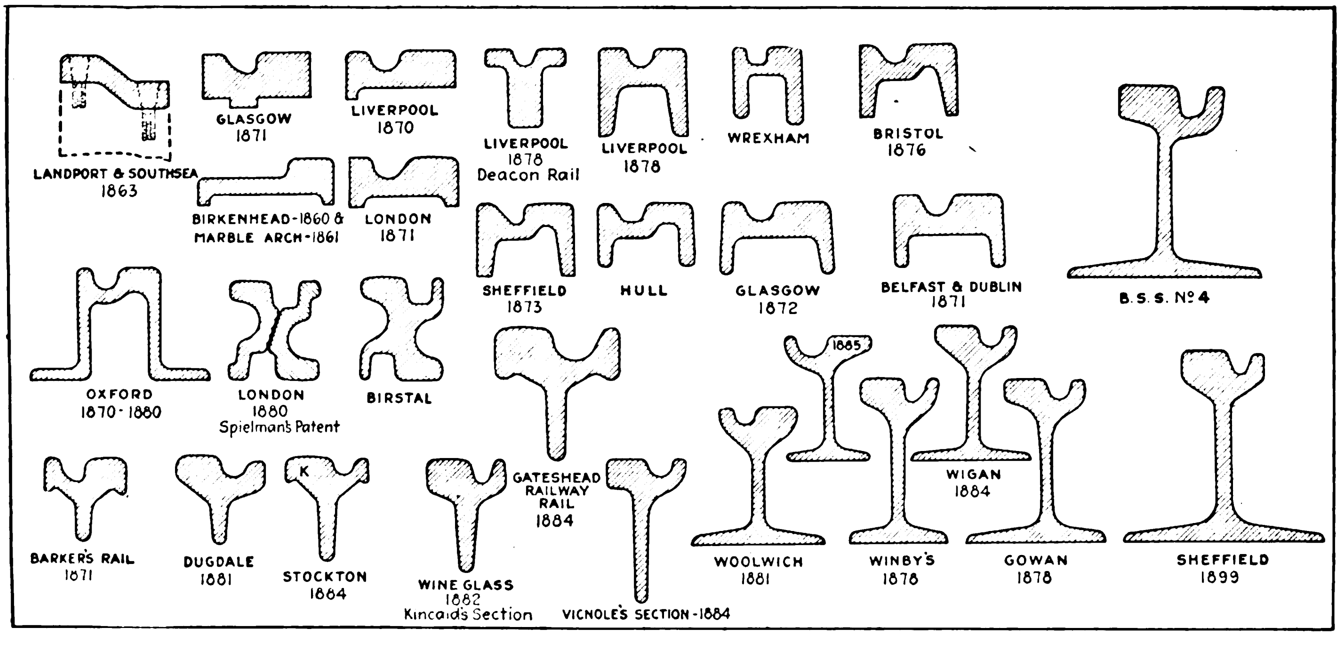
GROUP OF RAIL SECTIONS, SHOWING THE PROGRESS OF ELECTRIC RAILWAY RAILS IN THE UNITED STATES

The Evolution of the Tramway Rail

British Engineer Summarizes the Development of the Rail in Popular Lecture, Part of Which Is Abstracted

FRED BLAND of Edgar Allen & Company, Ltd., Sheffield, England, recently prepared a popular lecture on the development of the electric railway rail, using the drawings reproduced herewith. He began by stating that originally planks or timbers were laid down by some genius to help traffic through ruts and bad roads, the first record of a timber rail tramway being dated 1576. This consisted of a straight track from a colliery to a neighboring river. Later an extra timber was added to this to take the wear and to provide for renewal. Still later wrought-iron bars were laid on the incline, gradually being improved in form and eventually developing into a railway or tramway built of flange rails and edge rails of cast iron and wrought iron.

According to Mr. Bland the first American tramway was opened in 1832 from New York to Harlem, but it was not popular. Twenty years later the tramway idea was revived by M. Lubat, a French engineer. He rolled the first grooved rail, which went by the name of the "gutter rail." The diagrams contain sections of the original rails used in New York and later in Boston. The step rail used in Philadelphia was followed by a rail 8 in. wide used in New York in 1886. The step rail has always been a favorite with American engineers and three sections up to 9 in. high are shown. The sections also include four new ones proposed by the American Electric Railway Engineering Association, but at the present time there is considerable discus-


LANDPORT & SOUTHSEA
1863
GLASGOW
1871
LIVERPOOL
1870
LIVERPOOL
1878
Deacon Rail
LIVERPOOL
1878
WREXHAM
BRISTOL
1876
BIRKENHEAD-1860 & MARBLE ARCH-1861
LONDON
1871
SHEFFIELD
1873
HULL
GLASGOW
1872
BELFAST & DUBLIN
1871
B.S.S. Nº 4
OXFORD
1870-1880
LONDON
1880
Spielman's Patent
BIRSTAL
1885
WIGAN
1884
BARKER'S RAIL
1871
DUGDALE
1881
K
STOCKTON
1884
WINE GLASS
1882
Kincaid's Section
GATESHEAD RAILWAY RAIL
1884
VICNOLE'S SECTION-1884
WOOLWICH
1881
WINBY'S
1878
GOWAN
1878
SHEFFIELD
1899

THE DEVELOPMENT OF THE TRAMWAY RAIL IN GREAT BRITAIN AS SHOWN BY SECTIONS ARRANGED IN HISTORICAL ORDER sion in the ELECTRIC RAILWAY JOURNAL upon the merits and demerits of the step rail, as against the Trilby rail already standardized.

In the group of sections of English rails there are shown the step rail originally used at Birkenhead in 1860 and a tram rail laid in the Marble Arch in London in 1861. Later than this no step rails were used in England. In 1863 a new form of rail, as shown, was used at Landport and Southsea, which after many years of service was replaced with the grooved rail.

Mr. Bland said that in 1870 Liverpool adopted the grooved rail, and Glasgow and London followed in 1871. The popular form of rail next in order was the box section, used in Liverpool, Sheffield, Hull, Glasgow and elsewhere. Some reversible rails were also tried in London and in Yorkshire but they were not satisfactory. Then began the use of the girder rail first in the form having a center web, fitting or being bolted into cast-iron or wrought-iron chairs. The webs of these rails were gradually made higher until a complete girder rail with a flat bottom was tried. After going through many alterations this type of rail became the standard British rail.

Characteristics of the Two Types of Welding Arcs

The Writer Concludes That the Direct-Current Arc Is Preferable to the Alternating-Current Arc and Gives Reasons for This Conclusion

BY J. F. LINCOLN
Vice-President Lincoln Electric Company, Cleveland, Ohio

THERE are two kinds of arc welding equipments, one using alternating current in the arc, the other using direct current. The characteristics of the several types of direct-current welders are so well known because of their years of use that there is no need to explain them except in a very general way. The direct-current apparatus is of two general classes, that which gets its regulating properties from resistance and that which has the regulating properties inherent in the generator. Both are successful when properly designed and both are in use in large numbers. The machine which eliminates resistance is somewhat simpler so far as control is concerned and uses considerably less power. It has the feature, however, that it is impossible to get more than one arc off each machine and where a number of operators are required the first cost of the apparatus is larger than with the resistance type. The suitability of one or the other for a given line of work depends entirely upon conditions and for that reason both are in very general use.

The alternating-current arc welder, however, is of more recent development in its practical application to welding, and the characteristics of this equipment are less well known. The comparative newness of this equipment in the field renders timely an examination of its characteristics as it is valuable in some ways but at the same time it has a number of defects. A consideration of the facts in the case as applied to each job will generally decide for the buyer which type should be used. The claims made for the alternating-current machine are the following: It has (1) no moving parts and (2) no commutator with its consequent trouble. It is (3) possibly portable by hand. It has (4) high efficiency, and (5) it is of low first cost.

The first two claims are borne out by experience but it is necessary, in order to reduce the size of the welder, to use in conjunction with it a fan for cooling so that part of the claim of no moving parts and no commutator may be modified.

A machine suitable for delivering 150 amp. for welding weighs approximately 400 lb.; thus it is seen that it is possible for two men to lift this around to some extent at least, although if it is to be widely portable, as is necessary in most places where portability is required, a truck must be used either for this type of welder or for any of the previous types of direct-current apparatus.

Since there is no loss in resistance and since the transformation is accomplished in a transformer, the efficiency is very high compared to any direct-current apparatus. It is necessary, however, to have very large magnetic leakage in the transformer, which results in an efficiency of the entire machine much less than that of a transformer of standard type for constant voltage.

The cost also is low, as the 150-amp. size costs to manufacture, even in these times, probably less than $150. It is, however, sold at a price very much higher than this, I understand, at the present time.

The comparative operating characteristics of the alternating-current welder which are cited in its favor are: (1) The arc which it is necessary to hold in order to operate the machine is shorter and the chance of burning of the weld is less; (2) if a weld is made at all by this apparatus it cannot but be made well.

In practice the writer has found that with a covered electrode arcs greater than ½ in. in length can be established, but with the bare electrode a short arc only can be maintained. The chances of getting a bad weld with this type of welder I have found to be greater than with any other standard type of welding apparatus.

The difficulties as seen by the users of these machines are the following: (1) The heat is equal at both electrodes. (2) The alternating-current welder cannot be used for carbon-electrode work. (3) The power factor is approximately 10 per cent. (4) Great skill is necessary to hold the arc at all with bare electrode and consequently the speed of operation is very low. (5) The weld is inclined to be poor in actual operation because of the frequent breaking of the arc. (6) The electrode tends to sputter much more than with the direct-current welder, hence more electrode is used. (7) The cost of doing the work, all things being considered, is from 25 per cent to 200 per cent greater with the alternating-current than with the direct-current apparatus.

In discussing these points, the first one, of course, is self-evident. The heat at each electrode must be the same. With the direct-current welder the heat at the point where the most heat is required can be obtained by making the electrode positive. This is very essential where heavy plate is being welded. In the second place the alternating-current arc is not suitable for carbon-electrode work because when the electrode is positive carbon is carried across the work, thus greatly changing its characteristics. Third, a power factor of approximately 10 per cent is necessary in order to maintain the arc at all, and a power factor of 5 per cent gives considerably better operation. This means that for an outfit which would normally deliver 3 kw. to the arc transformer connection, power-house capacity and line capacity must be 30 kw. This results in great cost of generating equipment which will be discussed further.

As to the fourth point the speed of operation is lower because it is more difficult to hold the arc and it is practically impossible under normal operating conditions for any man to hold the alternating-current arc continuously during a ten-hour day. Fifth, any arc weld is good or bad, dependent upon the amount of oxide included in the metal. Each time the arc is broken there is very apt to be a little pocket of oxide formed, consequently, there is a possibility that each time the alternating-current arc breaks a defect will be made in the weld. Because of the difficulty of holding the arc the weld is less reliable.

Sixth, the sputtering of the electrode is something that cannot be explained positively. It probably comes from very wide variation in heat being liberated at the arc during different parts of the cycle. The fact still remains that the arc sputters much more with alternating-current than with direct-current apparatus.

Seventh, considering now the cost of operation, there are three items which enter into this: (1) Cost of equipment. (2) Cost of generating line and transformer equipment for supplying the power. (3) Cost of labor in doing the welding. All three of these can be determined with fair accuracy. The first cost of a 150-amp. size alternating-current equipment is $150 and of a direct-current equipment $1,000. The relative cost of generating equipment and line equipment for alternating current is $5,100, and for direct current, $680. Labor costs are from 25 per cent to 50 per cent higher for alternating current than for direct current.

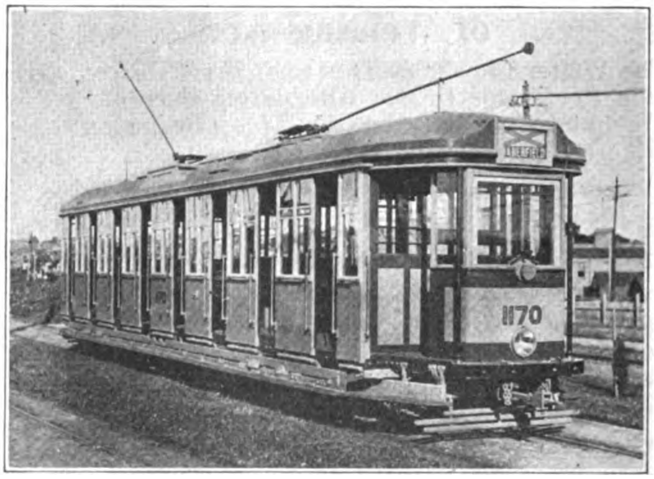
The first item is self-evident. In explanation of the second item, it may be said that the cost per kilovolt-ampere of service is $170. This includes boiler capacity, turbine capacity, generator capacity, primary transformer capacity, line capacity and step-down transformer capacity. It will, therefore, be seen that the equipment to produce a direct current of 150 amp. at 20 volts, with the consequent losses in the machine, will run approximately $680, while the alternating-current equipment to produce 30 kva. at the same price is $5,100. Comparative labor costs have been secured in one of the large shipbuilding plants. The best operator on alternating-current apparatus could do about two-thirds as much work as the best operator on direct current. With an operator of less skill the direct current could be operated fairly satisfactorily, but the alternating-current outfit could not be operated at all.

It, therefore, appears to the writer that the alternating-current welding apparatus as put on the market at the present time will have no very great application except where the first cost of the apparatus is the deciding factor. The added handicap of getting this on the lines of the power company without the knowledge of the power company also will militate against its use.

There are no doubt improvements which will be made over the present type of alternating-current welding apparatus both as regards operating characteristics and cost, and these will improve both. For instance, one of these is to use a reactance with a variable magnetic circuit instead of a transformer. This will both improve the characteristics and reduce the cost, but still does not make it successful equipment in comparison with direct-current welders. In the majority of jobs which should be arc welded, the application of alternating-current welders to them would eliminate any saving which would be possible by electric welding.

New Type of Car for the New South Wales Tramways

A NEW type of tram car has recently been put into service by the New South Wales Government Tramways on the Sydney city lines. This car was built at the tramway workshops at Randwick and embodies a number of new features. Three similar cars are under construction. The general dimensions of this new car are similar to those of the existing eighty-seat "Class O" car (illustrated on page 4 of the ELECTRIC RAILWAY JOURNAL of July 6, 1918.) Their general appearance is shown in the accompanying illustration.* Frameless glass windows have been substituted for the wooden panels in the four central compartments, and narrow blinds have been substituted for the glazed wooden doors. This same construction is followed in the end compartments so that the appearance of the car is unifor from end to end. The wide weather blinds previously used and which in some cases were very troublesome have been dispensed with. The windows throughout the car are balanced on the "raizograph" or "lazy-tong" principle requiring a minimum effort on the part of the passenger in manipulating them.



GENERAL ARRANGEMENT OF NEW CARS FOR NEW SOUTH WALES GOVERNMENT TRAMWAYS

The end destination boxes instead of being placed on the platform aprons are fitted into the roof where they can be more easily seen by the public and the signalmen. The side destination boxes are also built into the roof and at night are illuminated. All the destination boxes are operated from the inside of the car which is far more convenient for the staff than the old system of outside operation. Grab straps, thirty-two in number, inside the car have been replaced by eight wood

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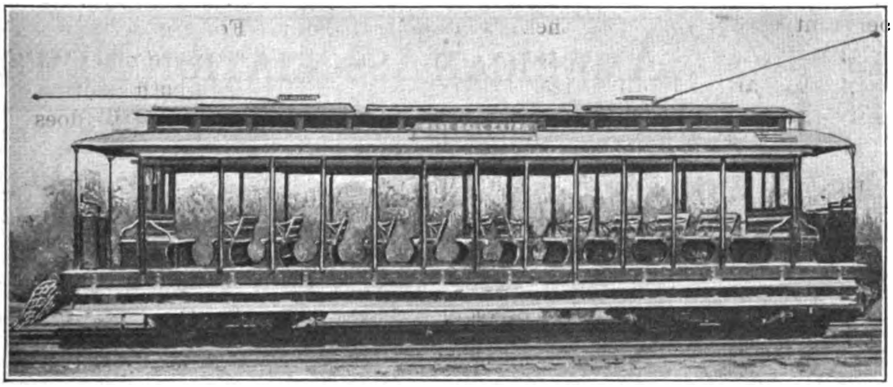
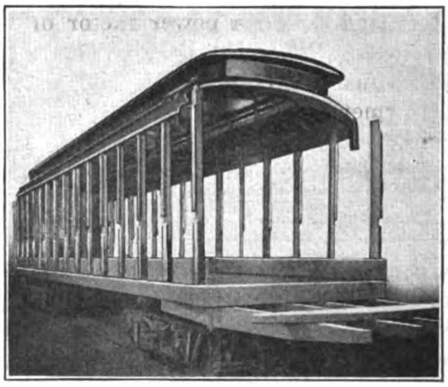
*Reproduced with the permission of the New South Wales Government Tramways, per C. F. Dewey.





AT LEFT, ORIGINAL FIFTEEN-BENCH OPEN CAR. AT RIGHT, FRAMING OF CAR UNDER CONSTRUCTION IN SHOP

rails, one to each compartment, running horizontally across the car. This improves the interior appearance and at the same time affords more comfort to standing passengers. The car is designed to give a maximum seating accommodation and also affords rapid entrance and exit facilities.

The underframe is similar to that of the existing "Class O" car except for one or two minor alterations, including those made to the lifeguard fender. The bogie truckframes were built by the electric welding process, bolts and rivets being dispensed with wherever possible. These are believed to be the first electrically welded trucks made in Australia.

Due to the war just closed and to the consequent need for economy these cars are painted gray with dark green and white facings, with the numeral in gold. The arrangement of these colors is pleasing to the eye and their use effects a considerable saving in paint expense.

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The advisory council of the Ministry of Reconstruction of Great Britain has issued a report upon standardization of railway equipment in which it is recommended that the standardization of wheels, axles, wheel centers, tires, running gear, door gear, bumping gear, trucks, brakes, and underframes be dealt with immediately. This work should be undertaken by the engineering standards committee, on which all interested, including private builders and makers of materials should be represented, and that when such essential parts have been standardized the adoption of the standards should be gradually enforced.

Fifteen-Bench Open Cars Changed to Closed Type

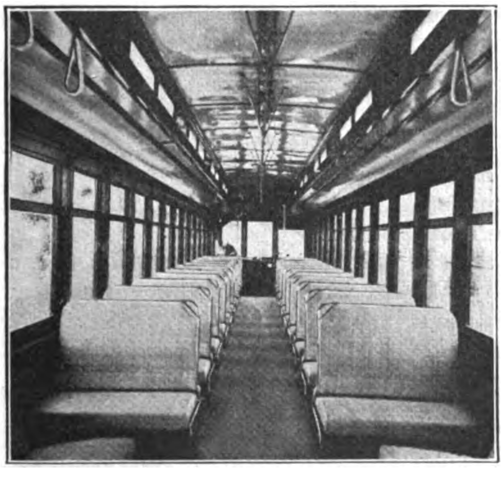
One Solution of the Problem of Making the Open Car Into a More Serviceable Piece of Rolling Stock

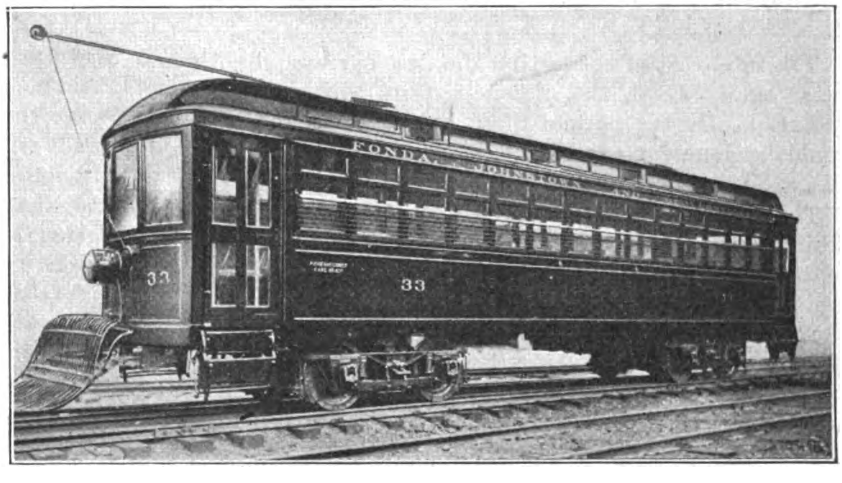
By JUDSON ZIMMER

Master Mechanic Fonda, Johnstown & Gloversville, Railroad, Gloversville, N. Y.

IN THE SHOPS of this company at Gloversville we are rebuilding a number of fifteen-bench open cars for use in city service as prepayment cars and in interurban tripper service for rush hours. In rebuilding, the main underframe was left intact, the cross-seats were disdismantled and the posts were replaced with new ash posts made straight with the necessary grooves to take the sash and curtains. The sills were furred out even with the straightened posts and a truss-plank was bolted on the inside of the posts and strapped through the sills. The platform sills were reinforced with steel, and the whole frame was thoroughly bolted and strapped to the body end-sills. The car was sided with hard pine ceiling covered with ¼-in. steel thoroughly bolted to the sills and fastened to the post with round-head steel screws. Brill angle-iron bumpers were used at the ends of the platform sills, and the inside and outside of the vestibule was lined with sheet steel. New flooring was laid in the car where necessary, and all steps and door openings were protected with safety treads.

All four corners were provided with double folding steps working in connection with the doors from the conductor's control stand. The steps were provided with





AT LEFT, GENERAL INTERIOR VIEW OF REMODELED CAR. AT RIGHT, REMODELED CAR AS COMPLETED

DETAILS OF COST FOR CONVERTING FIFTEEN-BENCH OPEN CAR INTO CLOSED-TYPE CAR

Carpenter labor	$757.69	
Blacksmith labor	85.10	
Painter labor	232.31	
Electrician labor	73.87	
Machinist labor	71.45	
Total labor		$1,220.42
Material		2,592.65
Total cost		$3,813.17

a counterbalance to facilitate easy working. The door mechanism was so designed that the doors can be locked in either the open or the closed position by the conductor from the control stand. Behind the motorman is a curtain 36 in. wide.

The car is equipped with G.E.-203-A motors, with gear ratio of 17:67, Taylor swing-motion trucks, Providence fenders, Peter Smith hot-water heaters, Consolidated buzzers, Westinghouse air brakes, Automatic ventilators, Pantasote curtains with Rex-all metal rollers, "Walkover" reversible cane seats, Crouse-Hinds headlights, Earll retrievers and Rico sanitary hand straps.

The trucks were rebuilt, using larger journal boxes to take M.C.B. 3¾-in. x 7-in. motor axles, rolled steel wheels, and new equalizer bars and ends. The car was rewired throughout and the motor control circuits were placed in Duraduct conduit. A single row of lamps was wired along the center of the car, with vestibule lamps to be used in accordance with direction of motion of the car. The car was also equipped with illuminated destination signs located at opposite right-hand corners. Briil vertical brake wheels and staffs were applied in connection with a Peacock brake gear providing a quick-acting hand-brake for emergency.

The exterior of the car was painted a standard Pullman color and striped with gold leaf. The interior was finished in cherry, stained and varnished, and the headlining in ivory, plain, with no borders or designs. The panels below the window sills were finished a light tan and those in the vestibules were painted in imitation cherry and varnished. Hand rails were painted with enamel corresponding in color to the headlining.

The general dimensions of the car are as follows:

Length over all	46 ft.	0 in.
Length over corner posts	36 ft.	0 in.
Length inside	36 ft.	0 in.
Width outside	7 ft.	11 in.
Width inside	7 ft.	2 in.
Width of aisle	20 in.	
Seating capacity	52	
Distance center to center of trucks	24 ft.	4 in.
Diameter of wheels	33 in.	
Weight	45,200 lb.	

The total cost of converting the first car was slightly more than $3,800, the major part of which was for material. During normal times it is believed the work could be done for considerably less than $3,000.

The activities of the Department of City Transit of Philadelphia, Pa., during 1917 were directed into three main channels: (1) Designing of the city's system; (2) work upon construction, and (3) lease negotiations with the Philadelphia Rapid Transit Company and support of necessary enabling legislation in connection therewith. According to the annual report of the department just issued, substantial progress was made in each branch of work, but the year's achievements were not so gratifying as had been expected, on account of the war and many local causes.

AMERICAN ASSOCIATION NEWS

The Foreman and His Men

THE Manila joint company section held its forty-fifth monthly meeting on Oct. 1 when A. Fainerman, general foreman power plant department, read a paper on "The Relation of the Foreman to the Men Under His Charge."

The keynote of Mr. Fainerman's paper was loyalty, with special reference to the duty of the foreman to inspire confidence, respect and affection in his men. The executive officer or foreman, said he, who knows human nature and takes a sympathetic interest in the welfare of his fellow employees will most likely get their confidence and faithful service. Some practical points which the speaker made were as follows: The foreman should be careful to give orders in clear language, and orders involving two or more operations should be given separately. One of the best ways in which a foreman can help his men and at the same time benefit the organization is by exercising care to see that men are assigned to work for which they are best fitted.

Lively Christmas Meeting at Chicago

HOME talent furnished a very entertaining program for the Dec. 17 meeting of the Elevated Railroads company section, which was attended by 140 members and guests. Recitations, solo dances, etc., kept the audience going for two hours. The following resolution as tribute to the 656 men from the company who were in the army and navy service was passed:

"Whereas, the German Imperial Government, without justification, declared war on the Republic of France, and in so doing wantonly destroyed life and property, not only in France but in other European countries, to such an extent that the government of the United States deemed it right and just to assist France and her allies in freeing themselves of the oppression of one German Kaiser who was endeavoring to dominate and rule the world; and

"Whereas, the American people, with their love for right arose in a body and lent their assistance, some by giving their lives and others by giving time and money, thereby aiding in dethroning the brute of all brutes; and

"Whereas, we, the members of Chicago Section No. 6 of the A. E. R. A., fully appreciate the sacrifices made by the 656 employees of the Chicago Elevated Railroads who entered the service of the government to fight the Hun and make the world safe for democracy, and were instrumental in bringing the war to a speedy conclusion; therefore, be it

"Resolved, that this body in meeting assembled extend to our fellow employees who are in the government service our heartiest appreciation and thanks for a work well done, and extend to them our best wishes for a Merry Christmas and a Happy New Year; and be it further

"Resolved, that a copy of these resolutions be incorporated in the minutes of this meeting, and that a copy also be published in the *Safety Bulletin.*"

News of the Electric Railways

FINANCIAL AND CORPORATE • TRAFFIC AND TRANSPORTATION
PERSONAL MENTION

Engineers Object

Barclay Parsons & Klapp Oppose Cleveland's Union Passenger Station as Planned

In a preliminary report to the Rapid Transit Commission of Cleveland, Ohio, on Dec. 16 Barclay Parsons & Klapp, engineers and traffic experts, object to the proposed union passenger station ordinance in its present form, and declare that, if put to a vote, it should be defeated. The firm has been making an investigation to ascertain what bearing, if any, the depot ordinance would have on the development of a municipal rapid transit system, such as is contemplated by the commission. Four of the principal objections are summarized as follows:

COMPLETE SYSTEM PROPOSED

1. It allows and sanctions a complete competitive rapid transit system, perpetual, privately owned and outside city control.
2. The system of tracks proposed does not meet the city's needs as to delivery of passengers at a convenient number of points over a wide enough area in the central business district.
3. It will make the development of a properly co-ordinated city system, street, rapid transit, suburban and interurban costly and of doubtful self-supporting character.
4. It gives to a private corporation city streets without in return receiving a corresponding return in kind, which the city will some day require.

O. P. Van Sweringen, president of the Cleveland Union Terminals Company, said the union station ordinance was submitted not to gain rapid transit rights within the city, but to obtain authority to build a station and provide entrances for the steam railways and interurban roads. The provisions regarding electric rapid transit were written into the ordinance at the request of the city, he said, and the company was willing that they should be taken out.

RAPID TRANSIT LINES INDEPENDENT

His company, he insisted, does not intend to build a rapid transit system that will compete with any system developed or owned by the city, and the public should understand that a station with steam and interurbans entering it is entirely independent of the rapid transit within the city.

H. M. Brinckerhoff, of the engineering firm, explained that plans will be submitted later for rapid transit developments for needs of a city of 2,000,000 population to be carried out as traffic needs arise. He declared that the proposed ordinance does not provide for the compensation of the city for vacation of streets and he objected to the plans of the terminal company for handling the traffic at the approaches of the proposed Huron high-level bridge.

MR. SANDERS SPEAKS FOR CITY

Fielder Sanders, Street Railway Commissioner, stated that, while the terminal project is one primarily for railroads and interurbans, certain rapid transit rights are to be reserved to the company. Rights that will retard the development of a paying subway system in the city must not be given away.

Charles A. Otis, chairman of the Rapid Transit Commission, said that it would probably be impossible to secure an ideal condition, but he urged that steps be taken to adjust the differences. It was decided that amendments to the ordinance, embodying the suggestions of the engineers, will be presented to Mr. Van Sweringen for consideration.

Drafting New Chicago Ordinance

A new ordinance draft is now being prepared by Walter L. Fisher, special counsel for the city, for settlement of Chicago's traction difficulties. Mr. Fisher was instructed by the sub-committee of the City Council on Dec. 18 to go ahead with framing a tentative form of franchise to be used as the basis of discussion with the companies. This involves the principle of a lease of the surface and elevated lines to the city, with a guaranteed rate of return and control by trustees of whom the railway companies would name only one-third.

The subway issue has been revived by the president of the board of local improvements, who proposes a system of lower-level streets. He suggests that the cost is to be defrayed by use of the city's traction fund—now nearly $25,000,000—and by assessment of property owners within a certain district. Aldermen who have been most active in trying to settle the transportation problem do not take the proposition seriously, and they call it an attempt to divert the traction fund and to throw the whole question into politics.

The commissioner of public service also took a hand in the traction situation by reviving a plan for having cars looped back outside of the business district and requiring people to walk from the turn-back point. No action was taken on this plan.

Men Ahead of Rental

Board Says Owners of Underlying Companies Should Recognize That Wages Due Affect Investment

The Rhode Island Company, Providence, R. I., planned to place in the pay envelopes of its 2700 employees on Dec. 24 their proportionate share of $72,066, representing one-third of the back wages due the employees from July 19 to Oct. 12, according to a decree issued by the War Labor Board.

In July the employees appealed to the War Labor Board for an increase in wages. In October, the board granted the men a substantial increase to begin Oct. 12 and ordered the company to pay by Dec. 1 the accumulated increase from July 19 to Oct. 12.

On Nov. 27 the company notified the union that owing to its financial condition, it would be unable to pay the back wages as ordered by the War Labor Board. The union then laid the matter before the War Labor Board. The latter notified the company that owing to the difficulty of financing at the present time, it would amend its decision by permitting the company to pay 50 per cent of the amount at once and the remainder by Feb. 1.

The company officials on the other hand suggested the payment of 25 per cent at once and the remaining three installments at monthly intervals. This proposition was rejected by the employees, who insisted on carrying out the board's amended decree.

The Rhode Island Company appealed for a rehearing. This was held in New York on Dec. 16. The federal trustees of the company pleaded that it be allowed to make the quarterly payments as proposed. Chairman Taft proposed payments by thirds, but both the railway and union officers rejected the plan.

At the conclusion of the hearing in Providence, the chairmen ordered the company to pay its employees 33⅓ per cent of the total amount on or before Dec. 24, the remaining two installments to be paid Feb. 1 and March 1, or to pay 50 per cent at once, 25 per cent on Feb. 15 and 25 per cent on March 15. The company notified the board and the union of its decision to accept the former proposition.

Mr. Taft said: "If the facts stated here regarding the value of the Rhode Island Company property are true, the owners of the company will be slow to let it go back to the underlying owners. In their turn, the underlying owners ought to regard the wages due the men as affecting the value of their investments. Without men and without service, their investments would not have the value they have now."

Purchase Discussions

Seattle Railway Purchase Ordinance Redrawn After Conferences of City and Railway Officials

At a recent informal discussion by the City Council of Seattle, Wash., of the proposed $15,000,000 railway purchase from the Puget Sound Traction, Light & Power Company, City Councilman R. H. Thomson suggested that if the present negotiations fall through, the city might obtain the property by condemnation.

Wants Lien on Earnings

The discussion followed the renewal by Attorney J. B. Howe, representing the company, of the proposition to so word the purchase bonds that they would be a lien on the gross revenues of the municipal railway system, thus pledging the city to pay the principal and interest whether or not the revenues from operation were sufficient. This proposition has been rejected by the City Council.

Mr. Howe and A. W. Leonard, president of the company, said they are only asking for a guarantee that they will get value received for what they will deliver to the city. Mr. Leonard states that the company proposes turning over to the city property worth at least $18,000,000, and that the company should have a guarantee that the city would pay the principal and interest no matter what the future might be.

The conference of city officials and officers of the company has terminated in a deadlock over the meeting of the term "gross revenues." Considerable argument has also developed over the bond ordinance. As amended, the ordinance provides that the "city of Seattle irrevocably binds itself to establish and maintain rates for transportation" sufficient to meet the bonds and interest until payment is made in full. Attorney Howe also asked that the city bind itself to operate the railway until the bonds were paid in full. Councilman Lane asserted that this raised the old question of operating the system whether or not the income was sufficient and making up the deficit by taxation. The traction company officials state that the ordinance as prepared by them was for the purpose of making the Supreme Court rule on the question of whether or not utility bonds would be a first lien on the earnings.

Will Redraw Measure

After further conferences the Council directed Corporation Counsel Walter F. Meier to rewrite the ordinance and contracts as amended by the committee and prepare them for introduction in the Council.

Amendments made by the committee during the three days' conference provide that $100,000 in utility bonds on the present municipal street railway, and $500,000 to be issued to complete and equip the elevated line shall be a lien on the revenues of the system superior to the $15,000,000 in bonds which will be issued in favor of the traction company; and that when a more feasible route is provided the Tacoma interurban trains will be required to operate over that route instead of on First Avenue and that the Puget Sound Traction, Light & Power Company be required to furnish the city with power to operate the street railway system eight years or longer, if the city desires to purchase current.

Mr. Meier has since transmitted the redrafted ordinances to the Council, recommending that before the ordinances are passed the inventory of the property involved be carefully checked, and the property description in the ordinances be made to conform.

B. R. T. Takes Canvass

Company Asks Patrons to Express Views on Action of Mayor in Indicting Officials

Shortly after the indictment of officials of the Brooklyn (N. Y.) Rapid Transit Company by the Grand Jury of Kings County in connection with the wreck of Nov. 1 the company began to ask its patrons whether they approved Mayor Hylan's holding certain officials for the wreck. The canvass was started on Dec. 23. It was conducted by trainmen and other employees who distributed among patrons of the company a card as follows:

Name ....

Address ....

Mayor Hylan as committing magistrate has held certain employees and officials of the undersigned companies in proceedings seeking to fix criminal responsibility upon them for the wreck which occurred November 1st in the Malbone Street tunnel.

Q. Do you approve of his action? A.....
Remarks (Here a space of 2 in. was left.)

We invite the freest expression of your views. Please fill out and hand to any conductor.

NEW YORK CONSOLIDATED RAILROAD COMPANY
BROOKLYN RAPID TRANSIT COMPANY

Mayor Hylan has criticised the canvass as an effort to secure a change of venue in connection with the trial of the officials. The assistant district attorney of Kings County is quoted as regarding the matter as an attempt to "force an expression of hostility" to the company.

The only expression of opinion coming from company sources was made by the lawyers engaged to defend the accused officials. They are reported to have said that "it was the unanimous opinion of counsel representing the various defendants that this should be done. Accordingly the counsel had it done."

Subsidize Road to Retain Service

The towns of Great Barrington, Sheffield and Egremont, Mass., have taken advantage of the legislative act of 1918, which permits municipalities to give aid from their treasuries to electric railways and have made appropriations for the assistance of the Berkshire Street Railway. Their action is unprecedented in Massachusetts.

By paying the railway $8,600, the three towns will make it possible for it to continue the operation of its lines running to those communities. Great Barrington will contribute $6,900, Sheffield $1,100 and Egremont $600.

The company had petitioned the Public Service Commission for permission to discontinue the service to the three towns and at a hearing in November represented that it was unable to obtain enough revenue to pay for their operation. At that time the Public Service Commission continued the hearing until Dec. 12.

Counsel for the town told the commissioners on Dec. 12 that the assistance promised by the three towns will be sufficient to keep the lines running. If the service had ceased, Egremont would have been isolated and Sheffield left to depend upon a very meager steam railroad service. The company proposed to abandon in all 44 miles of electric railway. Its affairs were reviewed briefly in the ELECTRIC RAILWAY JOURNAL for Oct. 19, page 718, and Nov. 16, page 904.

Kansas City Operating

Business Men Required to Serve as Guards on Lines of Kansas City Railways

The Kansas City (Mo.) Railways secured an injunction from the Federal Court in Kansas City, Mo., restraining members of the union of employees from interfering with the operation of cars, and from persuading employees not to work. A similar injunction request was refused by the Federal Judge in Kansas City, Kan. The latter court, however, ordered the city to provide guards for cars, the lack of police protection being the chief bar to service.

The company had more than enough men on hand to run the cars for which the city was providing protection. Mayor Mendenhall caused business men to be subpoenaed to serve as guards, using a list of members of the Chamber of Commerce. More than half those summoned refused to serve. The result was a general committee of citizens, which selected a list of employers and employees, who acted as guards. Objectors complained that their compulsory service was putting them in the position of opposing the strikers.

Violence by strikers and sympathizers became more pronounced on the evening of Dec. 21. The company had been operating cars only until 5.30 p.m. That night, to accommodate Christmas shopping crowds, it extended the service until 7 p.m. After dusk, strikers began throwing stones, and even shooting at cars. Monday there were similar demonstrations.

Rumors of a sympathetic strike are multiplying.

The interurbans are again operating, both those which get current from the Kansas City Railways and those which have had labor troubles of their own. The Leavenworth line secured an injunction from the Federal Court against the strikers.

News Notes

Omaha Strike to Be Arbitrated.—The lines of the Omaha & Council Bluffs Street Railway, Omaha, Neb. were closed for eight days recently by a strike which was brought to a conclusion by the men agreeing to submit their differences to the War Labor Board at a hearing to be held in Omaha on Jan. 2. The men have been insisting upon union recognition.

Carhouse Destroyed by Fire.—A fire burned the carhouse of the Illinois Traction System at Danville, Ill., and destroyed six summer cars of the Danville Street Railway & Light Company and three interurban cars, one of them an express car, the property of the Illinois Traction System proper. The total loss is estimated at $50,000. The company proposes to erect a new building on the site.

Ottumwa Employees Strike.—The employees of the Ottumwa Railway & Light Company, Ottumwa, Iowa, went on strike on Dec. 21. Five lines of the city are tied up and about sixty-five men are idle. Employees at the power plant, which furnishes steam heat to business houses and some residences, say they will walk out in a sympathetic strike if the demands of the men are not met.

Hearing in Regard to Women Postponed.—The continuation of the hearing before the War Labor Board in regard to the retention of women conductors on the lines of the Detroit (Mich.) United Railway, arranged to be held in Washington on Dec. 21, has been postponed by the Board to Jan. 4 at Chicago. The opening of the case in Detroit before the board was reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 21, page 1111.

Wants Inquiry Into Spokane Lines.—In a communication to the City Council of Spokane, Wash., Commissioner Leonard Funk, recommends an investigation of the railway situation in Spokane, and possible public ownership of the two local railways. The Council requested Mayor C. M. Fassett and Corporation Counsel Geraghty to conduct the investigation. Seven-cent fares, immediate betterment of service, and consolidation of the two lines are suggested by Mr. Funk, and other commissioners, as matters that should be investigated and placed before the people.

Doherty Executives Meet.—The largest convention of Doherty executives that has ever been held, with 200 in attendance, met in New York Dec. 9-12. At the final meeting Mr. Doherty said that he viewed the future with the greatest optimism and that during war times it had been shown that even public utilities finally received fair play, even though the blessings were somewhat delayed. Public utilities, he thought, were coming back into their own.

Municipal Ownership Conference in Omaha.—The City Council of Omaha, Neb., has appointed a committee which comprises Mayor Smith and two City Commissioners, to confer with G. W. Wattles, president of the Omaha & Council Bluffs Street Railway relative to municipal ownership. It is doubted whether the existing city charter provisions permit acquirement of a railway. If that doubt is not removed by the city legal department, a bill will be offered to the State Legislature on this subject.

Fight on Illinois Commission.—City officials representing sixty-one Illinois cities that are interested in forming a home-rule municipal league for the State met at Peoria recently. Some of those present attacked the State Utilities Commission and resolutions were adopted favoring the appointment of a legislative committee to present a demand to the General Assembly for the repeal of the public utilities act. A committee will report this action at the next meeting of the Illinois Municipal League, to be held in Chicago.

Interurban Legislation Proposed.—Considerable interest is manifested in probable electric railway legislation by the Legislature of Ohio this winter. So far the only proposed legislation that has come to light is in the hands of C. G. Taylor, State representative from Huron County. Mr. Taylor has been identified with traction lines for twenty-five years. He is advocating a bill for a valuation of the interurban lines and for centralized State control with boards having territories, with Cleveland, Toledo, Columbus, Dayton and Cincinnati as operating centers.

New Paducah Franchise Discussed.—The City Commissioners of Paducah, Ky., recently met to consider a proposed new franchise for the Paducah Traction Company. A. S. Nichols, general manager of the company, went over the provisions of the new franchise, which eliminates some unprofitable lines, and materially changes the present regulations. Cecil Reed, receiver of the company, looks upon the proposed franchise favorably. The grant confers on the city the privilege of purchasing and operating the lines at any time.

Wants M. O. Bill Passed.—By a vote of fifteen to eleven the City Council of Minneapolis, Minn., recently favored passage by the Minnesota Legislature of a bill to give the city the right to buy the Minneapolis Street Railway, included in the system of the Twin City Rapid Transit Company and operate it. The city attorney is instructed to prepare such a bill. The resolution was said by its proponents to be for a weapon in negotiations with the company rather than as a direct bid for municipal ownership. Those voting against the resolution opposed it as a start toward municipal ownership.

Savannah Wages Fixed.—The War Labor Board has approved the wage scale of employees of the Savannah (Ga.) Electric Company. In declining to order any increase in the present rate it was announced that the present wage scale is as much as the board could allow. The board found that the maximum now being paid by the company is 2 cents more than the maximum granted in other Southern cities such as Memphis, Charleston and Atlanta. The Savannah scale provides for a minimum rate of 38 cents an hour and a maximum of 42 cents after five years' service. A schedule of working conditions submitted by the company was approved by representatives of the employees and the board directed that it be put into effect.

Drive for Emergency Relief Fund.—On Dec. 1 a drive was begun among the employees of the Pacific Electric Railway, Los Angeles, Cal., for money firmly to establish the Emergency Relief Fund that since March, 1917, has been maintained by the Pacific Electric Club for the benefit of our fellow workers and their dependents who from any cause might become in need of immediate financial assistance. Assistance has been rendered in the past in as great a measure as was possible with the limited finances available, to employees of every department and of every class without regard to nationality or race, or whether members of the club. More than $1,600 having been expended for this purpose, the funds for which were derived from the sale of waste paper, small contributions of cash from interested individuals, and by entertainments given by the club and its friends for the benefit of this fund.

Public Utilities Must Be Servants.—The Governors and Governors-elect of the states of the union from Maine to Washington, from Michigan to Louisiana and even from far-away Alaska met in Annapolis, Md., on Dec. 16 to discuss problems of reconstruction and readjustment. Governor Harrington and Mayor Strange of Annapolis welcomed the visitors. Secretary of War Baker made a short address. He said that the principal function of states hereafter must be "to rescue men from the situation shown during the recent mobilization, when one-third of the drafted men were found to be physically undeveloped and defective." Governor Harrington said that the old conditions could never return. The surest way to avoid unrest was to see that legislation gave equal and just right and equal and just opportunity to every citizen. Referring more specifically to the public utility companies, he said: "Public corporations and big business must now understand that they can only exist when they recognize that their existence is permitted only for service and not self and that they are the servants and not the masters."

Financial and Corporate

International Faces Foreclosure

Protective Committee Outlines to Security Holders Problems Before Railway and Traction Companies

The International Railway, Buffalo, N. Y., faces foreclosure. The holders of the $18,000,000 of collateral trust 4 per cent gold bonds of the International Traction Company were notified on Dec. 24 by the protective committee that, "in order to preserve the security for your bonds, it is essential that you make provisions to protect the stock of the International Railway and the equity in its properties represented thereby, against the foreclosure of the mortgage of the railway, and it will probably be necessary for you to foreclose the indenture securing your bonds. The emergency is acute."

BONDS SECURED BY RAILWAY STOCK

By such a foreclosure the holders of the traction company's bonds would possess themselves of the common stock of the International Railway, leaving as sole charges on the earnings $17,119,000 in refunding and improvement bonds and $11,982,500 in underlying bonds of companies that were consolidated with what finally has become the International Railway.

The letter to the holders of the collateral trust 4 per cent gold bonds of the traction company says that the net earnings of the railway during the current calender year are less by more than $700,000 than the amount required to meet taxes and interest charges and that the protective committee has been advised that it cannot expect for the present to receive any interest or dividends upon the bonds or stock of the railway and that it will not be able to pay interest upon bonds which fall due Jan. 1, 1919. Continuing the letter says:

DEFAULT CLAIMED

"These failures of the railway company to pay taxes and interest upon its bonds constitute defaults under the mortgage securing said bonds, and unless the defaults are secured within the time prescribed by the said mortgage, the holders of said bonds will have the right to compel the foreclosure of the mortgage and thus bring about a sale of the properties of the railway company."

The protective committee that is acting for the bondholders of the traction company consists of Ellicott C. McDougal, president of the Bank of Buffalo; Jacob Gould Schurman, president of Cornell University; Thomas De Witt Cuyler, New York, and Thomas E. Mitten, Philadelphia, president of the Philadelphia Rapid Transit Company and former president of the International Railway.

A resolution will probably be enacted by the City Council at a meeting soon after the first of the year directing someone to make a survey of the property and equipment of the company, routes, headway of cars and general operating conditions. E. G. Connette, president of the International Railway and vice-president of the International Traction Company, has promised to cooperate with the municipal authorities in making the survey. It is generally believed that the City Council is withholding any action on solving the railway difficulty until after foreclosure proceedings are brought against the company by security holders.

Pittsburgh Riding Decreased 12½ Per Cent

In the opinion of the Public Service Commission of Pennsylvania, accompanying its order to the Pittsburgh (Pa.) Railways to prepare all its closed cars for winter service, referred to briefly elsewhere in this issue, the commission comments on the financial results of the company. It says in part:

"Testimony was taken from which the following facts appear: The revenue of the company for the first seven months of the fiscal year, April 1, 1918, to Nov. 1, 1918, yielded $8,565,000. The operating expenses for the same period were $6,427,000. The increase of revenue was only 3 per cent over the same period of the preceding year, while the increase of operating expenses was 15 per cent. There was a falling off in the number of riders of 12½ per cent.

"All of this is disappointing, but it is impossible, in view of the abnormal conditions existing during the war, to fix the responsibility for this loss of traffic during the period mentioned. The fare of approximately 5½ cents was in vogue until June 23, 1918, and from the last-mentioned date, for a period of more than four months included in the calculation, the fare was 5 cents for persons riding exclusively within an inner district with a radius of about 2 miles, and 7 cents for all others."

New Republic Company Director

Albert E. Turner has been elected a director of the Republic Railway & Light Company, New York, N. Y. It is understood that a large interest in this company has developed in Philadelphia, the stock being widely distributed in Pennsylvania. The company owns the Mahoning & Shenango Railway & Light Company operating in Youngstown and vicinity.

Make Haste Slowly

Warning That Other Elements Than Figures Enter Into Recent Boston Elevated Statement of Earnings

There have been a number of warnings from unofficial sources about drawing conclusions too hastily from the statement of earnings of the Boston (Mass.) Elevated Railway for the four months from July 1 to Oct. 1. This statement was published in the ELECTRIC RAILWAY JOURNAL for Dec. 7, page 1023. Now comes a public trustee of the company who also voices the fear it is not fair or conclusive to judge the results entirely by figures. This official is quoted in part as follows:

FIGURES NOT CONCLUSIVE

"To judge the results of public operation of the Boston Elevated Railway entirely by figures is not fair or conclusive. Other factors should be taken into consideration. When the trustees began to study the needs of the property, they estimated that $6,000,000 additional revenue would be required. This estimate included an allowance of $2,000,000 additional for wages. At the time, this was the very best estimate obtainable on the probable award by the National War Labor Board. The award actually amounted to $3,000,000, so that this single item threw out the trustees' calculations by $1,000,000.

"The increase in the fare from 5 cents to 7 cents, or 40 per cent, would have produced about $7,500,000 additional revenue, provided there was no curtailment of riding. Some curtailment, however, was naturally expected, but it seemed reasonable to suppose that an increase in fare, which, theoretically, should produce a gain in revenue of $7,500,000 would in actual practice yield the $6,000,000 estimated requirements. The epidemic of influenza cut down riding, and the 7-cent fare made an unsatisfactory showing.

"I am convinced, however, that the 7-cent charge was not given a fair trial. The immediate effect of an advance in the rate of fare is that the traffic curve takes a dip, then the former patrons begin gradually to come back. In other words, there is action followed by reaction. It is the trustees' intention to continue the 8-cent fare long enough to determine its revenue possibilities accurately.

PRICES MUST BE CONSIDERED

"Another element for which allowance cannot be made in a purely arithmetical study of past months' results is the question of prices. Nobody seriously anticipates an early cut in electric railway wage rates; on the other hand commodity prices might very reasonably be expected to come down. A fare which might be inadequate on the peak of commodity prices might yield more than enough revenue when prices have undergone some readjustment. The matter is not one which responds to purely arithmetical treatment."

Dominion Company Breaks Even

The comparative income statement of the Dominion Power & Transmission Company, Ltd., Hamilton, Ont., for the years ended Dec. 31, 1916 and 1917, follows:

	1917		1916	
	Amount	Per Cent	Amount	Per Cent
Gross earnings	$2,967,273	100.0	$2,693,211	100.0
Operating expenses	1,733,759	58.4	1,459,601	52.2
Net earnings	$1,233,514	41.6	$1,233,610	45.8
*Transfer to maintenance and renewal account	111,709	3.8	157,689	5.9
Balance	$1,121,805	37.8	$1,075,921	39.9
Bond and other interest	395,585	13.3	365,573	13.5
Surplus earnings	$726,220	24.5	$710,348	26.4

*Unexpended portion of company's allowance of 20 per cent of gross earnings for maintenance and renewals.

The steady rise in operating costs for this company during 1917 was almost exactly offset by the increase in earnings. A smaller amount was transferred to the maintenance and renewal account but the bond and other interest rose, so that the surplus earnings for the last year did not show any substantial change.

After paying dividends of $535,153 and making other adjustments, the company had on Dec. 31, 1917, a surplus of $723,963. On this date there was $1,750,000 in the "reserve" account and $500,012 in the maintenance and renewal account. The increase in all these accounts for 1917 was $284,864. No new issues of securities were made, but the company retired $134,000 of bonds.

A. E. & C. Prospects Brighter

H. C. Lang, secretary and treasurer of the company, in a circular dated Dec. 18 to the holders of the $3,079,000 of first and refunding mortgage 5 per cent gold bonds of 1906 of the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., says that earnings above operating expenses and taxes are insufficient to cover the interest charges and that the payment of the interest on the bonds of that issue due on Jan. 1, 1919, must be deferred, the past due coupons to run at interest as before.

Mr. Lang referred to the continuation of the increasing costs of operation referred to in the notice sent to the first and refunding mortgage bondholders last June. He says that the payment last October of the interest due on July 1 was made possible only by the loan secured from the War Finance Corporation. The proceedings for increases of rates mentioned in the June notice have resulted in advances to 6 cents in the fares on the Aurora and the Elgin city lines and in substantial increases of light and power rates. These have offset to some extent the higher operating costs.

The increase of suburban rates is still the subject of negotiation. If these are consummated before the turn of the year, the company will adopt higher rates for single and round trips on its interurban lines and bring suit to enjoin the enforcement of the Illinois statute limiting passenger rates to 2 cents per mile. Mr. Lang says other Illinois interurban lines outside of the Chicago district have successfully followed this course. Until the confiscatory suburban steam rates now in effect are corrected he thinks it would be futile for the Aurora, Elgin & Chicago Company further to increase its rates because they are now higher than the less-than-cost rates of competing steam railroads.

He says that this contemplated revision in fares and the increased travel which will result from a return to normal conditions should make a decided change in operating results and restore the company to its pre-war condition of financial strength and stability.

$3,241,966 Loss in Five Months

The Boston (Mass.) Elevated Railway has issued a statement showing that from the time the public trustees took control on July 1 to Dec. 1, a period of five months, there has been a net loss of $3,241,966. The report follows:

RECEIPTS	
Passenger receipts	$8,771,946
Express cars, etc	56,878
Advertising, etc.	122,082
Use of tracks, etc	21,340
Rents of buildings, etc	27,922
Power	43,041
Interest, etc.	43,552
Total receipts	$9,086,761
COST OF SERVICE	
Wages	$5,460,319
Contracts, material, etc	3,714,559
Taxes	368,355
Subway rentals	539,800
Rent for leased roads	1,149,048
Interest	548,207
Sundry items	7,210
Dividend (proposed)	541,238
Total cost of service	$12,328,727

Compared with the five months ended Dec. 1, 1917, there has been an increase in the total receipts of $919,600, while the cost of service has increased $3,742,000.

The increase in wages for this period over the corresponding months of last year, due to the decree of the War Labor Board, the increase made on May 1 in accordance with the agreement with the carmen's union, and the 2 cents allowed by Mr. Endicott of the public safety committee, totalled $1,665,525.40. There was an increase in other operating expenses for the same period of $1,598,124, including $446,000, largely coal. An increase in rentals, due principally to the new Dorchester tunnel, was $202,661.

Comment by one of the trustees appears on page 1152 of this issue.

Long Dividend Record Broken

The directors of the Chicago (Ill.) City Railway announced on Dec. 21 that the regular quarterly dividend had been passed. The announcement followed the cutting of the regular disbursement for the last quarter from 2 to 1 per cent. It was stated that the directors found earnings insufficient for the declaration of any dividend. The company has been paying dividends regularly for the past sixty years.

One of the main reasons for the reduction in earnings was given by Leonard A. Busby, president of the company, as the recent award of the War Labor Board which went into effect last August. This award adds approximately $3,700,000 annually to the payroll, besides which the increased cost of materials and supplies is estimated at $500,000, making a total advance in operating charges of $4,200,000. At the same time traffic is said to have decreased considerably, the report for the first ten months of the present fiscal year showing a decrease in income from that source of more than $800,000. Mr. Busby made the following statement:

> This is the first time in the history of the Chicago City Railway that it has been obliged to pass its regular quarterly dividend. This is due to the wage increase ordered by the National War Labor Board, the increased cost of operating material and supplies, and the falling off of gross receipts due to a decrease in traffic.
>
> The wage increase on the surface lines became effective on Aug. 1, last, and is approximately $3,700,000 a year. The increased cost of operating material and supplies is about $500,000 a year, making a direct increase in operating charges of $4,200,000 per annum. Owing to decreased traffic our gross receipts have fallen off more than $800,000 during the first ten months of the present fiscal year.
>
> During the first four months of actual operation under the new wage scale fixed by the National War Labor Board the net earnings of the Chicago Surface Lines have decreased $1,726,684. Of this amount $1,422,014 represents increased operating cost, and $304,670, represents decrease in earnings. This is only for the months of August, September, October and November, and indicates a decrease in net earnings at the rate of $5,000,000 a year below the earnings of the company for the year prior to the time the wage award became effective, and even during that year the company suffered a heavy decrease in its net earnings due to the greatly increased cost of operating material and supplies.

RAILWAYS LOSING $12,000 A DAY

> The companies are now operating at a loss of more than $12,000 a day, and since Aug. 1 have not even earned 5 per cent on the city purchase price. There is, therefore, no longer any 5 per cent earned for the city. This company has been conservatively financed, every dollar of its outstanding securities is within the valuation fixed by the city for the purchase of the property, and the management has devoted itself to building and operating a railway-system in Chicago, admittedly one of the best in the country.
>
> The companies (Chicago City Railway and Chicago Railways) are still operating under war conditions with respect to wages and cost of material, and it is certain that this condition will continue for many months to come—how long, the future alone can say.
>
> The continuance of the present situation without some relief is bound to destroy the companies' credit and impair their ability to serve the community. This situation does not apply to Chicago alone, but is the same throughout the country.
>
> In the end, any attempt to furnish service at less than cost will prove alike disastrous to the public as well as to the investor. The future of Chicago is absolutely dependent upon adequate transportation facilities, and anything which will retard their usefulness is bound to affect injuriously every industry and interest of the city.

Financial News Notes

Dividend Action Put Off.—At a meeting on Dec. 20 of the Chicago City & Connecting Railway, Chicago, Ill., at which the semi-annual preferred dividend would ordinarily have been declared, no action was taken.

New Receiver for Pittsburgh Railways.—W. D. George, Federal Food Administrator for western Pennsylvania, has been appointed a receiver of the Pittsburgh (Pa.) Railways, vice H. S. A. Stewart, resigned. The appointment was made by Judge Charles P. Orr in the Federal District Court.

Threatens to Discontinue.—The Hamilton (Ont.) Radial Electric Railway, controlled by the Dominion Power & Transmission Company, Ltd., is reported to have given notice that it will discontinue operation, having found it impossible to continue, in view of the losses now being sustained.

Dividend in Scrip.—The directors of the American Public Utilities Company, Grand Rapids, Mich., have declared the regular quarterly dividend of 1½ per cent, payable in scrip on Jan. 1 to holders of record of Dec. 20. In April, July and October the preferred dividend was also paid in scrip owing to war conditions.

Foreclosure Expected Soon.—Financial troubles of the Hartford & Springfield Street Railway, Warehouse Point, Conn., were explained by H. B. Freeman, receiver, to the Superior Court at Hartford on Dec. 20. The interest on three mortgages has been defaulted. The receiver expects that the mortgages will be foreclosed shortly. They aggregate $1,000,000. In October the expenditures of the road were $2,640 greater than the receipts.

Abandonment Disapproved.—The Public Service Commission for the Second District of New York on Dec. 10 denied the petition of George Bullock, as receiver of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., for leave to abandon that part of the road from Main and Temple Streets, Fredonia, to the State line between New York and Pennsylvania. The commission holds that in the interest of the public the road should not be abandoned. No evidence of a declaration of abandonment by the directors and stockholders of the road was presented to the commission. The section which it was proposed to abandon runs through Fredonia, Brocton, Portland, Westfield and Ripley.

Municipal Railway Bond Issue Approved.—The City Council of Seattle, Wash., has been advised that the proposed $550,000 Seattle Municipal Railway bond issue has been approved by the Capital Issues Committee. The approval was transmitted to the Federal reserve district on Nov. 25, but announcement was received by the Council only a few days ago. Arrangements will be made at once for selling the bonds and the work on municipal street railway extensions will be rushed.

Abandonment Hearing on Jan. 9.—The Public Service Commission for the Second District of New York on Jan. 9, will hear petitions by three Westchester County electric railways for approval of the proposed abandonment of certain parts of the lines. The Yonkers Railroad seeks to abandon its lines in the outskirts of Yonkers and in Hastings, the Westchester Electric Railroad in Bronxville and the New York, Westchester & Connecticut Traction Company in the town of Eastchester between Mount Vernon to and in Tuckahoe.

Public Service Corporation Dividend Again 1 Per Cent.—The Public Service Corporation of New Jersey, Newark, N. J., has declared a quarterly dividend of 1 per cent on the $29,999,600 of capital stock, payable on Dec. 31, to holders of record of Dec. 27. In September the quarterly dividend payment was reduced from 2 per cent to 1 per cent. This makes the total of payments for the present year 6 per cent as compared with 8 per cent paid in 1917.

Dividend in Liberty Bonds.—The Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., the report of which for the year ended Dec. 31, 1917, was abstracted in the ELECTRIC RAILWAY JOURNAL for Sept. 7, page 432, has declared a dividend of 7½ per cent on the common stock, payable in Liberty Bonds on Jan. 1 to holders of record of Dec. 31. In January, 1918, the company paid 3 per cent cash on the common stock and in April, July and September paid 2 per cent cash. Since 1909 the revenues of the company have increased 154.8 per cent.

Would Abandon Some Belt Lines.—The Public Service Commission for the First District of New York has directed that a hearing be held in reference to an application of the Belt Line Railway, one of the associated companies of the Third Avenue System, for permission to abandon certain of its tracks on various streets in lower Manhattan. The company makes the point that practically all of these lines have outlived their usefulness; that they are of no use or value to the company nor to the traveling public, and that the removal of the old tracks will in effect be a benefit to vehicular traffic. The company, however, desires to permit the old rails to remain in certain of the streets until such time as the city shall decide to repave the streets, or until such time as the city may wish the tracks removed.

Results With Six Cents in Connecticut.—The Connecticut Company, New Haven, Conn., in a recent statement to the public, reviewed the results under the 6-cent fare in part as follows: "There seems to be an impression because the company's earnings for the first ten months of 1918 showed a net decrease of $506,000, that the 6-cent fare has not produced as much revenue as had been produced under 5-cent fares. This is not a fact. The increase in cost in 1917 was $810,000 greater than the increase in revenue. The payroll of the Connecticut Company for 1918 is $740,000 more than it was in 1917. It will be seen that the increase in wages alone is more than the $506,000 decrease. When one considers that in addition to this wage increase, the company has had its burdens of paving costs, bridge construction, repairs and innumerable other items to meet, it will be seen that the 6-cent fare actually has produced more revenue than was produced under the 5-cent fare. The fact is that the increased cost of maintaining and operating the property has been so much geater than the increase in revenue, ends do not meet. If the company had had a 5-cent fare during the last year the loss would have been much greater than it is."

Electric Railway Monthly Earnings

CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, ME.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$247,729	*$192,925	$54,804	$71,126	†$16,322
1m., Oct., '17	267,632	*174,451	93,181	70,003	23,178
12m., Oct., '18	3,156,639	*2,244,688	911,951	854,407	57,544
12m., Oct., '17	3,065,173	*2,020,705	1,044,468	815,675	228,793

EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$391,548	*$317,213	$74,335	$66,590	$7,745
1m., Oct., '17	307,827	*223,571	84,256	66,020	18,236
12m., Oct., '18	4,129,734	*3,158,967	970,767	808,618	162,149
12m., Oct., '17	3,579,998	*2,366,903	1,213,095	775,714	437,381

LEWISTON, AUGUSTA & WATERVILLE STREET RAILWAY, LEWISTON, ME.

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Oct., '18	$67,900	*$67,129	$771	$19,722	†$18,951
1m., Oct., '17	78,606	*60,625	17,981	15,512	2,469
12m., Oct., '18	872,091	*773,882	98,209	219,173	†120,964
12m., Oct., '17	889,877	*662,903	226,974	186,216	40,758

PHILADELPHIA (PA.) RAPID TRANSIT COMPANY

Period	Operating Revenues	Operating Expenses	Operating Income	Fixed Charges	Net Income
1m., Nov., '18	$2,764,922	$1,771,163	$993,759	$822,893	$170,866
1m., Nov., '17	2,512,229	1,496,010	1,016,219	810,757	205,462
5m., Nov., '18	13,407,452	8,748,045	4,659,407	4,094,824	564,583
5m., Nov., '17	12,408,029	7,234,599	5,173,430	4,056,582	1,116,848

*Includes taxes. †Deficit.

Traffic and Transportation

St. Louis Fare Upheld

Missouri Supreme Court Decides Public Service Commission Has Authority Over City Rates

The Supreme Court of the State of Missouri on Dec. 19 handed down a decision in the 6-cent fare case of the United Railways, St. Louis, upholding the raise in rate awarded by the Public Service Commission.

In an opinion written by Judge A. M. Woodson the court reversed and remanded the decision of Circuit Judge J. G. Slate of the Cole County Circuit Court, who, on Sept. 7, held that the commission was without jurisdiction to grant the increased fare.

Judge Woodson's opinion was concurred in by Judges W. W. Graves, R. F. Walker and C. B. Faris. Chief Justice Henry W. Bond wrote a separate concurring opinion, which was concurred in by Judges Blair and Williams. Judge Faris also concurred in this opinion.

Judge Woodson held that Sec. 20 of Art. XII of the State Constitution, of which City Counselor Daues relied chiefly in his opposition to the fare increase, did not apply. Mr. Daues contended that under this section the State could not take away the power from the city to regulate the rates of a railway fixed by franchise ordinance.

The 6-cent fare became effective last June, after the United Railways had asked permission to increase rates to meet the demands of employees who had walked out on strike in February.

Chairman W. G. Busby of the commission wrote the opinion granting the fare increase, and it was concurred in by Commissioners Noah Simpson and Edward Flad. Commissioners David W. Blair and E. J. Bean dissented on the question of jurisdiction.

Proceedings were started in the Cole County Circuit Court by Counselor Daues for the city of St. Louis to upset the fare increase. When Circuit Judge Slate held the commission was without jurisdiction, the railway appealed to the Supreme Court. Chief Justice Bond then granted an order permitting the company to continue to collect the extra 1-cent fare, which he directed to be impounded until the final determination of the case.

Six Cents in Johnstown and Gloversville

The Public Service Commission for the Second District of New York has passed an order authorizing the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., to charge a 6-cent fare in the cities of Johnstown and Gloversville, with existing transfer privileges, and a 6-cent fare from Harrowers to Hagaman. If Amsterdam waives the existing franchise restriction limiting the railroad to a 5-cent fare "to or from West Main Street within the corporate limits of the city of Amsterdam" the commission in its order authorizes the railroad to charge 6 cents in Amsterdam, with existing transfer privileges.

The order also provides "that if the city of Amsterdam does not waive the franchise restriction the railroad company may file a schedule under a short notice, if desired, adjusting its rates in Amsterdam in accordance with the increase granted and the franchise restrictions." The fares authorized may continue in effect "during the present period of high prices and are subject to change when the facts shown warrant same."

The proposed tariff fixing the fare at 6 cents in Gloversville and Johnstown was filed with the commission effective from Dec. 7. On Dec. 20 the railroad filed with the commission a new passenger tariff effective on Dec. 24, under which the local fare between points within the corporate limits of the city of Amsterdam will be 6 cents except that a 5-cent fare will apply between West Main Street, Amsterdam, and any point within the corporate limits of the city of Amsterdam; also a 6-cent fare between Amsterdam and Harrowers, between Harrowers and Hagaman and between Amsterdam and Hagaman.

Three Cents a Mile Becoming General

Seven electric railways in Illinois are charging 3 cents a mile and two others are making plans to do so. All the increases have been brought about with the sanction of the courts. The roads charging 3 cents have obtained injunctions in court against all the State authorities to restrain them from enforcing the maximum 2-cent fare law of the State. Through the Attorney-General the Public Service Commission determined that the increase in rates was necessary and it has accordingly interposed no objection although itself powerless to grant relief.

The electric lines charging 3 cents a mile for passengers follow: Alton, Granite & St. Louis Traction Company, Galesburg & Kewanee Electric Railway, Murphysboro & Southern Illinois Traction Company, Illinois Traction System (except its interstate connections with St. Louis, Mo.), Rockford & Interurban Railway, Aurora, Plainfield & Joliet Railway and the East St. Louis, Columbia & Waterloo Railway. Two other roads which have suits for injunction proceedings pending are the Joliet & Eastern Traction Company and the Kankakee & Urbana Traction Company.

The points involved in some of the cases were reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 7, page 1026.

Trenton-Princeton Increase

Seven Cents Authorized by New Jersey Commission in Each of Four Interurban Zones

The Board of Public Utility Commissioners of New Jersey on Dec. 7 issued an order authorizing the New Jersey & Pennsylvania Traction Company to increase the fares from 6 cents to 7 cents in each of its four fare zones between Trenton and Princeton. The single trip to Princeton now costs 28 cents, an increase of 13 cents over the rate of a few years ago. The new rate is effective forthwith. The local fare in Trenton will continue unchanged. The company is also allowed to put into effect immediately a new schedule of freight rates, increasing the present freight charges.

SECOND INCREASE IN YEAR

The increase in passenger rates is the second in a year. With the 7-cent fare the company will gain additional revenue of about $18,000 a year, which sum will provide the money that the company is required to spend in the payment of additional wages under the award of the National War Labor Board.

In commenting on the wage increases to the employees of the company the commission says:

"It is for the interest of the public that street and interurban railway service shall be maintained. The employees of the company cannot be forced to continue to operate cars against their will and the company either had to pay the wages awarded by the National War Labor Board or cease operating, or at least curtail the service in a very marked degree.

"The problem is a very serious one. We repeat here for the company's benefit what was set forth in the board's report of the application of Northampton, Easton & Washington Traction Company to increase rates of fares, bearing date of Dec. 3, 1918.

LINE HAS COMPETITION

"Attention is directed to the fact that the line under consideration is operating in competition with the Trenton & Mercer County Traction Corporation between Trenton and Princeton. Both lines are practically the same length.

"We doubt if the increase in fare from 6 cents to 7 cents in each zone is the best solution of the company's troubles, but we will permit a trial of it."

The company is purely a railway. Its line is 13.25 miles with an equipment of five passenger cars, three freight and two work cars. Energy for operating the line is purchased.

Fare Increase on Holyoke Street Railway

New Scheme Retains in Part the Zone System, but Approaches More Nearly Previous Uniform Fares

The establishment of a 7-cent fare unit for the "inner zone" and a unit fare of 5 cents for other zones, with various changes in zone arrangement outside the city of Holyoke, is recommended by the Public Service Commission of Massachusetts, in an order dated Dec. 21 applying to the Holyoke Street Railway.

FIRST INCREASE A YEAR AGO

On Dec. 31, 1917, the commission authorized the company to increase its rates of fare, and an inner and an outer zone were created having average distances from the City Hall of 2.41 and 5.06 miles, respectively, and ranges of distance on the through lines as follows: Inner zone, 1.90 to 3.71 miles; outer zone, 3.37 to 7.48 miles. The fares then established were, briefly:

(1) Five cents for any ride within the limits of one zone; (2) 10 cents cash or 6⅔ cents by tickets for any ride from a point in one zone to a point in the other; (3) special tickets at 7½ cents each, good for local rides between any point in the inner zone and Smiths Ferry (5.62 miles from City Hall) or intermediate points on the Northampton line; (4) workmen's tickets, 7½ cents each, good during certain morning and evening hours between any point in the inner zone and the city boundary (6.7 miles from City Hall) on the Westfield line; (5) lap-overs, permitting passengers to ride between South Hadley Falls and South Hadley Center and between Willimansett and other parts of Chicopee for a 5-cent fare; (6) special tickets at 10 cents each, good between points on the Fairview line in Chicopee and points on the other Chicope lines; (7) free transfers at City Hall, available on tickets as well as cash fares; (8) a 7-cent fare unit on the Amherst and Sunderland line.

It was estimated that this scheme of fares might yield $110,000 additional revenue yearly. The new rates became effective on Feb. 17. The revenue from February to October, inclusive, was $537,080, or a decrease of $2,412, compared with the same period in 1917.

NEW PLAN SUGGESTED

The company recently applied to the commission for authority to secure additional revenue by a further development of the zone system. Under this new plan the central area and the adjacent outer zone would be somewhat contracted, the average through limits on the inner zone being cut to 1.98 miles with a range of 1.63 to 2.43 miles and on the outer zone the average was cut to 4.11 miles, with a range of 3.37 to 5 miles. The fares proposed, briefly, by the company, were as follows:

(1) A 5-cent fare for a ride within any one zone, except the central area, where this fare would carry only to and from City Hall; (2) a cash fare for a ride covering all or parts of two zones, equal to 5 cents multiplied by the number of zones, the central area being regarded as two zones with the City Hall as the dividing point; (3) tickets sold at the rate of twelve for $1, good for any ride between City Hall and any point in an adjacent outer zone, or for any ride in the central area passing beyond City Hall; (4) all other tickets, except the half-fare tickets for school children and all lapovers to be abolished. The general intent of this schedule was to base fares on distance traveled, making the rate about 2½ cents per mile when cash is paid and about 2 cents per mile with tickets.

At the hearings the company's plan for revision met with considerable opposition, and particular disapproval was expressed in regard to the provision for an extra charge at City Hall. Roughly speaking, the factory district is on one side of City Hall and the residential district on the other. This would often make the charge under the company's plan, for even comparatively short rides to and from work, 10 cents cash or 8⅓ cents with tickets. This practically amounts to charging from 3⅓ to 5 cents for transfers hitherto free. While the company's need for additional revenue was admitted, there seemed to be a general preference for a unit fare higher than 5 cents, covering a larger district than the present inner zone, without any transfer or other charge at City Hall.

The existing zone system in Holyoke and vicinity was approved by the commission for trial, but it does not appear that the results have been more satisfactory than in cases where a horizontal increase in fare has been authorized. The commission points out that in the present case it is difficult to retain a minimum fare of 5 cents without creating conditions to which objection may justly be made.

COMPLAINT SEEMS WELL FOUNDED

The complaint in regard to the extra charge at City Hall appears well founded. It is also true, the opinion states, that a system of fares which is theoretically open to objection may, in actual practice, produce good results if it is sustained by public opinion.

The company recognized the value of public opinion and at the hearings expressed its willingness to adopt an alternative plan of increased fares which provided for a minimum cash rate as high as 8 cents.

It has seemed to the commission just and reasonable to approve the adoption of a new scheme of fares, retaining in part the zone system, but approaching more nearly to the original uniform fare than the system now in force. The plan provides for the enlargement of both inner and outer zones; the provision of an additional zone beyond the outer zone on both the Northampton and Westfield lines; adoption of the zones on the South Hadley Center-Amherst-Sunderland line as proposed by the company; the provision of a unit fare of 7 cents for the inner zone, with free transfer privileges, and a unit fare of 5 cents for all other zones; the provision of a 10-cent fare for any ride between the inner and the outer zone; and certain lapover provisions in the Willimansett-Chicopee and South Hadley districts.

This plan, the commission points out, will make the zones reasonably symmetrical, the radius of the inner zone averaging about 2.76 miles. In comparison with the company's plan, the fares to City Hall from outlying points like Chicopee and South Hadley Center will be increased from 8⅓ to 10 cents, but this will be offset by the fact that the 10 cents will carry a passenger to any point in the inner zone beyond the City Hall; whereas the charge under the company's proposed schedule would have been 13⅓ cents.

The minimum charge in the inner zone will be raised from 5 to 7 cents, but the maximum will be reduced from 8⅓ to 7 cents, and certain small settlements comparatively near the city center which have always felt harshly treated under the present schedule will be brought within the limits of the 7-cent fare.

The commission has not attempted to fix with precision the exact limits of the inner zone, but has left the company some leeway in the selection of convenient points. In closing, the decision says in part:

> We also feel that the plan should not be regarded in any way as permanent, but should be subject to reconsideration after a fair trial. The country is now in a transition period. The war is over, the extraordinary demands for labor, fuel and materials, which have disturbed economic conditions are gradually ceasing, and the return of many of the soldiers to New England is promised in the not remote future. What the course of prices and traffic may be no one can confidently predict. In the event of any substantial change of conditions, the whole question of fares should be open to reconsideration.
>
> In conclusion, the commission desires to impress as strongly as it can upon the city of Holyoke and the other communities involved the fact that the electric railway situation in Massachusetts is critical, and that this is true of the company by which they are served. The Holyoke Street Railway has never, indeed, been more in need of hearty public co-operation than it is at the present time. Encouragement of jitney transportation is short-sighted in the extreme, and anything that communities can do by proper traffic regulations to facilitate the movement of cars, or any steps which they may take to limit unreasonable claims for injuries or damages are in their own interest quite as much as in the company's interest.

The proposed schedule of the company is canceled and a new one, revised as recommended by the commission, will be approved by the board.

Review of New York Plea

Edward Swann, district attorney of New York County and a member of the New York City administration, has issued a statement in regard to the applications that are now pending with the city for increases in fares on the local electric railways. He says that in order to pass upon the matter intelligently it is necessary to "ascertain the facts in the transit situation, past and present, for the best prophet of the future is the history of the past."

After calling attention to the quasi-public character of the railway business Mr. Swann says that the privileges which the companies enjoy are conveyed in trust, first, for the public benefit, and, second, for earning a reasonable profit on the investment. He has included as part of his statement a table of "net earnings for three years of the 'subway syndicate'," in which he has grouped the Interborough Rapid Transit Company (rapid transit lines) and the New York Railways (surface lines), operated separately but controlled by the Interborough Consolidated Corporation. Taken as a whole he considers the lines to be profitable.

Mr. Swann calls attention to the disapproval of the plan of reorganization of the old Metropolitan Street Railway and the Third Avenue Railway by the Public Service Commission on the ground that the proposed issue of securities in the reorganization was not justified and to the subsequent overruling of the commission by the courts as a legal question arising upon the construction of statutes. Later the law was amended giving the commission power over reorganizations.

Mr. Swann says that the surface railway companies just mentioned were warned at the time by the commission of the practical certainty that dividends could not be earned, and that default in payment of bond interest might result. It is his opinion that "if, in disregard of these considerations, the plans (reorganization) were adopted, the companies cannot now, with any justification, appeal to the public for an increase of fares to relieve them from the effects of their own improvidence." Mr. Swann has not dealt separately with the cases of the Third Avenue Railway [illegible] f the Brooklyn Rapid Transit Company.

Inter-Company Transfers

The Beeler transfer report reached the Public Service Commission of the District of Columbia on Dec. 23. The report is a fifty-page typewritten document covering the transfer conferences held recently between officers of the Washington Railway & Electric Company and the Capital Traction Company and John A. Beeler, traffic expert for the commission.

These conferences grew out of public hearings on the transfer matter on Nov. 7 and Nov. 14. On the latter date the companies agreed to the establishment of inter-company transfer points at Eighth and East Capitol, Eighth and C, Eighth and D and Eighth and H Streets northeast.

It was decided then to take the whole question up in conference. If the voluntary action of the companies has not met sufficiently the needs of the situation, the commission, it is expected, will announce further hearings.

The rate increase order of the commission, permitting the companies to charge a straight 5-cent fare, was issued on Oct. 26. The first transfer hearing was on Nov. 7. The first transfer points were established on Nov. 20.

The matter of free inter-company transfers was discussed first during the fare hearings, the officers of the companies admitting at that time that such an exchange at certain points would probably benefit the public, although perhaps not tending to increase the revenues of the companies. It was not expected that the concessions the companies are willing to make would be announced until after a meeting of the commission on Dec. 23.

Columbus Figures Presented

First of the Bemis Study Results Made Public Substantiate Fare Claims of the Railway

President Westlake of the City Council of Columbus, Ohio, expressed the opinion on Dec. 20 that very little will be done toward straightening out the fare trouble until after the United States Supreme Court has rendered a decision on the two suits before it to determine whether or not the terms of the present franchise of the Columbus Railway, Power & Light Company shall be enforced.

STOCKHOLDERS ORGANIZE

This attitude on the part of the city is due largely to recent events, among them the formation of a stockholders' protective committee on Dec. 19, representing stock with a par value of $1,200,000.

Emil Keiswetter, president of the Ohio National Bank, is chairman of the committee. Its purpose is to take such measures as will restore the company to the good will of the public. The committee hopes to have matters in shape to act at the annual meeting of stockholders on Jan. 28.

Edward W. Bemis, employed some time ago by the Council to audit the books of the company and make an investigation of its ability to operate at the present rate of fare, filed a partial report on Dec. 19. The report showed that the E. W. Clark Management Company receives 1½ per cent of the gross revenue for its service in managing the company. Formerly members of this organization were heavy stockholders, but it is stated that they now own less than 16 per cent of the total stock of the company. The management company pays the salaries of President S. G. McMeen, Vice-Presidents Crawford and C. M. Clark, as well as half the salary of General Superintendent Harold Clapp.

The figures bear out the statement made by company officials that the company has been losing about $50,000 a month because passengers refuse to pay their fares. During September and October of this year 3,073,021 passengers did not pay fares, which means a loss of $48,016. During these months it was shown that 9,685,588 passengers were hauled as compared with 13,984,875 for the same months in 1917. This loss of 4,984,875 resulted from the refusal of people to use the cars, it is stated.

WAGE INCREASE OF $585,000

Mr. Bemis stated that the increase awarded the employees by the War Labor Board will amount to $585,000 a year. Several heads of departments were also allowed an increase in order that their services might be retained. Fare rebate slips given out when a cash fare of 5 cents was imposed have created a contingent liability of $72,000 up to Oct. 31, which the company has promised to return if the courts decide the fare question against it.

Revenues derived from the railway department for September and October showed a decrease of more than $60,000 over the same period last year and the net decrease for both railway and power departments was $8,400. Operating expenses for the same time showed an increase of $46,246 for the railway department, while the power department of the company decreased its expenses $998, leaving a net increase of $36,929.

Net funds available for dividends and depreciation at the end of the two-month period were $7,229, as compared with $94,774 for the same period of last year.

Schedule 7 of the report by Mr. Bemis shows the following comparative statement of gross revenues, operating expenses and net earnings for the months of September and October, 1917 and 1918:

	Railway Revenues	Light, Heat and Power	Total
1917	$387,644	$284,773	$672,419
1918	323,602	342,406	664,009
Net decrease			$8,409
	Operating Expenses		
1917	$262,780	$203,866	$466,646
1918	309,026	194,548	503,575
Net increase			$36,929
	Taxes		
1917	$27,356	$24,569	$51,926
1918	25,584	23,219	48,803
Decrease			$3,123
	Operating Expenses and Taxes		
1917			$518,573
1918			552,379
Net increase			$33,805
	Net Earnings from Operation		
1917			$153,845
1918			111,630
Net decrease			$42,214
	Non-operating Revenue		
1917	$10,241	$22,115	$32,357
1918	2,868	14,907	17,776
Decrease			$14,581
	Net Available for Depreciation and Return on Investment		
1917			$186,202
1918			129,406
Decrease			$56,796
	Deductions for Interest and Miscellaneous		
1917			$91,428
1918			122,178
Increase in Deductions			$30,749
	Net Available for Depreciation and Dividends After All Deductions and Expenditures		
1917			$94,774
1918			7,228
Decrease			$87,545

The effect of the temporary 5-cent fare, used when it seemed that the City Council would give absolutely no heed to the company's plea for a higher rate of fare to meet increasing expenses, is shown in the following unofficial statement:

Pay Passengers, September and October, 1917	
Cash fares	752,182
Tickets	10,545,757
Total paying	11,382,433
Pay Passengers, September and October, 1918	
Cash fares	5,529,962
Tickets	3,506,907
Total paying	6,613,567

Non-paying Passengers, September and October, 1917	
Free transfers	2,602,442
Non-paying Passengers, September and October, 1918	
Free transfers	240,611
Refusing to pay	2,832,410
Total non-paying	3,073,021
Total passengers carried	
September and October, 1917	13,984,875
September and October, 1918	9,686,588

These figures for the two months show clearly the company's operating condition. They comprise only a portion of Mr. Bemis' report.

Transportation News Notes

No More Skip Stops in Galveston.—The Galveston (Tex.) Electric Company has revoked the skip-stop system of operation.

Six Cents in Kankakee.—The Public Utilities Commission of Illinois has made effective on one day's notice a 6-cent fare on the lines of the Kankakee Electric Railway. Nineteen tickets will be sold for $1.

Jury Inquiry in Brooklyn.—The November Grand Jury in Kings County is to continue in session indefinitely for a general examination of transit conditions on the lines of the Brooklyn (N. Y.) Rapid Transit Company.

Increase for Youngstown.—The Council of Youngstown, Ohio, has passed a service-at-cost franchise ordinance, providing for a fare of 5 cents immediately, and a 1-cent charge for a transfer. The old rate was twenty-five tickets for $1, with no transfer charge.

Rates Made Uniform.—The Public Utilities Commission of Illinois made effective as of Dec. 10 the proposed advances in freight and express rates of the Sterling, Dixon & Eastern Electric Company to coincide with like rates on steam roads under federal control.

Millville Line Wants Increase.—The Millville (N. J.) Traction Company has applied to the Board of Public Utility Commissioners of New Jersey for permission to increase its fares from 5 cents to 6 cents, and the fare between Millville and Vineland from 10 cents to 12 cents.

Council Adopts Service Order.—The Common Council of New Orleans, La., has adopted a resolution by which the New Orleans Railway & Light Company must restore all cars taken out of service and abolish the skip-stop system, thereby resuming the schedule in effect last summer.

Pittsburgh Ordered to Prepare.—In an opinion handed down by the Public Service Commission of Pennsylvania, the Pittsburgh Railways is ordered to prepare immediately all its cars, except summer cars, for use, so that the company "will be prepared to perform its duty to the maximum of its present capacity."

Waco Skip Stops Go.—The City Commissioners of Waco, Tex., recently adopted an order revoking a previous order providing for skip stops on the lines of the Waco Traction Company. As a result cars in Waco are again stopping at every corner and at other regular stops to take on or discharge passengers.

Increase in Milk Rates to Continue.—The Public Service Commission of Indiana has issued an order continuing in effect for ninety days beyond Dec. 31 its order of one year ago authorizing interurban electric railways in Indiana to charge increased rates for the transportation of milk and cream and their products.

Fare Complaint Not Pressed.—The Public Service Commission for the Second District of New York has ordered closed upon its records the complaint of patrons of the Syracuse Northern Electric Railway, Inc., over increased fares put in effect on Sept. 23. Commissioner Cheney gave a hearing in Syracuse in November, but the complainants failed to appear.

Increase in Speed Allowed.—The City Commission of Dallas, Tex., has passed an ordinance permitting cars of the Dallas Railway to increase their speed, the limit in the business district being raised from 8 to 12 m.p.h. and the speed in the residence district to 20 m.p.h. in accord with the recommendations of John A. Beeler, traffic expert.

Omaha-Lincoln Line Wants More.—T. A. Browne, secretary of the State Railway Commission of Nebraska, has notified Mayor Smith that the Omaha, Lincoln & Beatrice Railway has applied for permission to raise its fare from 5 cents to 7 cents. The company has had a deficit every year since the war started, ranging from $1,900 in 1914 to $4,524 in 1918.

Increase for Interurban Line.—The Public Utility Commission of Pennsylvania has granted authority to the Trenton, Bristol & Philadelphia Street Railway, Bristol, Pa., to increase its fares from 5 cents to 6 cents in each of its zones between Trenton and Torresdale. The company also sells strips of thirty-five tickets for $2, a saving of a quarter of a cent on each fare.

Tulsa Rules Against Jitneys.—The City Commission of Tulsa, Okla., has enacted an ordinance to regulate jitneys. The ordinance limits the number of passengers to be carried by a jitney to its seating capacity. The jitney drivers say they will be compelled to cease operation unless the ordinance is repealed. The city authorities say they will enforce the ordinance to the letter.

Boston Prohibits Smoking.—The trustees of the Boston (Mass.) Elevated Railway have ordered the discontinuance of smoking at all times on the cars of the system. Smoking has heretofore been permitted between 1 and 6 a.m. on night cars on inclosed platforms only. C. D. Emmons, general manager of the company, says he feels that this order is necessary for sanitary reasons and for the general convenience of the patrons of the road.

Chicago Elevated Fare Case Closed.—There will be no ruling until after the holidays on the injunction proceedings brought by State's Attorney Hoyne to enjoin the Chicago (Ill.) Elevated Railways from charging 6-cent fares. Oral arguments in the case have been closed before Circuit Court Judge Baldwin. The State's Attorney, counsel for the elevated lines and attorneys for the city will now submit briefs.

Zone Fare Statement of Jersey Company.—At a meeting of the Board of Public Utility Commissioners of New Jersey, to be held at Newark on Dec. 30, President T. N. McCarter of the Public Service Railway will present a statement on the establishment of a zone system of fare collection on that property. This is in accordance with the board ruling permitting an increase in fare, in connection with which it was specified that the railway company should present a plan [illegible] zone system by Jan. 1, 1919.

Asks Court to Modify Commission Ruling.—Wallace B. Donham, receiver for the Bay State Street Railway, Boston, Mass., asked the Supreme Court on Dec. 24 to annul, modify, or amend the recent order of the Public Service Commission setting the rate of fare on the Bay State system at 7 cents in cities and 2½ cents a mile in smaller communities. In his petition the receiver declared the decision of the commission declining to approve a 10-cent fare schedule and setting the lower rate had in effect denied him, as receiver, a reasonable return for the service rendered, and deprived him of his property without due process of law. The decision of the commission denying a flat 10-cent fare was reviewed in the ELECTRIC RAILWAY JOURNAL for Dec. 21, page 1103.

More Time Allowed in Chicago Case.—The 7-cent fare case of the Chicago (Ill.) Surface Lines was heard before the Illinois Public Utilities Commission on Dec. 23 and 24. Most of the time was devoted to arguments on the status of the contract with the city. The commissioners did not decide this point, but allowed the companies to present all their evidence. Questions of some of the commissioners would indicate that they had in mind the possibility of commuting the city's 55 per cent of the net receipts toward a reduction in fare. L. A. Busby, president of the railway, explained that such a plan would not help under the present circumstances because there is no net which can be divided with the city. The city was allowed further time to prepare its evidence and to cross-examine on the exhibits filed by the companies.

Legal Notes

KENTUCKY—*Separate Coaches Required for Races on Interurban Line.*

Kentucky Statute Sec. 795 requiring railroads operated within the State to provide separate coaches for different races applies to interurban lines but not to street railways, the former being distinguished from the latter by deriving their franchise and power of eminent domain from the State instead of the municipality. Hence, an interurban company which had turned its road over to another company and authorized its operation without separate coaches and the operating company were both liable for the penalty where the statute was not followed. (South Covington & Cincinnati St. Ry. Co. *vs.* Commonwealth, 205 Southwest. Rep., 603.)

KENTUCKY—*Overcrowded Cars Do Not Constitute a "Nuisance."*

In the absence of any ordinance or statute limiting the number of passengers on the cars, a street railway company cannot be prosecuted for maintaining a nuisance because it failed to prevent crowding on its cars. If the passengers become injuriously affected by such overcrowding, the remedy is in action for damages. (Commonwealth *vs.* South Covington & Cincinnati Street Ry. Co., 205 Southwestern Rep., 581.)

LOUISIANA—*Had Chance to Avoid Accident from Over-Speeded Car.*

A car was run too fast when approaching a street, but the danger could have been seen by a pedestrian whose subsequent negligence was the direct cause of his fatal injury. Hence, he had the last clear chance to avoid the accident, and his children could not recover. (Sammons *vs.* New Orleans Ry. & Light Co., 79 Southern Rep., 320.)

NEW YORK—*Strike Breakers Are Employees.*

Where a street railway had a strike and a detective bureau furnished strike breakers, the railway paying the bureau, which in turn paid the men, the men acting as motorman and conductor on a car were servants of the street railway, whose exclusive remedy for negligent injuries is under the workmen's compensation law (Consol. Laws, chap. 67). Public policy requires that a public carrier shall be regarded as a responsible employer. (Murray *vs.* Union Ry. Co. of New York City, 170 New York Sup., 601.)

NEW YORK—*Rails in Street Should Not Be Piled So as to Appeal to Playful Instincts of Children.*

Some children found rails piled on the street during reconstruction work and one of the rails lay in a nearly balanced condition across a block. The children proceeded to use it as a seesaw and were injured. The court held that the company should have known that such seesaw would appeal to the playful instincts of children and that the question of its negligence in leaving the rails in such a position should be referred to the jury. (Murnane *vs.* Third Avenue R.R., 172 New York Sup., 188.)

NEW YORK—*Injuries to Pedestrain While Crossing Street—Elements Essential to Recovery.*

To sustain recovery by a pedestrian, struck by a street car, he must show that before starting across the street, he looked in both directions, that no car was approaching within such distance or at such speed as to cause reasonable apprehension of collision, and that the motorman by exercise of reasonable care could have avoided a collision. (Fortunato *vs.* Union Ry. Co. of New York City, 172 New York Sup., 119.)

NEW YORK—*Consent to Construction of Elevated Railway Must Be Recorded.*

Written consent by an abutting owner to the construction of an elevated railway in a street is a "conveyance," within Real Property Law, Sec. 290, and must be recorded to be valid as against bona fide purchasers. Hence, a person who purchased after the consent was given and before it was recorded, and without notice, could recover damages for the construction of the road. (Maybeck *vs.* New York Municipal Ry. Corp., et al., 171 New York Sup., 848.)

PENNSYLVANIA — *While Passenger in Automobile Is Not Chargeable with Negligence of Driver, He Must Exercise Reasonable Care to Avoid Danger.*

The court affirmed the judgment of the lower court which quoted Dunlap *vs.* Philadelphia Rapid Transit Company, 248 Pa. 130, 93 Atl. 873 as a parallel case. Here the law was held to be that while, as a rule, a passenger is not chargeable with the negligence of his carrier, that rule does not relieve the passenger of the duty of exercising reasonable care to avoid danger. He must not sit quietly by and fail to see danger that is plainly imminent and then fail to warn the driver. (Laudenberger *vs.* Easton Transit Co., 104 Atl. Rep., 588.)

SOUTH CAROLINA—*Not a Trespasser or Licensee, When Having Access to Ground on Each Side of Track.*

Where a landlord had the right to use of the land on either side of the defendant's interurban line, the tenant's son, in going from a cow lot on the landlord's premises to his father's dwelling across defendant's tracks, was not a "trepasser" or a "licensee." (Phillips *vs.* Piedmont & Northern Ry., 96 Southeastern Rep., 960.)

New Publications

Power Pressure

No. 18 in the series of Safe Practices pamphlets issued by National Safety Council, Chicago, Ill. Price, 10 cents.

Safe Practices

Bulletin No. 17 in the series of Safe Practices Pamphlets issued by the National Safety Council, Chicago, Ill.

While this pamphlet relates more particularly to steam railroad yards and yards of manufacturers, it contains suggestions which would be applicable in electric railway yards also.

Labor Legislation of 1917

Bulletin No. 244 of the United States Bureau of Labor Statistics. Government Printing Office, Washington, D. C. 430 pages.

This bulletin, which has just been issued, is the latest supplement to preceding bulletins presenting the labor legislation of each year. Laws on the subject of workmen's compensation are not included, since these are published in a separate group.

The Safety Movement in the Iron and Steel Industry

By L. W. Chaney and H. S. Hanna, United States Department of Labor, Bureau of Labor Statistics, Washington, D. C.

This is a 300-page report giving a graphic picture of the accident situation in the special field mentioned. While not of direct application in electric railway work it should be suggestive to transportation men who are viewing the accident-reduction movement in a broad way.

Accident Report

Report on Long Island Railroad Accident near Central Islip, N. Y., on April 15, 1918. Interstate Commerce Commission, Washington, D. C.

This is the report of the chief of the Bureau of Safety covering the investigation of an accident which occurred on the Long Island Railroad near Central Islip, N. Y., on April 15, 1918, and it contains many valuable data of a technical character on T-rails. The report is well illustrated with rail cross-sections, both photographic and in outline.

Lectures on Engineering Practice

The 1918 "J. E. Aldred Lectures," delivered at the Johns Hopkins University, Baltimore, Md. Published by the university. One dollar per copy.

These lectures on engineering published under the Aldred foundation contain much of interest to electric railway men; for example, the lectures on development of concrete road construction, by A. N. Johnson; the manufacture of structural steel, by Bradley Stoughton; steam-electric power-plant design, by A. M. Loizeaux; the coal problem, by E. G. Bailey, and the growth of electric systems, by J. C. Smith.

Personal Mention

Mr. Hamilton Succeeds Mr. Andrews

Executive Offices of New York State Railways Removed to Rochester, Where Mr. Hamilton Is

James F. Hamilton, vice-president of the entire system of the New York State Railways, including the properties at Rochester, Syracuse and Utica since last February and resident manager for the company in Rochester, has been elected president of the company to succeed the late Horace E. Andrews. Walter N. Kernan succeeds Mr. Andrews as president of the Mohawk Valley Company, which controls the New York State Railways. As the Ontario Light & Traction Company is being merged with the New York State Railways no successor to Mr. Andrews with that company will be elected. As yet no successor has been selected to Mr. Andrews as president of the Schenectady Railway. James T. Hutchins, also of Rochester, has been elected president of the Rochester Railway & Light Company, doing a light and power business exclusively, to succeed Mr. Andrews. The executive offices of the New York State Railways will be removed to Rochester and Mr. Hamilton will continue in charge of the New York State Railways, Rochester Lines, as general manager. Since his election as vice-president of the company the local managers of the New York State Railways have reported to Mr. Hamilton in Rochester.

J. F. HAMILTON

Mr. Hamilton is well known throughout New York State, having been connected with the local railway properties in Buffalo, Albany, Schenectady and Rochester. His wide experience in operation, his knowledge of the local problems in the cities in which the New York State Railways operates, and his acquaintance with the needs of the various communities, should help materially in the handling of the many problems that will come before him for solution as operator and executive. Mr. Hamilton began his railroad career in 1897 as a conductor on the lines of the International Railway at Buffalo, and after various promotions with that company, he resigned in 1902 to accept a position as assistant superintendent of the Schenectady Railway and was promoted to the position of superintendent in 1909. In 1911 Mr. Hamilton was appointed general superintendent of the United Traction Company, Albany, and was retained by the Schenectady Railway in an advisory capacity. In 1912 he was promoted to the office of general manager in charge of both the Schenectady and United Traction properties. He resigned these positions to assume the duties of general manager of the New York State Railways, Rochester Lines. He was president of the New York Electric Railway Association in 1914-1915.

Another Boston Trustee Resigns

For the second time since the trustees were appointed by Governor McCall of Massachusetts on June 26 to conduct the Boston Elevated Railway on the service-at-cost plan, under State control, the chairman has resigned. Louis A. Frothingham, the first chairman, elected to that office by his fellow trustees at their first meeting, resigned in October upon receiving a major's commission in the United States army. On Dec. 17 William M. Butler, who has since been chairman, sent his letter of resignation to Governor McCall.

Mr. Butler's resignation was caused by the growing and urgent demands of his private business interests, it is said. He is a member of the law firm of Butler, Cox, Murray & Bacon. Mr. Butler is president of the Boston & Worcester Street Railway and the Boston & Worcester Electric Companies. He is also president of several cotton mills companies and of a storage warehouse company in New Bedford.

The remaining members of the Elevated trustees are Galen L. Stone, John F. Stevens and Stanley R. Miller of the original board, and former Congressman Samuel L. Powers, who was appointed to succeed Mr. Frothingham after the latter resigned.

L. H. Mountney has been appointed treasurer of the Center & Clearfield Railway, Philipsburg, Pa., to succeed F. P. Bagley, who has been appointed assistant secretary of the company. Mr. Mountney was formerly general manager of the Slate Belt Electric Street Railway, Pen Argyl, Pa. Previous to that he was superintendent of the Carbon Transit Company, Mauch Chunk, Pa.

J. M. Daley has been appointed acting manager of the Ogdensburg (N. Y.) Street Railway to succeed W. B. Voth, general manager, who resigned to become manager of the properties at Eau Claire, Wis., operated by the Wisconsin-Minnesota Light & Power Company.

C. A. Hoag, formerly assistant treasurer of the United Traction Company, Albany, N. Y., has been appointed treasurer of the company to succeed Henry F. Atherton, who is now assistant general manager of the Hudson Valley Railway. Mr. Hoag was appointed assistant treasurer of the United Traction Company in the spring of 1916, and previous to that time was connected with the bureau of departmental accounts of the company.

C. Sims Bailey has been appointed general manager of the Schuylkill Railway and the Schuylkill Electric Company, Girardville, Pa., to succeed the late R. Harold Smith. Mr. Bailey is an alumnus of Cambridge University, England. He has had a wide experience in the public utility field; first in the development of the Durban Tramways, South Africa, later in the construction and operation of the Richmond & Henrico Railway, Richmond, Va.; the Petersburg & Appomattox Railway of Petersburg, Va., and in the operative departments of the Morgantown & Wheeling Railway Company; Ha Ha Bay Railway; Hull Electric and other enterprises.

John W. Colton has been appointed executive assistant to L. S. Storrs, president of the Connecticut Company, New Haven, Conn., reporting to the president. His jurisdiction will cover information and advertising, among other things. Mr. Colton's appointment comes as a result of the Connecticut Company's decision to acquaint the public more fully with the problems that confront it. Recently a campaign of advertising in the daily and weekly newspapers in the cities and towns served by the company was begun, the purpose being to inform the public how changed conditions within the last few years had brought about increases in expenditures in excess of the increase in revenue, which eventually will make necessary a readjustment of fares. Mr. Colton was formerly city editor and news editor of the Springfield (Mass.) Union for the last twelve years, and prior to that had had reportorial and editorial experience on other Massachusetts newspapers. In September of this year he was called by the Bridgeport District Ordnance Office of the War Department to take charge of the publicity of the Bridgeport district, which, at that time, had very important plans under way for the dilution of labor in munition factories and the increasing of production by various other means. Mr. Colton specialized in electric railway matters during his newspaper career.

Messrs. Clapp and Campbell Move Up

Columbus Company Recognizes Executive Talent in Officials Whose Early Work Was Along Engineering Lines

A recent personal note in these columns directed attention to the election of two engineer-executives to vice-presidencies in the American Electric Railway Association. A similar coincidence occurred when H. W. Clapp was promoted to be general manager of the Columbus Railway, Power & Light Company, and W. C. Campbell was promoted to the general superintendency previously occupied by Mr. Clapp. Both of these men are electrical engineers by profession, the larger part of their business careers having been spent in engineering work.

H. W. CLAPP

Mr. Clapp is an American citizen by birth although he was born in Australia. He came by his interest in electric railway matters naturally because his father was managing director of the Melbourne Tramway & Omnibus Company. For four years before coming to America Mr. Clapp was superintendent of motive power of the Brisbane Tramways. With the operating experience thus gained, he entered the manufacturing field in 1902 as an engineer with the General Electric Company, his work being in the New York territory. During five and one-half years spent thus he had much to do with the electrification of the New York Central Railroad, with the rolling stock for the Interborough Rapid Transit Company and with the car equipment for the West Jersey & Seashore Railroad.

He left the General Electric Company in the fall of 1907 to enter the electrical engineering department of the Southern Pacific Railroad and about four years later became assistant electrical engineer to A. H. Babcock, being assigned to be engineer in charge of construction of the trans-bay electric lines of the Southern Pacific Company. He shortly thereafter resigned to become general superintendent of the Columbus Railway, Power & Light Company, continuing as such until his promotion to his present position. In connection with the work at Columbus he has also considerable to do with the physical operation of the East St. Louis & Suburban Railway and other properties affiliated therewith, and in 1915 became vice-president of these.

Mr. Clapp is the personification of enthusiasm, and he has put a tremendous amount of energy into every activity into which his interests have led him. He has made a special study of franchises, and has great hopes of the success of the service-at-cost plan of operation as it has been in use in Westerville, a suburb of Columbus. He is also vitally concerned in the accident-reduction movement, and has backed the National Safety Council through its electric railway section.

Mr. Campbell became acquainted with Mr. Clapp soon after the latter made his General Electric connection. Young Campbell had graduated from Union College, Schenectady, in 1900; and had spent one year in the General Electric shops, another in special work at Purdue University and a third on the General Electric testing floor. He was then assigned to the New York territory of the company, but left its service about the same time as did Mr. Clapp, to become general carhouse foreman for the New York Railways. Another year saw him back with the General Electric Company in the New York territory. but he was soon transferred to the San Francisco and Portland (Ore.) districts for construction engineering and sales work. In 1914 he joined Mr. Clapp at Columbus with the title of assistant general superintendent. As previously stated, he has just succeeded Mr. Clapp as general superintendent.

W. C. CAMPBELL

Both Mr. Clapp and Mr. Campbell retain their interest in electrical engineering matters, the former being a member and the latter an associate of the A. I. E. E. They are both active also in local civic affairs and together form a strong team in the management of the Columbus property. Their experience demonstrates the fact that engineering training need not prove a bar to entrance into general administrative work if a man has a talent for such.

Obituary

Eugene E. West, president of the Valdosta (Ga.) Street Railway, is dead. Mr. West had been in business in Valdosta for many years, but for some time he had lived in Jacksonville, Fla.

Edward Day Page died on Dec. 26 in Oakland, N. J. In addition to other extensive business interests, Mr. Page was president of the South Orange & Maplewood Traction Company and a director of the Yale & Towne Manufacturing Company and the Colorado Power Company. He was sixty-three years old.

Private **John W. Highams**, U. S. Marines and former cashier of the Memphis (Tenn.) Street Railway, has been killed in action in France. He gave up the position which he held with the railway for fifteen years to enlist during the past summer. Private Highams was twenty-nine years of age. He had been in France less than two months.

Harrison Harwood, Natick, Mass., is dead. He was born in Natick seventy-six years ago. His business interests were mostly in his home town. Until two years ago he was president of the Natick National Bank. He promoted both the Natick & Cochituate Horse Railroad and the electric railway from Natick to Newton Lower Falls and Needham, now included in the system of the Middlesex & Boston Street Railway. He was a large stockholder of the Natick Gaslight Company, of which he was an officer for many years.

Harry L. Bleecker, vice-president and general manager of the Washington Water Power Company, Spokane, Wash., died recently of pneumonia. Mr. Bleecker was one of the most widely known public service corporation officials in Washington and had an extensive acquaintance in Idaho, California and the East. He was forty-five years old and had been with the Washington Water Power Company sixteen years. He was born in Belleville, Ont., and went with his father to California, where, after studying law, he entered the legal department of the San Diego Street Railway. In 1900 Mr. Bleecker became private secretary to Jay P. Graves, at Grand Forks, B. C., who was then building the Granby smelter. Two years later he went to Spokane and became private secretary to the late Henry M. Richards, then president of the Washington Water Power Company, and to D. L. Huntington, now president of the Washington Water Power Company. In 1903 he was elected secretary of the company and later was chosen vice-president.

Manufactures and the Markets

DISCUSSIONS OF MARKET AND TRADE CONDITIONS FOR THE MANUFACTURER, SALESMAN AND PURCHASING AGENT

ROLLING STOCK PURCHASES   BUSINESS ANNOUNCEMENTS

Difference of Opinion Over the Trend of Prices

Some Hold to Stiff Prices, Others Desire Quick, Sharp Break—Gradual Decline Expected

There is a considerable difference of opinion among members of the trade regarding the future trend of prices of electrical goods. That prices will eventually go to lower levels none deny.

Some are firmly of the conviction that it will be some time before lower prices can reasonably be expected. Labor is still high. There are stocks on hand of raw materials that were laid in at the high prices. Besides, more were ordered which are either on the way or will be shipped within the next few months. Until these conditions are changed this group believe that prices must stay up.

Contrary to this view is the hope expressed by many prominent men in the industry that prices will at once drop as far as they are going. These people, as a prominent insulated-wire manufacturer expressed it a few days ago, "want to take their loss all at once, get it over with and make it attractive to do business."

Those who hold this position, while they do not believe that it will come, say that the buyers will not be enticed into the market by a small decrease. Rather will a decrease lead them to expect still lower prices. To do things this way, these people state, is simply to postpone buying and in the meantime go through a long-drawn-out period of business agony and hesitancy.

The view, however, that is coming to be held most generally is that prices from now on can be expected to fall not fast but surely. In some lines this has already happened. Insulated-wire base, for instance, has dropped slightly in the last few days. When the price of copper drops after the first of the year, as copper authorities say it will, and as is predicated by the announced price of 23 cents for export, other commodities where copper or brass plays a large part may be expected to follow the lead of wire.

Except for certain lines, few orders are now being received for electrical goods, and while the factories may have large quantities of unfilled orders, still incoming orders must be stimulated. Competitive conditions, therefore, may arise shortly.

A case came to light a few days ago in which an order for $25,000 worth of motors and substation equipment was about to be placed. The concern that received the order cut its price first 8 and finally 10 per cent in order to get the business. Moreover, it was said at the time this was the first instance in several years that the salesmen had been allowed to meet competition in that way.

While it is probably true that much business is going to be delayed waiting for further decreases, still this must be expected. So long as prices are to come down slowly, new business will be placed slowly.

Apportionment of B. R. T. Cars

The Brooklyn (N. Y.) Rapid Transit Company on Dec. 19 got another extension from Justice Benedict in Supreme Court so that it will not have to put into operation before Nov. 1, 1919, the 250 cars which the Public Service Commission in February, 1917, ordered the company to add to its surface rolling stock.

Formal orders which were signed on Dec. 19 by Justice Benedict supersede the decision given several weeks ago, when, on the application of the Public Service Commission for a writ of mandamus to compel the company to obey the order for more cars, the mandamus was made effective as of June 1, 1919.

The extension was granted as the result of a conference between Justice Benedict, former Judge Ransom, counsel for the commission, and Luke D. Stapleton and Charles L. Woody for the railway.

The formal orders state that of the 250 cars the Brooklyn Heights Railroad is to supply 135, fifty-four to be of the low-level center-entrance trailers, twenty-seven of which have already been ordered from the Jewett Company, and twenty-seven to be ordered by Feb. 1, and that plans and specifications for the other eighty-one are to be in the hands of the Public Service Commission for approval not later than Feb. 1, 1919. The Brooklyn, Queens County & Suburban Railroad is to supply ten, two of which have been ordered, two to be ordered by Feb. 1 and six to be planned by the latter date. The Coney Island & Brooklyn Railroad must furnish five, two of which are ordered and three to be ordered by Feb. 1, and the Nassau Electric Railroad will supply ninety-two, of which thirty-seven are to be low-level center-entrance. Of the thirty-seven, nineteen have been ordered, eighteen are to be ordered by Feb. 1 and on that date the Public Service Commission is to be given specifications for the other fifty-five, showing their type and design, all to be in operation by Nov. 1.

Year's Air Brake Sales Have Been Good

Electric Railway Companies Are Reported Again to Be Actively in the Market for Supplies

Manufacturers of air brakes have just completed one of the best years in the history of the industry. Previous to the entry of the United States into the war large quantities of air-brake parts were exported for electric railways in France and England. Materials on hand up to two years ago were plentiful, but on the entry of this country into the war supplies began to be depleted rapidly with a consequent rise in price of brakes which, roughly, amounted to 80 per cent in the past two years.

Large orders for air brakes have been placed for electric railway cars through the Emergency Fleet Corporation and Housing Corporation and now the electric railways themselves, having postponed the purchase of new equipment as long as possible, are reported to be actively in the market. Purchases of equipment by roads which have not been granted increases in fare have been exceedingly light during the past three years, but as one producer put it, "their equipment is falling apart" and air brakes they must have, repair work having been carried on to the limit.

Gears and Pinions Coming on the Market

Traction Buying Good but Supplies on Hand Limited and Deliveries Run Six to Eight Weeks

Gears and pinions, the production of which has been much curtailed during the war, are coming back into the market again but in very limited quantities. Owing to government requirements iron and steel mills stopped the manufacture of gear cases entirely and some of the gear and pinion plants themselves were taken over by the government for the production of shell cases.

The demand from electric railways has been brisk, but owing to the scarcity of supplies in the market deliveries cannot be made in better than six to eight weeks. Peak prices, it is belived by the distributers, have been reached. One concern that intended several weeks ago to advance prices on Jan. 1 has now abandoned the idea. Manufacturers show a disinclination to stock up at this time pending expected price changes in iron and steel.

Sympathetic Strike of General Electric Men

Action Follows Reduction of Forces Because of Canceled Orders—Statement on Company's Attitude

A sympathetic strike began at most of the plants of the General Electric Company on Dec. 19. Some of the men who went out had returned on Dec. 24, but it was estimated on Tuesday of this week that 20,000 men were out, including 15,600 at Schenectady. At Erie, Pa., where the cause of the strike originated, it was stated that 800 out of 5200 men were out, 400 of the 1200 who went out originally having returned. Substantially half the employees at Pittsfield remained loyal, and at the Lynn (Mass.) works of the company all the employees remained at work and were at their posts on Monday of this week.

The strike followed the action of the company in laying off 200 men at the Erie works, of whom ten were union members, as a result of the cancellation of orders following the signing of the armistice. The union demands the reinstatement of the men, and other matters have also been raised, such as the recognition of the union.

STATEMENT BY PRESIDENT RICE

Replying to a communication from John I. Wickham, secretary-treasurer Electrical Manufacturing Industry Labor Federation, E. W. Rice, Jr., president of the General Electric Company, says that the committee plan of employee representation adopted in Erie "is the same kind of a plan as that adopted in Pittsfield and in Lynn, pursuant to the award of the National War Labor Board and there is no reason for the elimination of the plan at Erie, unless similar plans are also eliminated at Lynn and Pittsfield, where they have been established under governmental direction. The elimination of such plans the company would decline."

On the question of lay-off the answer of Mr. Rice is: "That the managers of the several plants are taking up with their employees' committees the question of so handling the work as to reduce to a minimum either inconvenience or hardship from loss of work resulting from the cancellation of orders due to the cessation of the war and the diminished volume of orders received. This is a problem which involves different conditions in the different plants and in the several departments of each plant, and it must be worked out with the management of each individual plant because no general rules can be made applicable to all.

Regarding the re-employment of men in the service Mr. Rice wrote: "On Dec. 11, 1918, a letter was issued to all departments of the company, stating that it was a matter of great pride to the company that 8000 of its employees had entered the military or naval service and that we would welcome them home with pleasure and reinstate them in our employ."

Some figures as to the present volume of business and orders of the General Electric Company have been made public in connection with the strike situation. The 1917 orders aggregated $247,000,000. Orders received during the seven weeks prior to Dec. 14 were at the rate of $157,000,000 a year. In the last two weeks of this period they were at the rate of $125,000,000.

Metals Going Lower

Large Stocks Have Been Accumulated by Allied Governments as Well as Producers

As the year closes the metals again come into a free market. Iron and steel, copper and lead are released from government control at the close of business on Tuesday next. The iron and steel people a couple of weeks ago put through an arbitrary reduction of a few dollars a ton on certain items including rails. Copper producers announced this week an asking price of 23 cents for export. This is three cents below the government maximum price. Lead producers have cut their price until it is almost as low as it will probably go, namely 5½ cents per pound.

That lower prices of practically all of the metals will come shortly is the confident opinion of the recognized authorities. Asking prices are felt to be largely market feelers. The belief that copper will go to 20 cents or perhaps 19 cents before the market is stimulated sufficiently to buy in tonnage is gaining supporters. This week electrolytic copper was offered for resale at 21 cents and London intimated that buying might take place at about 19 cents. Lead is expected to fall to 5 cents a lb. Copper wire (base) has fallen to 28 cents f.o.b. mill in carload lots. Tremendous quantities of metal are now known to be held by the United States and other governments. This is in addition to the stocks that have accumulated in the hands of producers. In its current issue the *Engineering and Mining Journal* says regarding metal stocks:

LARGE SUPPLIES ON HAND

"In copper, American producers were estimated about a month ago to have approximately 800,000,000 lb. of crude copper in stock and in transit, and the quantity must have been increased during December. Australia has about 50,000,000 lb., and Japan must have a large supply. It has become known within a few days that the British government has 62,000,000 lb. of refined and the American government between 75,000,000 and 100,000,000 lb.

"The surplus of copper has not resulted from any great increase in production in 1918. On the contrary, the indications are rather strong that the statistics of the world's production in 1918, for which preliminary figures will be available in a few days, will show a considerable decrease from 1917.

"In lead we find a similar situation. Large stocks exist in America and Great Britain, the British government reporting 49,000 long tons of its own, while supplies have backed up in Australia.

"The British government has reported holding 18,769 long tons of common spelter and 6544 tons of high grade. Stocks in the hands of American producers are about 35,000 tons, a decrease from the figure of Oct. 1, but there is reason to surmise that the invisible supply in this country is large.

"With this situation there is no reason for surprise respecting the failure of buyers to appear in want of metals at recent prices."

Electrical Sales for 1918 Around $750,000,000

Indications Are That 1917 Record Has Not Been Far Surpassed This Year

As the current year comes to a close it becomes apparent that sales of electrical equipment billed in 1918 are not much geater, if greater at all, than those billed during the record year of 1917. In fact, in not a few instances, it will be found that gross sales for 1918 were below those for 1917.

If the above is true, then the sales of electrical goods billed in 1918 will probably be found to run around $750,000,000.

A good many reasons can be found for sales not running higher. First, there was not the quantity of added factory space in 1918 that there was for 1917 production. Second, there was less commercial and more government purchasing. Third, the shortage of raw materials and labor reduced production in many lines. Fourth, conservation measures required curtailment in the output of a number of electrical products. Sixth, the signing of the armistice early in November caused a very large reduction in output. Seventh, government prices on raw materials brought lower average prices on certain lines, particularly wire, which has the largest output in dollars and cents of all electrical manufactures.

At the close of 1917 the unfilled orders on hand were very large. Some of these orders have not yet been filled. Unfilled orders now on hand are probably much smaller than they were a year ago. The close of the war brought many cancellations. All government contracts, however, were not canceled. The big government contract for outpost wire, for instance, is still in the process of fulfillment.

When the new year opens the electrical manufacturing industry will find itself in a better condition to attract business than it has been in for the past two years. Once more it will be able to give service to buyers.

Track and Roadway

Fairfield (Ala.) Utilities Company.—It is reported that the Fairfield Utilities Company will soon begin the construction of public utilities for the newly incorporated city of Fairfield, this line of improvements to include light, heat, water, power, gas and street car service, besides street improvements and other urban needs. The company was recently organized with a capital stock of $50,000. The officers of the company are George Gordon Crawford, president of the Tennessee Coal, Iron & Railroad Company, president; H. C. Ryding, vice-president; L. T. Beecher, secretary-treasurer, and C. R. Sexton, assistant secretary.

Columbus (Ga.) Railroad.—It is reported that the Columbus Railroad is considering the construction of an extension to Camp Benning.

Illinois Central Railroad, Chicago, Ill.—Plans are being made to begin work next spring on the electrification of the entire right-of-way of the Illinois Central Railroad in Chicago, in connection with the construction of a large passenger terminal at Twelfth Street and the lake front, Chicago. It is planned to convert the Randolph Street suburban station into a subway station linking the electrically-operated suburban system of the Illinois Central running under Grant Park to the proposed city-built local transportation subways. The conversion of the Illinois Central Railroad to electrical operation within the city limits will be accomplished in three steps, according to the program agreed to. The suburban service will be electrified as soon as the necessary installation can be made, after which work will be started on the electrification of the through train service within the city. The final step will be the electrification of the freight service.

Louisville (Ky.) Street Railway—In the event that Camp Taylor is abandoned, as it has been rumored, the Louisville Street Railway will have many thousands of dollars tied up in useless equipment. This line has been a fairly good one while the camp was busy, and from present indications demobilization from this camp will result in several thousand men being on hand for six months or more, as returning men from military service in France will be demobilized here, for a radius of more than 300 miles.

Manchester, Ky.—The Columbia-Panama Coal Company of Chicago, Ill., is constructing an electric line from Manchester to a large boundary of coal land which it has secured 2 miles north of Manchester, on Main Goose Creek. Grading will be completed about the first of the year. The company has secured a tract of ground adjacent to Manchester for the purpose of erecting a power plant, machine shop and repair shops. H. H. Hardinge, Chicago, Ill., president.

Trenton & Mercer County Traction Corporation, Trenton, N. J.—Announcement has been made by the Trenton & Mercer County Traction Corporation that it will extend its line through Trenton Junction, a distance of about three-quarters of a mile. The material for the improvement is on the ground and the work will be begun as soon as the Philadelphia & Reading Railway completes the tunnel at that place. The trolley tracks will pass through the tunnel, doing away with the old grade crossing. The traction company is now laying tracks in the Sullivan Way tunnel under the Pennsylvania Railroad and the Delaware and Raritan Canal near the State Hospital for the Insane. When the work is completed the Stuyvesant Avenue division to Trenton Junction will be abandoned. The City Commission of Trenton has adopted a resolution requesting the Trenton & Mercer County Traction Corporation to build a line along Fair Street to connect with the South Trenton branch, so as to provide transportation to the new municipal dock which is being built along the Delaware River.

International Railway, Buffalo, N. Y.—The Public Service Commission for the Second District of New York has ordered the International Railway to install an interlocking plant in Union Road, Cheektowaga, to control and regulate the crossing of its tracks over tracks of the Lehigh Valley and Erie Railroads.

Interborough Rapid Transit Company, New York, N. Y.—Plans made by the Public Service Commission for the First District of New York in reference to the extension of operation of the Pelham Bay Park subway line from the present terminus of operation, Third Avenue and 138th Street to Hunts Point Road, call for the extended service to begin on Jan. 7. It was originally planned to have this extension of service take place on Dec. 21, but it was found impossible to get signals, power cables and other equipment in readiness at an earlier date. The Interborough Company, however, will have all work completed by Jan. 7.

Muskogee, Okla.—R. D. Long and Edgar Graham, both of Muskogee, Okla., have announced that plans have been completed for the construction of an electric interurban line to connect Muskogee, Oklahoma City and Tulsa. All surveys have been made and the project financed, it is announced, and the promoters are only waiting more normal conditions before starting actual construction. The proposed route is from Muskogee through Boynton, Morris and Okmulgee into Tulsa, passing through the oil fields, and from Tulsa south through Creek County oil fields into Okmulgee and through the Okmulgee coal fields, and from Henryetta to Shawnee, thence to Oklahoma City. The estimated cost of the line is $10,000,000.

Pittsburgh, Pa.—Work will be begun soon on the construction of two new steel bridges to take the place of the old Sixteenth and Forty-third Street spans over the Allegheny River. The approaches will be extended to eliminate grade railway crossings. One bridge will be built at Fortieth Street at an approximate cost of $1,250,000 and the other at Sixteenth Street at an approximate cost of $1,000,000. Railway service may be resumed by the Pittsburgh Railway over the latter bridge.

Southern Pennsylvania Traction Company, Chester, Pa.—Work has been completed and operation begun on the double-track line of the Southern Pennsylvania Traction Company from Chester to Darby. The track was built by order of the government to furnish better traveling facilities for men employed in the munition plants and shipyards. The cost of building the double track was borne by the national government.

Dallas (Tex.) Railway. — Citizens of Mount Auburn, Parkview Place and East-We-Go have petitioned the City Commissioners of Dallas to require that the Dallas Railway extend its street car service through these communities.

Virginia Railway & Power Company, Norfolk, Va.—Officials of the Virginia Railway & Power Company have submitted to the city officials a rerouting plan for its cars throughout the city which eliminates, it is understood, about 50 per cent of the present trackage.

Power Houses, Shops and Buildings

Little Rock Railway & Electric Company, Little Rock, Ark.—A 5000-kw. turbine will be erected by the Little Rock Railway & Electric Company in its power house.

Pacific Gas & Electric Company, Sacramento, Cal.—The Pacific Gas & Electric Company will construct a new forge and blacksmith shop at its gas works at Fresno. The shop will be equipped with machinery for the repair and manufacture of tools, pipe, etc. A new pump house will also be built.

Public Service Company of Northern Illinois, Chicago, Ill.—The power house of the Public Service Company of Northern Illinois at Joliet, which supplies power to the local railways, was recently destroyed by fire. The loss is estimated at $500,000.

Illinois Traction System, Peoria, Ill.—The carhouse of the Illinois Traction System at Danville, containing nine cars, was recently destroyed by fire, causing a loss of about $50,000. The company proposes to erect a new and modern carhouse on the site of the burned building.

Virginia Railway & Power Company, Richmond, Va.—It is reported that the Virginia Railway & Power Company will construct a great dam at the falls of the Appomattox for the purpose of developing the water power in the vicinity of Petersburg and supplying electric light and power to the city of Tidewater, Virginia. It is estimated that the cost of the work will approximate $2,000,000, and it is intended to secure Federal government aid in the construction of the dam. The scheme to build this dam has been under consideration for years. Richmond is already being supplied with electricity from Petersburg and a high power transmission line is being erected to Norfolk to supply that city and Suffolk with electricity for all purposes. About 15 miles of this line has already been completed.

Rolling Stock

Danville Street Railway & Light Company, Danville, Ill., is reported to have lost nine cars through a fire in the carhouse, Six of the cars were summer cars and three interurban cars. One of the latter was an express car belonging to the Illinois Traction System proper.

Trade Notes

Railway Audit & Inspection Company, Inc., Philadelphia, Pa., has opened a St. Louis office. It will be in charge of F. W. Stockmar.

Charles L. V. Frank, former president of Charles L. V. Frank & Company, Inc., handlers of mill and electric railway supplies, has filed notice to the effect that he has severed all connection with the concern.

Milliken Brothers Manufacturing Company, Inc., New York, is now stocking up at its new plant, 136th Street and the East River, preparatory to the installation of machinery and equipment to provide for the production of its various specialties, including electric transmission towers, steel poles, etc. The galvanizing plant will be erected on an adjoining plot.

Perley A. Thomas, High Point, N. C., has purchased 30 acres of land upon which he has erected several new buildings which, in addition to the mill and cabinet shop which he already had, puts him in position to take care of construction of steel or wooden cars or to repair cars. He has now several orders for steel cars going through the shop and is repairing quite a number of others.

Western Electric Company announces that George E. Cullinan, who since 1909 has been manager of the St. Louis house, has been appointed manager of the Chicago house, succeeding Frank A. Ketcham, who was recently promoted to the position of sales manager of the company. Harry N. Goodell has been advanced from manager of the Omaha house to succeed Mr. Cullinan at St. Louis. M. A. Curran is advanced from assistant manager at Philadelphia to take charge of the Omaha house.

Yarnall-Waring Company, manufacturer of power-plant devices, Philadelphia, has acquired a 3-acre tract at Mermaid Lane and Devon Street, Chestnut Hill, Philadelphia, adjacent to the Mermaid Lane station, Chestnut Hill division of the Philadelphia & Reading Railway. The tract contains a three-story stone mansion which is being converted into general offices, and a one-story modern machine shop has been erected in which manufacturing is now being carried on.

Southern Electric Supply Company, 31 Peters Street, Atlanta, Ga., has been incorporated to conduct an electrical supply business and is an outgrowth of the National Telephone Supply & Development Company of Atlanta. R. L. Stewart is president of the company and Carl D. Boyd sales manager. Traveling salesmen will cover the states of Georgia, Florida, Alabama, North and South Carolina and portions of Mississippi and Tennessee. A catalog is being compiled which, it is understood, will be ready for distribution about Feb. 1, 1919.

H. W. Clarke, who until Dec. 15 had been connected with the advertising service department of the McGraw-Hill Company at Chicago, has been appointed manager of advertising for the Chicago (Ill.) Pneumatic Tool Company. Mr. Clarke has been identified with the engineering advertising field for several years. Prior to his connection with the McGraw-Hill publications he spent eight years with the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., part of the time as a member of the sales and publicity departments and later as Western publicity representative with headquarters at Chicago.

New Advertising Literature

Ajax Metal Company, Philadelphia, Pa.: A thirty-six-page booklet descriptive of the company's ingot metals.

Trans-Com Lighting Products Corporation, New York City: An eighteen-page booklet descriptive of electrical boxes and conduit fittings, railway and other electrical appliances and water-tight fittings.